2021-2022 Graduate Catalog

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Admissions Information

Undergraduate students
785-532-6250
Fax: 785-532-6393
E-mail: k-state@k-state.edu

Future students should contact:
Office of Admissions
Kansas State University
119 Anderson Hall
Manhattan, KS 66506-0102
E-mail: k-state@k-state.edu
www.k-state.edu/admissions

Graduate students
1-800-651-1816 (toll free)
Outside the United States: 785-532-6191
Fax: 785-532-2983

Future students should contact:
Graduate School
Kansas State University
119 Eisenhower Hall
Manhattan, KS 66506-1103
E-mail: grad@k-state.edu
www.k-state.edu/grad/

The material in this catalog is provided for informational purposes and does not constitute a contract. For example, courses, curricula, degree requirements, fees, and policies are subject to constant review and change without notice.

Equity in athletics

In accordance with the Equity in Athletics Disclosure Act, an annual report pertaining to K-State's athletic programs is available to prospective students, students, and to the public in the following locations: Intercollegiate Athletics and online at www.kstatesports.com.

Any questions regarding the Equity in Athletics Disclosure Act should be directed to Intercollegiate Athletics, Kansas State University, 1800 College Avenue, Manhattan, Kansas 66502.

Notice of nondiscrimination

Kansas State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status, in the university's programs and activities as required by applicable laws and regulations. The person designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning the nondiscrimination policy is the university's Title IX Coordinator: the Director of the Office of Institutional Equity, equity@k-state.edu, 103 Edwards Hall, 1810 Kerr Drive, Kansas State University, Manhattan, Kansas 66506-4801. Telephone: 785-532-6220 | TTY or TRS: 711. The campus ADA Coordinator is the Director of Employee Relations and Engagement, who may be reached at charlott@k-state.edu or 103 Edwards Hall, 1810 Kerr Drive, Kansas State University, Manhattan, Kansas 66506-4801, 785-532-6277 and TTY or TRS 711.

About the Catalog

The K-State *Undergraduate and Graduate Catalogs* are electronic references for those interested in academic policies, procedures, and programs of the university.

Degree requirements and programs are organized by colleges and departments. Course descriptions are provided to help you and your academic advisor plan your academic choices.

Notices

Kansas State University reserves the right to make changes in admission requirements, fees, degree requirements, and other rules and guidelines appearing in this catalog. Such changes take precedence over catalog statements. While reasonable effort is made to publicize any changes, the student should remain in close contact with departmental advisors and appropriate offices. Responsibility for complying with all applicable requirements ultimately rests with the student.

Although the university attempts to accommodate the course needs of students, course offerings may be limited by financial, space, and staffing considerations or may otherwise be unavailable. Nothing in this catalog may be construed to promise or guarantee registration in any course or course of study, nor may anything be construed to guarantee completion of an academic program within a specific length of time.

Admission to the Graduate School is not complete until application materials and fees have been fully processed and the applicant has been notified of admission by the Graduate School.

Course Descriptions

The following course description key explains the system used for courses listed throughout the catalog.

Sample undergraduate course description

GEOG 221 - Introductory Physical Geography
Credits: (4)
A basic physical geography course examining the atmosphere, biosphere, geosphere and hydrosphere, with emphasis on processes, patterns, and physical background.
Note: Three hours lecture and one two-hour lab a week.
Requisites: Prerequisite: None.
Typically Offered: Fall, Spring, Summer
K-State 8: Empirical and Quantitative Reasoning; Natural and Physical Sciences

Sample graduate course description

GEOG 895 - Topics in Spatial Analysis
Independent advanced study of a selected topic. An example is the use of remote sensing and GIS in environmental modeling.
Credits: (1-3)
Requisites: Pr.: Consent of instructor.
Typically Offered: Fall, Spring, Summer

Course number

The letters **GEOG** generally denotes the department in which the course is offered (in this case, the Department of Geography).

The three digits of the course number **321** (undergraduate) and **899** (graduate) represent the level of the course (e.g., 100-199 = first year, 200-299 = second year, etc.)

000 - 099	An undergraduate course in which no credit is granted toward degree requirements.
100 - 299	An undergraduate lower-division course, designated as a freshman - or sophomore - level course.
300 - 499	An undergraduate upper-division course, designated as a junior- or senior-level course.
500 - 699	An undergraduate upper-division course, primarily designated as a junior- or senior-level course. Courses numbered 500 - 599 may be taken for graduate credit only in a graduate student's minor field. Courses numbered 600 - 699 may be taken for graduate credit in a graduate student's major field.
700 - 799	An undergraduate upper - division or graduate course, primarily a graduate-level course.
800 - 899	A graduate course, primarily for a master's level course or a professional-level course.
900 - 999	A graduate course, primarily for a doctoral-level course.

The number in parentheses (4) indicates the units of credit given for the course.

The **Fall, Spring, Summer**, and/or **intersession** indicates the semester, or semesters, each course is usually offered.

K-State 8 indicates that the course has been approved for The K-State 8 General Education Program which encourages students to be intellectual explorers. Students who first enroll in Summer 2011 or later must meet the requirements of the K-State 8 General Education Program.

The abbreviation **Pr**. indicates prerequisites for the course. In the sample course, students would be required to have completed Environmental Geography I before enrolling. Some courses list **Recommended pr**., which means a previous course is strongly recommended, although not required.

Some courses may allow or require concurrent and co-requisite enrollment in other courses. This is indicated by the abbreviation **Conc**.

Faculty Lists Key

Departmental sections

In the departmental sections, faculty members are listed by their last names and according to their faculty rank.

Faculty section

An all-inclusive faculty and administration section lists each faculty member's full name, academic degrees, and year of first appointment at K-State (in parentheses).

Graduate faculty

Consult the respective department page listed in the Graduate Catalog under *Colleges and Departments*.

Contacts

All phone numbers are 785 area code, except where noted. All addresses are Manhattan, Kansas, 66506, except where noted.

Other Publications

Course schedule

The *Course Schedule*, a listing of courses offered each semester, is available at courses.k-state.edu.

For future undergraduate students

Office of Admissions
Kansas State University
119 Anderson Hall
Manhattan, KS 66506-0114
785-532-6250 or
1-800-432-8270 (toll free)
E-mail: k-state@k-state.edu
www.k-state.edu/admissions

For future graduate students

Graduate School
Kansas State University
119 Eisenhower Hall
Manhattan, KS 66506-1103
785-532-6191 or
1-800-651-1816 (toll free)
E-mail: grad@k-state.edu
www.k-state.edu/grad

Graduate Catalog: Description of graduate programs and courses.

Graduate Handbook: University policies on graduate education adopted by the Graduate Council.

For online students

K-State Global Campus
Kansas State University
1615 Anderson Avenue
Manhattan, KS 66502-4098
785-532-5575 or
1-800-622-2578 (toll free)
online.k-state.edu/

Degree Listing: Choose from more than 100 online programs, including bachelor's degrees, master's degrees, doctoral programs, certificates and minors.

Intersession: Classes available in January, May, and August between K-State terms. Courses are offered on campus in Manhattan.

About the University

Kansas State University

Kansas State University was founded February 16, 1863, as a land-grant institution under the Morrill Act. It was initially located on the grounds of the old Bluemont Central College, which was chartered in 1858. The university moved to its present location in 1875.

The 664-acre main campus is in northern Manhattan, convenient to both business and residential districts. Under an enactment of the 1991 Kansas Legislature, the Salina campus was established through a merger of the former Kansas College of Technology with the university. The Olathe campus opened in April 2011. Located in the Kansas Bioscience Park, it brings K-State research, education and commercialization programs to Johnson County.

Additional university sites include 18,000 acres in the four locations of the Agricultural Research Centers - Hays, Garden City, Colby, and Parsons - and 8,600 acres in the Konza Prairie Biological Station.

One of the six universities governed by the Kansas Board of Regents, Kansas State University continues to fulfill its historic educational mission in teaching, research, and public service.

Mission statement

The mission of Kansas State University is to foster excellent teaching, research, and service that develop a highly skilled and educated citizenry necessary to advancing the well-being of Kansas, the nation, and the international community. The university embraces diversity, encourages engagement and is committed to the discovery of knowledge, the education of undergraduate and graduate students, and improvement in the quality of life and standard of living of those we serve.

Kansas State University is a comprehensive, research, land-grant institution serving students and the people of Kansas, the nation, and the world. Since its founding in 1863, the university has evolved into a modern institution of higher education, committed to quality programs, and responsive to a rapidly changing world and the aspirations of an increasingly diverse society. Together with other major comprehensive universities, K-State shares responsibilities for developing human potential, expanding knowledge, enriching cultural expression, and extending its expertise to individuals, business, education, and government. These responsibilities are addressed through an array of undergraduate and graduate degree programs, research and creative activities, and outreach and public service programs. In addition, its land-grant mandate, based on federal and state legislation, establishes a focus to its instructional, research, and extension activities which is unique among the Regents' institutions.

Through quality teaching, the university is committed to provide all students with opportunities to develop the knowledge, understanding, and skills characteristic of an educated person. It is also pledged to prepare students for successful employment or advanced studies through a variety of disciplinary and professional degree programs. To meet these intentions, the institution dedicates itself to providing academic and extracurricular learning experiences which promote and value both excellence and cultural diversity. K-State prepares its students to be informed, productive, and responsible citizens who actively participate in advancing cultural, educational, economic, scientific, and socio-political undertakings.

Research and other creative endeavors comprise an essential component of K-State's mission. All faculty members contribute to the discovery and dissemination of new knowledge, applications, and products. These efforts, supported by public and private resources, are conducted in an atmosphere of open inquiry and academic freedom. Basic to the pursuit of this mission is the University's commitment to broad-based programs in graduate education at both the master's and doctoral levels.

Faculty, staff, and administrators share their expertise through service to the university and disciplinary organizations, via outreach, engagement, and extension-related activities. Their work provides support to numerous projects related to the goals, missions, or aspirations of the departments, colleges of the university, and to the members of the professional community. Through outreach and engagement initiatives, partnerships are established with various stakeholders to translate knowledge and basic research into applications that address public needs. These service activities are integrally related to the land-grant mission.

Extension is governed by Kansas statutes that empower elected county councils and district governing boards with authority and responsibility to assess needs and conduct a local educational program in cooperation with Kansas State University and the United States Department of Agriculture (USDA). A network of local extension professionals and volunteers link Kansas State University faculty, the National Cooperative Extension System to the USDA which produces high-quality educational programs.

Accreditation

Kansas State University is accredited by the Higher Learning Commission (HLC), (230 South LaSalle Street, Suite 7-500, Chicago, IL 60604, 1-800-621-7440), www.k-state.edu/assessment/accreditation/.

Faculty

The faculty at Kansas State University are dedicated to excellence in teaching, student advising, research, extension education, scholarly achievement, and creative endeavor.

K-State recognizes superior teaching with annual faculty awards. Citations for the Outstanding Teachers of the Year and for Distinguished Graduate Faculty Members are presented at commencement. The university also honors faculty members who contribute to the expansion of knowledge in their respective fields.

The faculty assume a major responsibility to participate in outreach activities that serve the citizens of the state, and many hold leadership positions in their disciplines and in professional organizations.

Graduate student learning outcomes

Graduates of advanced degree programs at Kansas State University will:

Knowledge

Demonstrate thorough understanding and/or competency in a specific area of emphasis, study, or profession.

Skills

Demonstrate the ability to apply knowledge through critical thinking, inquiry, analysis, and communication to solve problems and to produce scholarly and creative works including but not limited to design, art, performance, original research in the form of thesis or dissertation.

Attitudes and Professional Conduct

Exhibit an awareness of their responsibilities (professional integrity, ethical behavior, ability to work with diverse groups of peoples, etc.) and engage in professional conduct towards all constituent groups, including students, faculty, public, etc.

Assessment of student learning

K-State is committed to student learning and to providing the highest quality educational experiences for its students. The university upholds assessment of student learning and the use of the results of assessment as key strategies to ensure continuous improvement of student leaning. Student learning outcomes at the university, degree program, and support program levels provide a shared vision of what we value and what students are expected to learn.

Within a culture of reflection, scholarship, trust, and shared responsibilities, faculty, with participation from students, administrators, alumni, and K-State constituents, develop and implement ongoing and systematic assessment strategies to understand what, how much, and how students learn. Through the use of both direct and indirect sources of evidence of student performance, results from assessment guide collective actions for, among others, curricular change, better learning opportunities for students, improvement of teaching, and more effective academic support services.

Further information can be found on the K-State Office of Assessment web page.

Colleges & Departments

College of Agriculture

- Agricultural Economics
- Agricultural Technology Management
- Agronomy
- Animal Sciences and Industry
- Communications and Agricultural Education
- Entomology
- Grain Science and Industry
- Horticulture and Natural Resources
- Plant Pathology

College of Architecture, Planning and Design

- Architecture
- Environmental Design
- Interior Architecture and Industrial Design
- Landscape Architecture and Regional & Community Planning

College of Arts and Sciences

- American Ethnic Studies
- Art

- Biology
- Chemistry
- Communication Studies
- Economics
- English
- Gender, Women, and Sexuality Studies
- Geography and Geospatial Sciences
- Geology
- History
- Journalism and Mass Communications
- Mathematics
- Modern Languages
- Music, Theatre, and Dance
- Philosophy
- Physics
- Political Science
- Psychological Sciences
- Security Studies
- Sociology, Anthropology, and Social Work
- Statistics

College of Business Administration

- Accounting
- Finance
- Management
- Marketing

College of Education

- Curriculum and Instruction
- Dean of Education
- Educational Leadership
- Staley School of Leadership Studies
- Special Education, Counseling, and Student Affairs

College of Engineering

- Architectural Engineering and Construction Science
- Biological and Agricultural Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science
- Electrical and Computer Engineering

- Industrial and Manufacturing Systems Engineering
- Mechanical and Nuclear Engineering

College of Health and Human Sciences

- Applied Human Sciences
- Food, Nutrition, Dietetics and Health
- Gerontology
- Hospitality Management
- Interior Design and Fashion Studies
- Personal Financial Planning
- Kinesiology

College of Technology and Aviation (Aerospace and Technology Campus)

- Aviation

College of Veterinary Medicine

- Anatomy and Physiology
- Clinical Sciences
- Diagnostic Medicine/Pathobiology

Graduate School

Interdisciplinary Programs

- Biochemistry and Molecular Biophysics
- Food Science
- Genetics
- Leadership Communication
- Public Health

School of Applied and Interdisciplinary Studies (Olathe Campus)

College of Agriculture

114 Waters Hall
785-532-6147

Fax: 785-532-6563
http://www.ag.k-state.edu/

The Kansas State University College of Agriculture is a dynamic, student-friendly college with a diverse offering of outstanding academic programs integrated with nationally recognized research programs. The College encompasses much more than traditional production agriculture; so, whether your interests range from the biosciences to food systems, or from environmental management to running a multi-million dollar agri-business, the K-State College of Agriculture has a program that will help you meet your objectives and prepare you for a multitude of career opportunities. Our outstanding faculty and staff are committed to student success and helping achieve future career goals.

Agricultural Economics

342 Waters Hall
785-532-6702
Fax: 785-532-6925
http://ageconomics.k-state.edu/

Department Head

Allen M. Featherstone

Director of graduate studies

Allen M. Featherstone (MAB)
Dustin L. Pendell- AGEC

Graduate Faculty

*Vincent R. Amanor-Boadu, Ph.D., University of Guelph, Ontario
Chatura Ariyaratne, Ph.D., Kansas State University
*Andrew P. Barkley, Ph.D., University of Chicago
G. A. Barnaby (Art), Ph.D., Texas A&M University
David G. Barton, Ph.D., Purdue University
*Jason S. Bergtold, Ph.D., Virginia Tech
Michael A. Boland, Ph.D., Purdue University
*Brian C. Briggeman, Ph.D., Purdue University
Logan Britton, Ph.D., Oklahoma State University
*Brian K. Coffey, Ph.D., Kansas State University
*Timothy J. Dalton, Ph.D., Purdue University
*Allen M. Featherstone, Ph.D., Purdue University
Bill B. Golden, Ph.D., Kansas State University
*Terry W. Griffin, Ph.D., Purdue University
Gregg L. Hadley, Ph.D., Michigan State University
Keith D. Harris, Ph.D., University of Missouri
*Nathan P. Hendricks, Ph.D., University of California - Davis
*Gregory A. Ibendahl, Ph.D., University of Illinois Urbana-Champaign
*Jennifer Ifft, Ph.D., University of California - Berkeley
*Joseph Janzen, Ph.D., University of California
*Sarah Janzen, Ph.D., University of California
Rodney D. Jones, Ph.D., Virginia Tech University

*David K. Lambert, Ph.D., Oregon State University
*John C. Leatherman, Ph.D., University of Wisconsin - Madison
Xianghong Li, Ph.D., University of California - Davis
Nina K. Lilja, Ph.D., Purdue University
Richard V. Llewelyn, Ph.D., Kansas State University
Daniel M. O'Brien, Ph.D., Iowa State University
*Dustin L. Pendell, Ph.D., Kansas State Univeristy
*Edward D. Perry, Ph.D., Iowa State University
Kara L. Ross, Ph.D., Kansas State University
*Gabriel S. Sampson, Ph.D., University of California - Davis
*Ted C. Schroeder, Ph.D., Iowa State University
*Benjamin B. Schwab, Ph.D., University of Wisconsin
*Aleksan Shanoyan, Ph.D., Michigan State University
*Jesse B. Tack, Ph.D., University of California - Berkeley
*Mykel R. Taylor, Ph.D., North Carolina State University
*Glyndall T. Tonsor, Ph.D., Kansas State University
Leah J. Tsoodle, Ph.D., Kansas State University
Monte L. Vandeveer, Ph.D., Purdue University
*Nelson B. Villoria, Ph.D., Purdue University
*Jeffery R. Williams, Ph.D., Michigan State University
*Christine A. Wilson, Ph.D., Kansas State University
*Tian Xia, Ph.D., University of California - Davis
*Elizabeth A. Yeager, Ph.D., Kansas State University
*Jisang Yu, Ph.D., University of California - Davis
Yacob Zereyesus, Ph.D., Kansas State University

* Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

On- Campus Program description

The Department of Agricultural Economics offers on-campus studies leading to a Master of Science (M.S.) or Doctor of Philosophy (Ph.D.) degree. The M.S. and Ph.D. programs stress a strong foundation in economic theory and quantitative analysis, and their application in agricultural and rural issues.

The Agricultural Economics program seeks to achieve excellence in teaching, research, and Extension through the development of the individual student. The core curriculum is deliberately broad in order to build a framework of fundamental information so that new findings and concepts can be assimilated as they arise in the rapidly changing field of agricultural economics. In addition, the programs are designed to provide graduate students a core body of common knowledge through a number of required courses and limited electives.

The core curriculum requires of every student successful completion of courses in microeconomic theory, macroeconomic theory, quantitative methods, production economics and agricultural marketing.

Off- Campus Program description

An off-campus distance Master's of Agribusiness (MAB) degree is offered through the Agricultural Economics Department for working professionals. The MAB program emphasizes the application of economic and management concepts to problems facing the agribusiness professional. The program is designed for off-campus students who wish to continue full-time employment while pursuing the post-baccalaureate degree. The MAB program emphasizes the study of economic and agribusiness management concepts and their application to food and agricultural business situations. The curriculum focuses on current issues facing agribusiness managers while providing tools for making better decisions in the areas of risk management, logistics, financial management, strategic planning, agricultural resource and trade policy, marketing, human resource management, and institutional changes within agriculture. Two

one-week campus sessions are required during both the first and second year of the program. For additional information please see the Agribusiness (MAB) - Distance Program catalog page.

Admission

M.S. and Ph.D. Degrees

Most incoming students have degrees in agricultural economics, economics, business, or some other field in agriculture. Some students have degrees in other social sciences, statistics, computer science, or engineering. The most important consideration for applicants is an interest in continued study and intensive research in some area of agricultural, resource, or environmental economics with the minimum prerequisites for admission to the program. A strong background in economics and quantitative methods are the most important requirements.

Application for admission to the program in a fall semester should be made in the preceding winter or early spring.

Admission to graduate study in agricultural economics requires a minimum grade point average of 3.0 (B average) in the last two years of undergraduate work that earned a bachelors degree. Undergraduate subject matter requirements are as follows:

a. Two courses in the principles of economics
b. A course in intermediate microeconomics or production economics and agricultural market structures
c. A course in intermediate macroeconomic theory
d. An additional course in agricultural economics or economics
e. A course in statistics
f. A course in calculus

Students whose undergraduate academic performance and program of study warrant admission, although some of the subject matter requirements are not met, may be admitted provisionally. Students admitted provisionally will make up these deficiencies by enrolling in appropriate courses for undergraduate credit.

Applicants with grades in the final two years of an undergraduate program that average below 3.0 may, in exceptional cases, be considered for probational admission. Applicants admitted on a probational basis must acquire regular standing by doing satisfactory graduate work during the first semester of graduate study.

Research facilities

The Department of Agricultural Economics is well equipped for research in agricultural economics. Computing equipment and support staff are available to assist researchers. Interdisciplinary research is encouraged and facilitated.

Graduate programs and research in departments such as economics, statistics, mathematics, computer science, industrial engineering, business administration and the production departments in agriculture provide support for research and graduate education in agricultural economics.

Financial support

The Department of Agricultural Economics financially supports graduate study and development in numerous ways. Students enrolled in the M.S. and Ph.D. programs are eligible for graduate research, teaching, and extension assistantships. Departmental faculty regularly secure research and extension grants from federal agencies, state agencies, commodity commissions, research foundations, and private industry. In addition, the Department routinely supports many teaching and research assistantships. The Department has a successful record of securing USDA National Needs Fellowships and other graduate student fellowships and scholarships. Graduate assistantships are usually on a five-tenths basis. Stipends vary depending upon time worked and level of graduate education. Funded graduate assistants and instructors are regarded as Kansas residents for enrollment fee purposes.

Concurrent

Concurrent B.S./M.S. in Agricultural Economics

Offered through the Agricultural Economics program, students may obtain the M.S. in either the thesis or non-thesis options, in either Agribusiness or Agricultural Economics.

Admission Requirements

Applicants must meet the following requirements:

- The student must be seeking a B.S. degree from the Department of Agricultural Economics.
- The student must have completed AGEC 500, AGEC 501, AGEC 505, and six additional hours of agricultural economics courses. Applicants are encouraged to apply prior to entering their senior year.
- The student's cumulative undergraduate GPA must be at least 3.5.

Application Process

Applicants should follow the K-State Graduate School application process. The application form can be found on the Department's website. Required elements of the application include:

- The K-State graduate application form, which should be completed on-line with the appropriate application fee.
- A brief cover letter and a 2-page statement of objectives for graduate study.
- Three letters of reference.
- Transcript(s) of all undergraduate work completed at the time of application.
- The Graduate Record Examination (GRE) is required for admission to the graduate program.

Applicants without the GRE may be admitted on a probationary basis, but will be required to take the GRE.

Applications are evaluated by the Department's Graduate Committee, which will provide a recommendation to the Director of Graduate Studies about an applicant's suitability for the program.

Program Formats and Guidelines

Once admitted to the concurrent B.S./M.S. degree program, the student should consult the graduate handbook (https://www.k-state.edu/grad/student-success/graduate-handbook/) and the Department's guidelines for graduate programs (available at the Department website) for policies regarding supervisory committee, program of study, final examination, etc. The successful applicant should identify a major professor within two semesters of admission to the program.

The B.S. degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.S. and M.S. degrees may be awarded concurrently. Students in the concurrent program must complete all undergraduate requirements with the exception that up to 9 credit hours of AGEC classes taken for graduate credit can count toward the undergraduate degree. Those graduate credits can only be used as unrestricted electives in the undergraduate degree.

Doctor of Philosophy

Agricultural Economics (Ph.D.)

Degree Requirements

The Ph.D. program is offered through the Department of Agricultural Economics graduate program and is operated in cooperation with the Department of Economics. Students earn a Ph.D. in Agricultural Economics upon completion of the program. In the program, students will study economic theory, knowledge in research methodology, general agricultural economics and a specialty branch including: agribusiness, international development, natural resources, price analysis/marketing, production/farm management/finance, community and regional economics, trade and policy. A Ph.D. program of study must have at least 60 credit hours of graduate course work (the credit received for writing an M. S. thesis or report may be used to help meet the 60 credit hour requirements), and 30 hours of research credits are required for the written Ph.D. dissertation. A minimum of 24 credit hours of course work on the program of study must be taken at Kansas State University.

The program of study in agricultural economics shall include course work in four branches: economic theory, research methodology, general agricultural economics, and a specialty branch in agricultural economics. The student may choose to list a minor field in addition.

After completing 12 hours of microeconomics and macroeconomics, the student takes qualifying examinations in microeconomic and macroeconomic theory. After successfully completing the qualifying examinations and the required courses in agricultural economics, the student takes the preliminary examination in general agricultural economics. After passing the preliminary examination the student is admitted to candidacy.

The candidate prepares a written dissertation proposal including an identification of the problem, a review of relevant literature, and an outline of proposed research procedures to be used. The candidate must satisfactorily defend the proposal in a seminar at least six months before the final Ph.D. oral in which the candidate defends the dissertation.

The course requirements are:

Economic Theory (15 Credits)

- ECON 735 - Mathematical Economics **Credits:** 3
- ECON 805 - Macroeconomic Theory I **Credits:** 3
- ECON 905 - Macroeconomic Theory II **Credits:** 3
- ECON 940 - Advanced Microeconomic Theory I **Credits:** 3
- ECON 945 - Advanced Microeconomic Theory II **Credits:** 3

Research Methodology (9 credit hours)

- AGEC 901 - Research Methods in Economics **Credits:** 3
- AGEC 936 - Quantitative Topics in Agricultural Economics **Credits:** 3
- ECON 930 - Econometrics II **Credits:** 3

Additional Required Agricultural Economics Courses (6 credit hours)

- AGEC 905 - Agricultural Demand and Commodity Marketing **Credits:** 3
- AGEC 923 - Economics of Agricultural Production **Credits:** 3

Specialty Area (6 credit hours)

Requirements for each Specialty Area:

Agribusiness

Two of the following with at least one from AGEC 880 or AGEC 890:

- AGEC 880 - Agribusiness Industry Structures **Credits:** 3
- AGEC 890 - Advanced Food and Agribusiness Management **Credits:** 3
- FINAN 815 - Foundations of Finance **Credits:** 3
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3
- ECON 947 - Industrial Organization **Credits:** 3

Community and Regional Economics

Two of the following:

- AGEC 955 - Independent Study of Advanced Topics in Agricultural Economics **Credits:** 1-18
- ECON 832 - Public Sector Analysis **Credits:** 3
- ECON 925 - Location of Economic Activities **Credits:** 3
- ECON 955 - Theory and Methods of Regional Economic Analysis **Credits:** 3
- SOCIO 832 - Sociology of Community **Credits:** 3

International Development/Trade/Policy

Two of the following:

- AGEC 815 - International Agricultural Development **Credits:** 3
- AGEC 840 - International Markets and Agricultural Trade **Credits:** 3
- AGEC 810 - Price, Income and Trade Policies in Agriculture **Credits:** 3
- ECON 981 - International Trade Theory and Policy **Credits:** 3

Natural Resources

- AGEC 825 - Natural Resource Policy **Credits:** 3
- AGEC 925 - Advanced Resource and Environmental Economics **Credits:** 3

Price Analysis/Marketing

- AGEC 810 - Price, Income and Trade Policies in Agriculture **Credits:** 3
  or
- AGEC 880 - Agribusiness Industry Structures **Credits:** 3

  and one of the following:

- ECON 935 - Time Series Econometrics **Credits:** 3
- ECON 938 - Microeconometrics **Credits:** 3
- STAT 730 - Multivariate Statistical Methods **Credits:** 3
- STAT 880 - Time Series Analysis **Credits:** 3

Production/Farm Management/Finance

- AGEC 812 - Advanced Farm Economics **Credits:** 3
  (may be replaced with FINAN 815)

  and one of the following:
- ECE 870 - Neural Networks in Engineering **Credits:** 3
- IMSE 830 - Applied Fuzzy Set Theory **Credits:** 3
- IMSE 982 - Nonlinear Programming **Credits:** 3
- IMSE 991 - Advanced Topics in Decision Theory **Credits:** 3

Applied Econometrics

Two of the following:

- AGEC 955 - Independent Study of Advanced Topics in Agricultural Economics **Credits:** 1-18
- ECON 910 - Topics in Macroeconomics **Credits:** 3
- ECON 935 - Time Series Econometrics **Credits:** 3
- ECON 938 - Microeconometrics **Credits:** 3
- ECON 955 - Theory and Methods of Regional Economic Analysis **Credits:** 3

General Electives* (700-level and higher) (18 credit hours)

*Must include the following M.S. level courses or their equivalent:

- AGEC 712 - Optimization Techniques for Agricultural Economics **Credits:** 3
- AGEC 805 - Agricultural Marketing **Credits:** 3
- AGEC 823 - Production Economics II **Credits:** 3
- ECON 830 - Econometrics I **Credits:** 3
- STAT 706 - Basic Elements of Statistical Theory **Credits:** 3

Total course credit hours (60)

Dissertation credit hours (30)

Total credit hours required for the Ph.D. (90)

Note

The following courses developed for the Masters of Agribusiness are not allowed on a student's program of study: AGEC 700, AGEC 701, AGEC 713, AGEC 720, AGEC 730, AGEC 760, AGEC 761, and AGEC 770.

Master of Agribusiness (MAB) - Distance Program

Master of Agribusiness (MAB) - Distance Program

An off-campus distance Master's of Agribusiness (MAB) degree is offered through the Agricultural Economics Department for working professionals. The MAB program emphasizes the application of economic and management concepts to problems facing the agribusiness professional. The Master in Agribusiness program is designed for off-campus students who wish to continue full-time employment while pursuing the post-baccalaureate degree. The MAB program emphasizes the study of economic and agribusiness management concepts and their application to food and agricultural business situations. The curriculum focuses on current issues facing agribusiness managers while providing tools for making better decisions in the areas of risk management, logistics, financial management, strategic planning, agricultural resource, and trade policy, marketing, human resource management, and institutional changes within agriculture. Two one-week campus sessions are required during both the first and second year of the program.

Students enrolling in the Master of Agribusiness program must have at least two years of post baccalaureate professional work experience in agribusiness or other organizations in the food and agricultural sector. Students admitted to the Master of Agribusiness program must meet the following subject matter requirements:

1. One course in principles of macroeconomics, introduction to agricultural economics or principles of microeconomics

2. Proficiency in microcomputer operations

3. One course in accounting

4. One course in statistics

Application deadline is October 15th to begin the program in January. Applicants with grades in the final two years of an undergraduate program that average below 3.0 may, in exceptional cases, be considered for probational admission. Applicants admitted on a probational basis must acquire regular standing by doing satisfactory graduate work during the first semester of graduate study.

For additional information and application materials please contact:
Allen Featherstone
Master's of Agribusiness Program Director
Department of Agricultural Economics
Kansas State University
342 Waters Hall
Manhattan, KS 66506-4011
785-532-4441
Fax: 785-532-6925
E-mail: afeather@ksu.edu
Home Page: http://www.mab.ksu.edu/

Master's degree requirements

The Master in Agribusiness degree requires the completion of 42 credit hours. The curriculum consists of a set of integrated management and economics topics, including 27 hours of agribusiness courses, 9 hours of business courses, and 6 hours of thesis. Students enter the program as a cohort and pace through the program together over a 30 month period.

Course requirements for the Master in Agribusiness are:

Agribusiness courses (27 credit hours)

- AGEC 700 - Applied Agribusiness Economics **Credits:** 3
- AGEC 701 - Introduction to Computer Decision Tools for Agribusiness **Credits:** 1
- AGEC 713 - Agribusiness Financial Management **Credits:** 3
- AGEC 720 - Agribusiness Risk Management **Credits:** 3
- AGEC 730 - Applied Agribusiness Logistics **Credits:** 3
- AGEC 740 - Seminar in Agricultural Economics Analysis **Credits:** 0-18
- AGEC 760 - Applied Econometric Analysis **Credits:** 3
- AGEC 761 - Optimization Techniques for Agribusiness **Credits:** 2
- AGEC 770 - International Agribusiness and Policy Analysis **Credits:** 3
- AGEC 890 - Advanced Food and Agribusiness Management **Credits:** 3

Business courses (9 credit hours)

- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3
  Business Elective of the student's choice, selection must be approved by MAB Program Director (3)

Thesis hours (6 credit hours)

- AGEC 899 - Agricultural Economics Master's Research **Credits:** 1-18

Total hours required for graduation (42)

Note

The thesis involves the application of concepts and quantitative tools learned in course work to a firm-level agribusiness problem. The candidate is expected to take a final oral examination for the purpose of defending the thesis.

Master of Science

Agricultural Economics (M.S.)

M.S. in Agricultural Economics

Offered through the Department of Agricultural Economics, the M.S. in Agricultural Economics can be earned in either a thesis or no-thesis option.

Thesis option

The thesis option includes a minimum of 30 semester hours of graduate credit including 24 hours of course work and a Master's thesis for which 6 semester credit hours are given. The program is designed to prepare students for careers in research, analysis, or to continue towards a Ph.D. program. The course requirements are:

Economic and Agricultural Economics theory (12 credit hours)

- ECON 720 - Microeconomic Theory **Credits:** 3
  and

Select three courses from:

- AGEC 805 - Agricultural Marketing **Credits:** 3
- AGEC 810 - Price, Income and Trade Policies in Agriculture **Credits:** 3
- AGEC 823 - Production Economics II **Credits:** 3
- AGEC 825 - Natural Resource Policy **Credits:** 3
- AGEC 840 - International Markets and Agricultural Trade **Credits:** 3
- AGEC 880 - Agribusiness Industry Structures **Credits:** 3
- ECON 805 - Macroeconomic Theory I **Credits:** 3

Quantitative methods (6 credit hours)

- STAT 706 - Basic Elements of Statistical Theory **Credits:** 3
- ECON 730 - Applied Econometrics **Credits:** 3

Electives (6 credit hours)

- AGEC elective Credits: 3 (700 level or higher)
- General elective Credits: 3 (700 level or higher)

Thesis hours (6 credit hours)

- AGEC 899 - Agricultural Economics Master's Research **Credits:** 1-18

Total (30 credit hours)

Non-thesis option

The non-thesis option includes a minimum of 36 semester hours of coursework and a final examination. The program is designed to prepare students for careers in public service, commerce, and industry. The course requirements are:

Economic and Agricultural Economics theory (12 credit hours)

- ECON 720 - Microeconomic Theory **Credits:** 3

and

Select three courses from:

- AGEC 805 - Agricultural Marketing **Credits:** 3
- AGEC 810 - Price, Income and Trade Policies in Agriculture **Credits:** 3
- AGEC 823 - Production Economics II **Credits:** 3
- AGEC 825 - Natural Resource Policy **Credits:** 3
- AGEC 840 - International Markets and Agricultural Trade **Credits:** 3
- AGEC 880 - Agribusiness Industry Structures **Credits:** 3
- ECON 805 - Macroeconomic Theory I **Credits:** 3

Quantitative methods (9 credit hours)

- STAT 706 - Basic Elements of Statistical Theory **Credits:** 3
- AGEC 712 - Optimization Techniques for Agricultural Economics **Credits:** 3
- ECON 730 - Applied Econometrics **Credits:** 3

Electives (15 credit hours)

- AGEC Elective credits: 9 (700 level or higher)
- AGEC or Business Electives: 6 * (700 level or higher)

*3 hours of agricultural economics and 6 hours of the agricultural economics or business electives may be substituted for by a specialty consisting of 9 hours at the 700 level or above.

Note

Candidates in the thesis program are required to take a final oral examination covering the thesis and the subject matter in the major field and the minor field when a minor is selected.

Candidates in the no-thesis program are required to demonstrate evidence of scholarly effort by completing a creative component consisting of a written paper and an oral defense. The written paper will be on a topic provided by the student's advisory committee relating to the student's field of study.

The following courses developed for the Masters of Agribusiness program are not allowed on a student's program of study: AGEC 700, AGEC 701, AGEC 713, AGEC 720, AGEC 730, AGEC 760, AGEC 761, and AGEC 770.

Agricultural Economics: Concentration in Agribusiness (M.S.)

The on-campus Master of Science in Agricultural Economics with concentration in Agribusiness, offered by the Department of Agricultural Economics, is designed for students aiming for the next level in the agribusiness sector or academia.

Thesis Option

Agribusiness Economics (12 credit hours)

- AGEC 880 - Agribusiness Industry Structures **Credits:** 3
- ECON 720 - Microeconomic Theory **Credits:** 3
- FINAN 815 - Foundations of Finance **Credits:** 3

and select one course from:

- AGEC 805 - Agricultural Marketing **Credits:** 3
- AGEC 810 - Price, Income and Trade Policies in Agriculture **Credits:** 3
- AGEC 823 - Production Economics II **Credits:** 3
- AGEC 825 - Natural Resource Policy **Credits:** 3
- AGEC 840 - International Markets and Agricultural Trade **Credits:** 3
- ECON 805 - Macroeconomic Theory I **Credits:** 3

Quantitative Methods (9 credit hours)

- AGEC 712 - Optimization Techniques for Agricultural Economics **Credits:** 3
- ECON 730 - Applied Econometrics **Credits:** 3
- STAT 706 - Basic Elements of Statistical Theory **Credits:** 3

Ag Economics, Finance, Marketing, Management (3 credit hours)

Select one course from:

- AGEC 700 or higher level course not used for other requirements (3)
- FINAN 820 - Advanced International Financial Management **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3
- MKTG 842 - Advanced Marketing Research **Credits:** 3
- MKTG 844 - Advanced International Marketing **Credits:** 3
- MKTG 860 - Advanced International Business **Credits:** 3
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- MANGT 825 - Advanced Business Law **Credits:** 3

Thesis Research (6 credit hours)

- AGEC 899 - Agricultural Economics Master's Research **Credits:** 1-18

Total hours required for graduation (30)

Note

The following courses developed for the Masters of Agribusiness are not allowed on a student's program of study: AGEC 700, AGEC 701, AGEC 713, AGEC 720, AGEC 730, AGEC 760, AGEC 761, and AGEC 770.

Statistics courses STAT 702 and STAT 703 are not permitted in the M.S. degree program of study.

Non-Thesis Option*

Agribusiness Economics (9 credit hours)

- AGEC 880 - Agribusiness Industry Structures **Credits:** 3
- ECON 720 - Microeconomic Theory **Credits:** 3

and select one course from:

- FINAN 815 - Foundations of Finance **Credits:** 3
- ECON 805 - Macroeconomic Theory I **Credits:** 3
- AGEC 810 - Price, Income and Trade Policies in Agriculture **Credits:** 3
- AGEC 825 - Natural Resource Policy **Credits:** 3
- AGEC 840 - International Markets and Agricultural Trade **Credits:** 3
- AGEC 890 - Advanced Food and Agribusiness Management **Credits:** 3
- AGEC 805 - Agricultural Marketing **Credits:** 3
- AGEC 823 - Production Economics II **Credits:** 3

Quantitative Methods (9 credit hours)

- AGEC 712 - Optimization Techniques for Agricultural Economics **Credits:** 3
- ECON 730 - Applied Econometrics **Credits:** 3
- STAT 706 - Basic Elements of Statistical Theory **Credits:** 3

Business Core (9 credit hours)

- FINAN 815 - Foundations of Finance **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3
- MANGT 820 - Managing Organizational Behavior **Credits:** 3

Ag Economics, Finance, Marketing, Management (3 credit hours)

Select one course from:

- AGEC 700 or higher level course not used for other requirements (3)
- FINAN 820 - Advanced International Financial Management **Credits:** 3
- MKTG 842 - Advanced Marketing Research **Credits:** 3
- MKTG 844 - Advanced International Marketing **Credits:** 3
- MKTG 860 - Advanced International Business **Credits:** 3
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 825 - Advanced Business Law **Credits:** 3
- MANGT 840 - Advanced Entrepreneurship **Credits:** 3

Total hours required for graduation (36)

Note:

* The student is required to demonstrate evidence of scholarly effort by completing a creative component consisting of a written paper and an oral defense. The written paper will be on a topic provided by the student's advisory committee relating to the student's field of study. The report shall demonstrate a student's understanding of the economic concepts critical to the problem. A critique of literature related to the topic should be included in the written report. The student should provide a qualitative analysis (graphical) of the problem. The qualitative analysis may propose testable hypotheses. Finally, the student should present a quantitative framework for further analysis. Quantitative analysis is not necessarily required, though it is encouraged.

The following courses developed for the Masters of Agribusiness are not allowed on a student's program of study: AGEC 700, AGEC 701, AGEC 713, AGEC 720, AGEC 730, AGEC 760, AGEC 761, and AGEC 770.

Statistics courses STAT 702 and STAT 703 are not permitted in the M.S. degree program of study.

Dual Degree

Dual Degree: Master of Agribusiness and Professional Master of Business Administration

The Dual Professional Master of Business Administration/Master of Agribusiness is an academic program that allows for the concurrent study of graduate business and graduate agribusiness and leads to both the MAB degree and the PMBA degree. The program is designed for students seeking business problem-solving skills, organizational communication and change management knowledge, and development of strategic analysis competencies utilizing technological tools to increase workplace efficiencies in diverse setting spanning business, food, animal health, and agribusiness industries. The PMBA portion is designed to advance the knowledge and decision making skills necessary for today's business environment. The MAB portion is designed to provide agribusiness professionals strategies for making informed decisions based upon a thorough understanding of current issues. Students graduating from the dual degree program will receive two degrees, a Master of Business Administration and a Master of Agribusiness. The program requires the completion of 63 credit hours: 27 credit hours in the PMBA program and 36 credit hours in the MAB program. The degrees are conferred simultaneously when all requirements for the dual degree program have been met. The assessment of the dual degree program is conducted in each program independently as specified in respective programs.

Application/ Admission

Students are required to fulfill the admittance requirements of both degrees to be admitted into this dual degree program. The person seeking admission to the MAB/PMBA Dual Degree Program must:

a. Complete an application on CollegeNet (https://www.applyweb.com/kstateg) using Dual MAB/PMBA program link. The link will be accessible from both the College of Business Administration and Department of Agricultural Economics portals. (Students desiring to apply only to the PMBA or MAB should select the specific program not the dual degree option in CollegeNet.) Application materials include: official transcript of all completed academic work; GRE or GMAT scores and TOEFL scores, if applicable; statement of objectives; resume; and an Affidavit of Financial Support, if applicable.

b. The graduate admission committee of each program will evaluate the application separately and collectively make the final decision using the same criteria as specified in their respective programs. The applicant must meet admissions requirements of both programs.

c. A student who is initially admitted to either the PMBA or MAB and who later decides to pursue the dual degree must apply for a change of degree to the MAB/PMBA dual degree prior to being awarded the first degree.

d. Students admitted to the MAB/PMBA joint degree program who later decide they only want to complete one of the degrees must:

1) Submit a written notification to both programs.
2) Must have their primary program plan changed to reflect the degree to be completed.
3) Submit a new program of study for the degree program they will complete to the Graduate School for
an approval. Students must complete the requirements for the respective program to receive the PMBA or MAB degree.

Degree Requirements

PMBA Program: 27 credit hours

Business Core 21 credit hours

- ACCTG 810 - Foundations of Accounting **Credits:** 3
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- MANGT 830 - Information Technology Strategy and Application **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3
- ACCTG 860 - Management Accounting and Business Problem Solving **Credits:** 3
- MANGT 860 - Managing the Triple Bottom Line Business **Credits:** 3

Integrated Core 6 credit hours

- MANGT 880 - Business Strategy **Credits:** 3
- GENBA 875 - MBA International Business Experience **Credits:** 1-3

MAB Program: 36 credit hours

Required Courses 27 credit hours

- AGEC 701 - Introduction to Computer Decision Tools for Agribusiness **Credits:** 1
- AGEC 713 - Agribusiness Financial Management **Credits:** 3
- AGEC 730 - Applied Agribusiness Logistics **Credits:** 3
- AGEC 700 - Applied Agribusiness Economics **Credits:** 3
- AGEC 761 - Optimization Techniques for Agribusiness **Credits:** 2
- AGEC 720 - Agribusiness Risk Management **Credits:** 3
- AGEC 760 - Applied Econometric Analysis **Credits:** 3

- AGEC 770 - International Agribusiness and Policy Analysis **Credits:** 3
- AGEC 890 - Advanced Food and Agribusiness Management **Credits:** 3
- AGEC 740 - Seminar in Agricultural Economics Analysis **Credits:** 0-18

Additional Courses – Thesis Option 6 credit hours

- AGEC 899 - Agricultural Economics Master's Research **Credits:** 1-18

Electives 3 credit hours

Elective (3 credit hours) from Agricultural Economics or Business Administration

Graduate Certificate

Animal Health Management Graduate Certificate

Contact: Dr. Allen Featherstone
E-mail: afeather@ksu.edu

Contact: Mr. Paul Casady
E-mail: pscasady@ksu.edu

The increasing complexity of the global animal health industry has created a need for additional training for employees of this industry in the management of organizations in this industry. Critical issues include the redefinition of animal health as a whole and the complexities that have arisen with pharmaceutical impact in food supplies; the breadth of species included in animal health (food and companion); veterinary epidemics and the one health concept; consolidation of companies; increasing regulation; "downstream customer" influence and knowledge; workforce diversification; and the competition for resources in human/animal markets.

The aim of this certificate program is to provide a series of courses and experiences that will equip employees in animal health industries with economic and animal agriculture specific management tools to enable them to lead and manage organizations in the animal health sector. The certificate will be open to individuals meeting the admissions criteria delineated in Section E and is not limited to Master of Agribusiness students.

Required Courses (20 credit hours)

- AGEC 700 - Applied Agribusiness Economics **Credits:** 3
- AGEC 713 - Agribusiness Financial Management **Credits:** 3
- AGEC 735 - Sales and Marketing in the Global Animal Health Industry **Credits:** 3
- AGEC 780 - Economics of the Global Animal Health Industry **Credits:** 3
- AGEC 890 - Advanced Food and Agribusiness Management **Credits:** 3
- AAI 840 - Regulatory Aspects of Drug and Vaccine Development in the Animal Health Industry **Credits:** 2
- MANGT 820 - Managing Organizational Behavior **Credits:** 3

Total hours required: 20

Agricultural Technology Management

A graduate degree is not offered in agricultural technology and management. The following courses may be taken for graduate credit in a minor field.

Agronomy

2004 Throckmorton Hall
785-532-6101
Fax: 785-532-6094
agronomy@k-state.edu
http://www.agronomy.ksu.edu

Department Head

Rajiv Khosla

Director of graduate studies

Gerard J. Kluitenberg

Graduate Faculty

Eric A. Adee, Ph.D., University of Wisconsin - Madison
*Robert M. Aiken, Ph.D., Michigan State University
*Eduardo Alvarez Santos, Ph.D., University of Guelph
Telmo J. Amado, (Adjunct) Ph.D., Auburn University
Mohammad Asif, (Adjunct) Ph.D., University of Alberta (Canada)
*Guihua Bai, (Adjunct) Ph.D., Purdue University
R. Louis Baumhardt, (Adjunct) Ph.D., Mississippi State University
*Scott R. Bean, (Adjunct) Ph.D., Kansas State University
Daryl D. Buchholz, (Emeritus) Ph.D., Kansas State University
*Ignacio Ciampitti, Ph.D., Purdue University
Thomas S. Cox, (Adjunct) Ph.D., Iowa State University
*Randall S. Currie, Ph.D., Texas A&M
*Daniel L. Devlin, Ph.D., Washington State University
*Johanna A. Dille, Ph.D., University of Nebraska
Kevin Donnelly, Ph.D., Colorado State University
Stewart R. Duncan, Ph.D., Kansas State University
*Walter H. Fick, Ph.D., Texas Tech University
*Allan K. Fritz, Ph.D., Kansas State University
*Mary Guttieri, (Adjunct) Ph.D., University of Nebraska - Lincoln
Lucas A. Haag, Ph.D., Kansas State University
Keith R. Harmoney, Ph.D., Iowa State University
Chad Hayes, (Adjunct) Ph.D., Texas A&M University
*Ganga M. Hettiarachchi, Ph.D., Kansas State University
*Johnathon D. Holman, Ph.D., University of Idaho
Amit Jhala,(Adjunct) University of Alberta (Canada)
*Krishna Jagadish, Ph.D., University of Reading (United Kingdom)
*Mithila Jugulam, Ph.D., University of Guelph (Canada)

*Rajiv "Raj" Khosla, Ph.D., Virginia Tech
*Mary B. Kirkham, Ph.D., University of Wisconsin
*Gerard J. Kluitenberg, Ph.D., Iowa State University
*Vipan Kumar, Ph.D., Montana State University
*Sarah Lancaster, Ph.D., Texas A&M University
Dale F. Leikam, (Adjunct) Ph.D., Kansas State University
*Xiaomao Lin, Ph.D., University of Nebraska, Lincoln
*Romulo Lollato, Ph.D., Oklahoma State University
*David B. Mengel, (Emeritus), Ph.D., Purdue University
Carlos D. Messina, (Adjunct), Ph.D., University of Florida
*Doohong Min, Ph.D., University of Maryland
*Colby J. Moorberg, Ph.D., North Carolina State University
*Nathan O. Nelson, Ph.D., North Carolina State University
*Augustine K. Obour, Ph.D., University of Florida
*Clenton E. Owensby, Ph.D., Kansas State University
*Andres Patrignani, Ph.D., Oklahoma State University
*Ramasamy Perumal, Ph.D., Tamil Nadu Agricultural University (India)
*Dallas E. Peterson, Ph.D., North Dakota State University
*Pagadala V. Vara Prasad, Ph.D., University of Reading (United Kingdom)
*Deann R. Presley, Ph.D., Kansas State University
*K. P. Price, (Emeritus), Ph.D., University of Utah
*Charles W. Rice, Ph.D., University of Kentucky
*Kraig L. Roozeboom, Ph.D., Kansas State University
*Dorivar A. Ruiz Diaz, Ph.D., Iowa State University
*Gretchen F. Sassenrath, Ph.D., University of Illinois
*William T. Schapaugh, Jr., Ph.D., Purdue University
*Alan J. Schlegel, Ph.D., Purdue University
Rollin G. Sears, (Adjunct) Ph.D., Oregon State University
*James P. Shroyer, (Emeritus) Ph.D., Iowa State University
*Phillip W. Stahlman, (Emeritus) Ph.D., University of Wyoming
Michael Stamm, M.S., Kansas State University
Jean Steiner (Adjunct), Ph.D., Kansas State University
*Loyd R. Stone, Emeritus, Ph.D., South Dakota State University
*Daniel W. Sweeney, Ph.D., University of Florida
*Tesfaye T. Tesso, Ph.D., Kansas State University
*Stephen J. Thien, Emeritus, Ph.D., Purdue University
Michael Tilley, (Adjunct) Ph.D., Kansas State University
*Peter J. Tomlinson, Ph.D., University of Arkansas
H.D. Upadhyaya, (Adjunct) Ph.D., GB Plant University of Ag. & Tech. Pantnagar, India
*Stephen M. Welch, Ph.D., Michigan State University
*Guorong Zhang, Ph.D., North Dakota State University

* Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Program objectives

The Department of Agronomy offers courses of study leading to degrees of master of science and doctor of philosophy in many diverse crop, soil, and range science specializations. These study areas include: agricultural climatology, crop-climate modeling, crop ecology, crop physiology, crop production, cytogenetics, environmental chemistry, environmental physics, forage management, plant breeding, plant genetics, range science, soil biochemistry, soil

fertility, soil genesis and classification, soil microbiology, soil-plant-water relations, soil physics/biophysics, soil/water chemistry, soil/water conservation, soil/water management, and weed science.

The department consists of 55 graduate faculty members, about 65 graduate students, and several postdoctoral fellows and visiting scientists. The faculty are dedicated to providing students individualized training needed to address the many challenges facing agriculture.

Graduate programs are designed to accommodate the interest and objectives of the student. These programs require students to conduct original research. Students receive thorough training in investigative techniques by using modern facilities and through experienced guidance by faculty. Critical parts of the process involve the preparation of research findings in the form of a thesis or dissertation and their publication in a scientific journal. Students are encouraged to develop independent thought as well as a broad spectrum of knowledge. Flexibility in graduate training is possible because of the large number of faculty and the diversity of their research interests.

Facilities and equipment

The Department of Agronomy laboratories are well equipped with modern instrumentation for research in the many areas of specialization. Controlled environment chambers and greenhouses are available. Excellent dryland and irrigated field research facilities are available at the agronomy farms near Manhattan, at seven agronomy experiment fields, and at four Agricultural Research Centers located throughout the state. A large inventory of field, plot and laboratory equipment enable graduate students to plan and implement complex research programs which address challenges facing agriculture. Vehicle support provides student access to the diverse cropping and grazing systems present in Kansas. The Rannells Range Research Unit and the Konza Prairie enable native range investigations to be conducted at Manhattan. Special facilities which can be utilized by graduate students include the USDA Wind Erosion Lab, USDA Grain Marketing Lab, Agronomy Soil Testing Lab, and other service labs. Reference materials from the University Library are complemented by the Agronomy Graduate Library, housed within the department. Graduate students benefit from excellent computer and networking facilities through the mainframe computer center. State-of-the-art personal computers are available for use by all students.

Admission

Incoming students commonly have a bachelor or master of science degree in agriculture, agronomy, crop science, soil science, or a related physical or life science. The most important considerations for applicants are an interest in continued study and intensive research in a specific area of agronomy along with prerequisites for admission to the program. Preparation in the biological, physical, and mathematical sciences is considered fundamental for all areas of graduate study in agronomy. Course requirements for each student are determined by a supervisory committee with consideration given to the student's qualifications and professional interests and goals.

Stipends

Research and teaching assistantships and research fellowships are available to graduate students in the Department of Agronomy. A majority of the students enrolled in Agronomy are supported during their graduate study. Nearly 50 percent of graduate students are appointed to a half-time graduate research assistantship. Stipends are competitive with leading universities. Graduate teaching and research assistants are assessed the in-state rate for tuition and fees. Graduate teaching assistants receive a substantial reduction of in-state tuition. An excellent graduate scholarship program provides additional assistance to several graduate students each year.

Application procedure

Applications are accepted at any time. However, students desiring admission and consideration for an assistantship for the fall semester are urged to submit their applications early, preferably before February 1, to enhance their chances for

admission and financial support. The completed application form, statement of objectives, transcripts, and letters of recommendation are used to determine qualifications for graduate work. GRE scores are not required.

Doctor of Philosophy

Agronomy (Ph.D.)

Students in Ph.D. Agronomy programs conduct original research and receive thorough training in investigative techniques by use of modern facilities with guidance by experienced faculty. The large number of faculty and the diversity of their research interests provides flexibility in graduate training. Course requirements for each student are determined by the major professor and the supervising committee with consideration given to the student's qualifications and professional interests and goals.

Master of Science

Agronomy (M.S.)

Students in M.S. Agronomy programs conduct original research and receive thorough training in investigative techniques by use of modern facilities with guidance by experienced faculty. The large number of faculty and the diversity of their research interests provides flexibility in graduate training. Course requirements for each student are determined by the major professor and the supervising committee with consideration given to the student's qualifications and professional interests and goals.

Other Degrees

Grassland Management Graduate Certificate

Contact: Walter H. Fick
E-mail: whfick@ksu.edu

This certificate is offered through the Agronomy graduate program and is available through distance education.The purpose of this program is to provide current and future grassland professionals (i.e., managers, advisors, and conservationists) and others with distance education opportunities that lead to a graduate certificate in grassland management. Grasslands (including rangelands, pasturelands, and haylands) are the principle land resource type in the Great Plains, comprising more than 50% of the land surface area. The major use of the regions' grasslands is livestock grazing. The beef cattle industry is prominent in the Great Plains, making up more than 50% of the US beef cow inventory. Grasslands in the region are also critically important for providing wildlife habitat, recreation, high quality water and air, and other environmental services. Grasslands represent a fundamental resource of the region that determines the environmental and economic future of the Great Plains states.

Required Courses (12 credit hours)

Select 12 credit hours from the following:

- AGRON 660 - Grassland Monitoring and Assessment **Credits:** 2
- AGRON 662 - Rangeland Watershed Management **Credits:** 3
- ATM 661 - Watershed Assessment and Management **Credits:** 3

- AGRON 682 - Grassland Fire Ecology **Credits:** 3
- AGRON 781 - Ecology of Invasive Species **Credits:** 3
- AGRON 821 - Principles of Forage Quality **Credits:** 3
- AGRON 832 - Grassland Plant Identification **Credits:** 2
- AGRON 881 - Grazing Ecology and Management **Credits:** 3

Animal Sciences and Industry

232 Weber Hall
785-532-6533
Fax: 785-532-2461
asi@ksu.edu
http://www.asi.k-state.edu/

Department Head:

Michael L. Day

Director of graduate studies:

Jennifer Bormann

Graduate Faculty:

*Jayendra Amamcharla, Ph.D., North Dakota State University
*R. Scott Beyer, Ph.D., University of Georgia
*Dale Blasi, Ph.D., University of Nebraska
*Elizabeth A. E. Boyle, Ph.D., Colorado State University
*Micheal J. Brouk,, Ph.D., South Dakota State University
*Michael Chao, Ph.D., University of Nebraska
*Alison Crane, Ph.D., North Dakota State University
*Michael Day, Ph.D., University of Nebraska
*Joel DeRouchey, Ph.D., Kansas State University
*Teresa L. Douthit, Ph.D., Colorado State University
*James S. Drouillard, Ph.D., University of Nebraska
Jaymelynn Farney, Ph.D., Kansas State University
*Karol E. Fike, Ph.D., University of Nebraska - Lincoln
*Kelly Karr Getty, Ph.D., Kansas State University
*Robert D. Goodband, Ph.D., Kansas State University
*Sara Gragg, Ph.D., Texas Tech University
*David M. Grieger, Ph.D., Washington State University
*Lindsey Hulbert, Ph.D., Texas Tech University
John R. Jaeger, Ph.D., Oregon State University
Sandra K. Johnson, Ph.D., West Virginia University
*Cassandra Jones, Ph.D., Iowa State University
*Joann M. Kouba, Ph.D., Texas A&M University
*Victor Gomez León, Ph.D., Universidade Federal de Viçosa, Brazil
*James Lattimer, Ph.D., Kansas State University
Lyle W. Lomas, Ph.D., Michigan State University
*Jennifer Minick-Bormann, Ph.D., Iowa State University

*J. Ernest Minton, Ph.D., Oklahoma State University
Daniel Moser, Ph.D., University of Georgia
*Jim L. Nelssen, Ph.D., University of Nebraska
Abbey L. Nutsch, Ph.D., Kansas State University
*Travis O'Quinn, Ph.D., Colorado State University
*Kenneth G. Odde, Ph.D., Kansas State University
*KC Olson, Ph.D., Kansas State University
*Randall K. Phebus, Ph.D., University of Tennessee
Deanna D. Retzlaff, Ph.D., Kansas State University
*Megan Rolf, Ph.D., Kansas State University
*Tim G. Rozell, Ph.D., Washington State University
Scott Schaake, Ph.D., University of Kentucky
*Karen A. Schmidt, Ph.D., University of Minnesota
*J. Scott Smith, Ph.D., Pennsylvania State University
*Charles Stark, Ph.D., Kansas State University
*Jeffrey S. Stevenson, Ph.D., North Carolina State University
Anthony Tarpoff, D.V.M., Kansas State University
*Jeanette Thurston, Ph.D., University of Arizona
*Evan C. Titgemeyer, Ph.D., University of Illinois
*Mike D. Tokach, Ph.D., University of Minnesota
*Valentina Trinetta, Ph.D., University of Milan
*Achilles Vieira-Neto, Ph.D., University of Florida
*Jessie Vipham, Ph.D., Texas Tech University
Justin W. Waggoner, Ph.D., New Mexico State University
*Robert Weaber, Ph.D., Cornell University
*Jason Woodworth, Ph.D., Kansas State University
*Umut Yucel, Ph.D., The Pennsylvania State University
*Morgan Zumbaugh, Ph.D., Virginia Polytechnic Institute and State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Doctor of Philosophy

Animal Sciences (Ph.D.)

Click here to view the Animal Sciences and Industry graduate program page.

Admissions

Application for admission to graduate school should begin as early as possible in the semester before the proposed admission date (i.e., for fall semester, begin application process early in the preceding spring semester).

All applicants must submit a completed application form, three letters of recommendation, and official transcripts of all previous college work. In addition, the applicant should write a short statement of objectives to include the discipline area (and animal species if appropriate) in which the student desires to study. The student should mention in the statement of objectives specific faculty with whom he/she desires to work as a graduate student. This information is important in placing prospective graduate students with major professors whose area of research coincides with their areas of interest.

In addition to the information noted above, international applicants must meet English proficiency requirements as described in the Graduate School handbook (submit satisfactory English test scores or provide evidence of receipt of a

degree from a U.S. university). International students must also provide a completed financial form and evidence of financial support for their entire graduate training.

The Graduate Record Examination is not required for admission, but may be helpful in the evaluation process.

Upon receipt of all of the required application documentation, the applicant's file will be reviewed by the departmental Graduate Committee which includes graduate faculty members representing each of the five discipline areas. If the student is deemed acceptable for admission, a graduate faculty member willing to serve as major professor must be identified before forwarding of the student's credentials to the graduate school.

Limited numbers of Graduate Research Assistantships and Graduate Teaching Assistantships are available on a competitive basis. For students awarded a Graduate Research Assistantship, student tuition and fees are assessed at in-state resident rates. For students awarded a Graduate Teaching Assistantship, tuition is waived.

Animal sciences and industry- program description

The Department of Animal Sciences and Industry is a comprehensive unit supported by about 50 faculty devoted to research, teaching, and extension activities related to domestic farm animals species. Currently, the department has approximately 1,200 undergraduate students advised in the department and about 75 graduate students pursuing either M.S. or Ph.D. degrees in the Animal Science graduate program.

For graduate training, the department has animal research and teaching units located conveniently to the main campus. Those units include beef (grazing and feedlot), dairy, swine, sheep, poultry, and horse teaching and research units. In addition, both Call Hall and Weber Hall contain laboratories equipped to conduct most analytical techniques required for research.

Graduate training in the Department of Animal Sciences and Industry is organized within six functional discipline groups including animal breeding and genetics, meat science, monogastric nutrition, physiology, ruminant nutrition, and food science. The food science program represents a large interdisciplinary degree program and is detailed in a separate area in the catalog.

Programs of study must follow the policies of the Graduate School. All Ph.D. students must complete 3 hours of ASI 990 (Seminar in Animal Sciences Research). Students who have previously completed a research-based M.S. degree must complete at least 25 hours of ASI 999 (Doctoral Research in Animal Sciences and Industry), whereas students who have not completed a M.S. degree must complete at least 32 hours of ASI 999 (Doctoral Research in Animal Sciences and Industry). Graduate students in Animal Science are required to assist in teaching a course during each Spring and Fall semester, although waivers can be granted, notably during the student's final semester.

Animal breeding and genetics

Graduate work leading to M.S. and Ph.D. degrees in animal breeding is administered by participating faculty. Graduate programs are designed specifically for each student to acquire training in genetics, animal breeding, and statistics. Additional courses will be selected from the fields of biological and physical sciences. A typical program of study will include some of the following graduate level courses: statistical and population genetics; animal breeding; statistics and experimental design; physiology; and anatomy. Research is conducted using field data from cooperating ranches, breed association, and universities. Facilities are available for adequate analysis of most data set, including REML and BLUP procedures.

Meat science

The meat science program is comprehensive and prepares students for fundamental and applied research, product and process development, and technical service in industry, academic, regulatory, and international positions. Faculty

conduct research in tissue growth and development; germplasm characterization; ante- and post-mortem factors and processes affecting meat quality and composition; myofibrillar, collagen, and pigment chemistry; packaging; lighting; irradiation; low-fat products; byproduct value enhancement; processed meats; quality assurance; and safety of meat and meat products. Facilities include a fully equipped meat laboratory that permits experimental and industry-like fresh and processed meat processing; research laboratories for physical and chemical analyses; and thermal processing, display, and sensory facilities for instrumental and sensory panel evaluation of meat products. Graduate students are actively involved in teaching, research, and extension activities as part of their training.

Monogastric nutrition

The monogastric nutrition teams offer comprehensive training that weaves a basic understanding of nutrition into an applied research program. Areas of specialized emphasis include both comprehensive programs in swine, equine, and poultry nutrition. Areas of research in the swine nutrition program include: amino acid and energy nutrition; utilization of alternative feed ingredients; influences of technological advances on nutritional requirements; and effects of feed processing technologies on nutrient utilization.

The K-State swine nutrition program is a national leader in conducting applied field research in modern commercial swine facilities. This allows graduate students to be exposed to the swine business while conducting timely and industry-leading research.

The Equine Nutrition Research Team at K-State has one of only two university-owned herds of cecally cannulated horses. This allows graduate students an exceptional research program focused on nutrient digestion and absorption, the equine hindgut's microbiome, and the cecal environment.

The poultry program focuses not only on broiler and laying hen nutrition, but gamebird nutrition as well. Research areas include feed processing and nutrient requirements of poultry.

Graduate students are offered an array of course work to develop areas of expertise. Common areas of training include basic nutrition, biochemistry, statistics, and grain science. Seminars and discussion groups are an integral part of the graduate program. Prospective graduate students are encouraged to visit with the faculty and current graduate students about opportunities in the program.

Physiology

Students pursuing M.S. and Ph.D. programs in physiology in the Department of Animal Sciences and Industry will be exposed to a comprehensive, interdisciplinary degree program including course work, seminars and research experiences spanning many departments including biochemistry, statistics, biology, and anatomy and physiology.

Graduate training in physiology prepares students for various careers in research, teaching, technical services, consulting, adult education, and extension in animal reproduction and related fields of animal physiology. Graduate studies will be in reproductive endocrinology, establishment of pregnancy, cell and tissue culture, molecular biology of reproduction, stress-environmental physiology, gamete physiology, and exercise physiology.

Ruminant nutrition

Scientists within the ruminant nutrition program maintain the dual goals of conducting research that will advance the understanding of fundamental nutritional phenomena but which also provide insight into practical aspects of the nutritional management of ruminant livestock. Individual research programs range from basic to very applied. Students in the program are provided with a strong foundation in ruminal and post-ruminal digestion, metabolism, and fundamental experimental procedures necessary for conducting ruminant nutrition research.

Supporting course work is frequently pursued in the areas of biochemistry, grain science, microbiology, physiology, and statistics. Areas of research emphasis within the ruminant nutrition group include dairy cattle nutrition, feedlot nutrition, cow-calf nutrition (grazing livestock), and stocker cattle nutrition.

Master of Science

Animal Sciences (M.S.)

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Communications and Agricultural Education

301 Umberger Hall
785-532-5804
Fax: 785-532-5633
http://www.communications.k-state.edu/

Department Head:

Jason Ellis

Director of graduate studies:

Gaea Hock

Graduate Faculty:

*Katherine Burke, Kansas State University
*Jason Ellis, Ph.D., Iowa State University
Lawrence Erpelding, (Emeritus) Ph.D., Kansas State University
*Gaea Hock, Ph.D., Texas Tech University
*Levy Randolph, Ph.D., University of Florida
*Tiffany Rogers-Randolph, Ph.D., University of Florida
*Jonathan Ulmer, Ph.D., University of Missouri-Columbia
*Shannon Washburn, Ph.D., University of Missouri-Columbia

* Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Graduate Faculty Associate:

Ken Burton, DVM, Kansas State University

Agricultural Education and Communication (M.S.)

Offered through Communications and Agricultural Education, this master's of science degree in Agricultural Education and Communication fits the mission of discovery of knowledge, the education of graduate students and the improvement in the quality of life for those we serve. Graduates of this program will include professionals charged with educating the public regarding the breadth and depth of the agricultural industry and those responsible for communicating that information to specific audiences in the agricultural industry as well as the general public.

Research Methods

Choose one of the following

- EDCEP 816 - Research Methods in Education **Credits:** 3
- MC 780 - Research Methods in Mass Communications **Credits:** 3
- AGED 800 - Research Methods in Agricultural Education and Communications **Credits:** 3
- COMM 710 - Introduction to Communication Research Methods **Credits:** 3

Philosophical Context

Choose one of the following

- EDSEC 620 - Principles and Philosophy of Career and Technical Education **Credits:** 2-3
- AGED 830 - The History and Leadership of the Land Grant University **Credits:** 3
- HIST 557 - History of American Agriculture **Credits:** 3
- MC 710 - History of Mass Communications **Credits:** 3
- SOCIO 831 - Sociology of Agriculture **Credits:** 3
- EDCI 812 - History of Education **Credits:** 3
- EDCI 813 - Comparative Philosophies of Education **Credits:** 3
- AGED 820 - History and Philosophy of Agricultural and Extension Education **Credits:** 3

Theoretical Foundation

Choose one of the following

- AGED 840 - Advanced Theory and Methods of Teaching Agriculture **Credits:** 3
- AGCOM 844 - Theory in Agricultural Communications **Credits:** 3
- EDCI 709 - Agricultural Education Methods and Practicum for Teaching and Learning **Credits:** 3

Thesis Research Option

Choose one of the following

- AGED 810 - Social Data Analysis in Communications and Agricultural Education **Credits:** 3
- SOCIO 823 - Intermediate Methods of Social Research **Credits:** 3
- SOCIO 824 - Qualitative Methodology **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
  Choose 6 hours from the following
- AGED 899 - Master's Thesis **Credits:** 1-6
- AGCOM 899 - Master's Thesis **Credits:** 1-6

Scholarly Project (Non-Thesis Option)

Choose 2 hours from the following

- AGED 890 - Master's Project **Credits:** 1-3
- AGCOM 890 - Master's Project **Credits:** 1-2

Electives

Note: Additional elective courses available subject to approval by the student's graduate committee.

- AGCOM 610 - Crisis Communication **Credits:** 3
- AGCOM 712 - Environmental Communication **Credits:** 3
- AGCOM 810 - Scientific Communication **Credits:** 3
- AGED 615 - Laboratory Instructional Techniques in Teaching AgriScience **Credits:** 3
- AGED 621 - Program Planning in Agricultural Education **Credits:** 3
- AGED 704 - Extension Organization and Programs **Credits:** 3
- AGED 705 - Organization Problems in Teaching Agricultural Mechanics **Credits:** 2-3
- AGED 706 - Principles of Teaching Adults in Extension **Credits:** 3
- AGED 734 - Practicum in Agriculture-Related Occupations **Credits:** 1-6
- AGED 736 - Practicum in Extension Education **Credits:** 1-6
- AGED 786 - Topics in Agricultural Education **Credits:** 1-3
- AGED 823 - Agricultural Education for Beginning Teachers **Credits:** 1-3
- AGED 824 - Young Farmer and Adult Farmer Education in Agriculture **Credits:** 2-3
- AGED 850 - Curriculum Development in Agriculture I **Credits:** 2-3
- AGED 852 - Curriculum Development in Agriculture II **Credits:** 2-3
- AGED 855 - Field Studies in Agricultural Education **Credits:** 2-3
- AGED 858 - Program Planning and Evaluation in Agricultural and Extension Education **Credits:** 3
- AGED 859 - Management of Volunteers in Agricultural and Extension Education **Credits:** 3
- ENGL 510 - Introduction to Professional Writing **Credits:** 3
- ENGL 759 - Studies in Technical Communication **Credits:** 3
- PMC 635 - Methods of Environmental Interpretation **Credits:** 3
- PMC 740 - Advanced Environmental Interpretation **Credits:** 3

Entomology

123 Waters Hall
785-532-6154
Fax: 785-532-6232
entomology@k-state.edu
http://www.entomology.ksu.edu

Department Head:

Brian McCornack, Interim

Director of Graduate Studies:

Greg Zolnerowich

Graduate Faculty:

*Frank H. Arthur, Adjunct, U.S. Grain Marketing and Production Research Center, Ph.D., North Carolina State University (Stored Product Entomology)
*Lawrent L. Buschman, Emeritus, Ph.D., University of Florida (Integrated Pest Management)
*James F. Campbell, Adjunct, U.S. Grain Marketing and Production Research Center, Ph.D., University of California-Davis (Insect Behavior)
*Ming-Shun Chen, Adjunct, Ph.D., Kansas State University (Insect Genetics)
*Raymond Cloyd, Ph.D., Purdue University (Entomology)
Lee Cohnstaedt, Adjunct, Ph.D., Yale University
*Srinivas Kambhampati, Adjunct, Ph.D., Simon Fraser University (Insect Genetics and Phylogenetics)
Tania Kim, Ph.D., Florida State University
*Berlin Luxelly Londono Renteria, Ph.D., Tulane University
*David C. Margolies, Emeritus, Ph.D., North Carolina State University (Insect Ecology and Behavior)
*Jeremy L. Marshall, Ph.D., University of Louisiana at Lafayette (Environmental and Evolutionary Biology)
*Brian P. McCornack, Ph.D., University of Minnesota (Entomology)
*John P. Michaud, Ph.D., Simon Fraser University (Integrated Pest Management and Biological Control)
*William Morrison III, Adjunct, Ph.D., Michigan State University (Entomology)
*Dana Nayduch, Adjunct, Ph.D., Clemson University
*James R. Nechols, Emertitus, Ph.D., Cornell University (Biological Control, Insect Ecology)
*Cassandra Olds, Ph.D., Universität Basel (Microbiology)
*Brenda Oppert, Adjunct, U.S. Grain Marketing and Production Research Center, Ph.D., Kansas State University (Insect Physiology)
*Yoonseong Park, Ph.D., University of Arizona (Insect Molecular Biology and Bioinformatics)
*Thomas W. Phillips, Ph.D. SUNY College of Environmental Science and Forestry (Entomology)
*John C. Reese, Emeritus, Ph.D., University of Wisconsin (Plant Resistance to Insects)
*John Ruberson, Ph.D., Cornell Universiy (Entomology)
*Erin Scully, Adjunct, Ph.D., Pennsylvania State University (Genetics)
*Kristopher Silver, Ph.D., Cornell University (Environmental Toxicology)
*C. Michael Smith, Ph.D., Emeritus, Mississippi State University (Plant Resistance to Insects)
*Brian Spiesman, Ph.D., Florida State University
*Robert Jeffery Whitworth, Ph.D., Kansas State University (Entomology)
*Kun Yan Zhu, Ph.D., Utah State University (Molecular Toxicology and Toxicogenomics)
*Gregory Zolnerowich, Ph.D., Texas A&M University (Insect Systematics)

*Sarah Zukoff, Ph.D., Adjunct, University of Missouri
*Ludek Zurek, Ph.D., Adjunct, University of Alberta, Canada (Medical and Livestock Entomology)

Ancillary Graduate Faculty:

*Subramanyam Bhadriraju, Ph.D., University of Minnesota (Stored Product Insects)
*Susan Brown, Ph.D., University of Missouri (Developmental Genetics)
*Rollie Clem, Ph.D., University of Georgia (Insect Virology)
*Michael Dryden, Ph.D., Purdue University (Flea Biology and Management)
*Roman Reddy Ganta, Ph.D., All India Institute of Medical Sciences, New Delhi, India (Molecular Biology and Ticks and Tick-Borne Diseases)
*Tony Joern, PhD, University of Texas (Ecology)
*Michael Kanost, Ph.D., Purdue University (Insect Biochemistry)
*Kristin Michel, PhD, University of California-Riverside (Regulation of mosquito innate immunity; malaria parasite-mosquito interactions)
*Theodore Morgan, PhD, Washington State University (Evolutionary and Ecological Quantitative Genetics)
*Subbaratnam Muthukrishnan, Ph.D., Indian Institute of Science (Biochemistry and Plant Resistance to Insects)
*Lorena Passarelli, Ph.D., University of Georgia (Insect Virology)
Gerald R. Reeck, Ph.D., University of Washington (Molecular Biology of Insect-Plant Interactions)
John Ruberson, Ph.D., Cornell University (Entomology)
*Kim With, Ph.D., Colorado State University (Landscape Ecology)

* Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Introduction

The Department of Entomology at Kansas State University has an internationally recognized graduate program, leading to the M.S. or Ph.D. degree and an MS graduate certificate program. A wide variety of opportunities for graduate study are offered in several areas of research in which the faculty have established expertise. These areas include

- arthropod pest management
- agrospatial, behavioral, chemical ecology
- biocontrol
- molecular, developmental, and population genetics
- physiological, biochemical, toxicological, and molecular insect science
- plant resistance to insects
- molecular and ecosystem plant/insect interactions
- stored-product entomology
- ecology, systematics, and evolution
- public and animal health entomology

The department is housed in Waters Hall, and maintains excellent research facilities with state of the art research equipment, a student computer laboratory, and a research insect collection. Classrooms and teaching laboratories have been renovated and utilize multimedia-assisted instructional aids. Facilities include 22 greenhouses of various sizes, bioclimatic chambers, and rearing rooms. Field research is conducted on experimental farms at Manhattan and at branch experiment stations throughout the state. Cooperative research programs exist with the KSU Departments of Animal Sciences and Industry; Agronomy; Biochemistry and Molecular Biophysics; Grain Science and Industry; Plant Pathology; Horticulture, Forestry and Recreational Resources; the Wheat Genetics Resource Center; the College of Veterinary Medicine; the U.S. Grain Marketing Production and Research Center , and other U.S. and international organizations.

Extension Entomologists are broadly knowledgeable over a wide range of insect and related arthropod topics. Public support is offered through an insect identification and diagnostic service, 4-H and Youth programs, pesticide safety

training, and training for pesticide application certification. An integrated pest management approach is used in providing the public with programs and information on insects and other arthropods of importance to field and horticultural crops, livestock, stored grain, residential environs, and human health. Programming is routinely coordinated among entomologists and members of other academic departments and many governmental agencies.

The department offers unparalleled outreach opportunities through its outstanding and well-recognized Insect Zoo, which is located in the Kansas State University Gardens. Students, staff, and faculty volunteer to serve as tour guides and in its maintenance. The mission of the Insect Zoo is to foster a better understanding and increased awareness of our natural world and of the important roles that insects and their relatives play in it. The Insect Zoo offers an interactive experience for visitors who will experience the sights, sounds, and smells of live creepy crawlies, including giant cockroaches, centipedes, scorpions, spiders, tarantulas, beetles, walking stick, and praying mantises. Visitors also can "pet" some of the animals during show-and-tell demonstrations by the staff. The Insect Zoo, designed by Lee Manske, a former KSU architecture student, and former KSU entomology professors Ralph Charlton and Sonny Ramaswamy, features a number of exciting educational exhibits including the Mick Hilleary-designed Tropical tree/flooded Amazonian Rainforest. Other fascinating exhibits are The Desert-Scape, observation beehive, and a mock kitchen. Many interactive learning stations with touch-screen computers along with colorful posters offer additional information on butterflies, insects, arthropods, and plants.

The department currently has 17 permanent, and 30 adjunct/ancillary faculty, four full-time office staff, about 30 postdoctoral and technical support staff, over 30 graduate students, and several other temporary personnel and numerous undergraduate students involved in research. The faculty have received awards for excellence in research, teaching, and extension, and serve in leadership positions with various professional societies, grant panels, blue ribbon panels, etc. Faculty receive competitive research grants from the National Institutes of Health, National Science Foundation, United States Agency for International Development, Environmental Protection Agency, and the U.S. Department of Agriculture-National Institute for Food and Agriculture Programs, Pest Management Alternatives Program, Risk Avoidance and Mitigation Program, etc., in addition to various industries and commodity commissions.

The goal of the department is to provide graduate students with opportunities for basic and practical experiences in research, teaching and extension, and for significant professional development. Students publish their research findings in leading scientific journals and participate in the preparation of extramural grant proposals. All students are afforded opportunities to present their findings at professional meetings. Our graduate students routinely win local, regional, national, and international awards for their research endeavors, and compete in the annual Linnaean Games sponsored by the Entomological Society of America, winning national and regional championships several times. In addition to a seminar series that brings nationally and internationally recognized scientists to the department, faculty and students participate in journal discussion groups on a variety of entomological topics.

Financial assistance

Stipends

The Department of Entomology supports graduate study and development in numerous ways. Stipends are available as graduate research and teaching assistantships. Department faculty successfully secure research grants from federal agencies, commodity commissions, agribusiness corporations, and private foundations that fund many graduate students on research assistantships. Check with the department for current rates. Student tuition and fees are not waived, but are assessed at in-state rates for all graduate assistants.

Master's students are encouraged to seek teaching experience. Ph.D. students are required to seek teaching experience. A student can obtain teaching experience as a paid, non-credit hour teaching assistant or a graduate teaching assistant receiving variable credit for ENTOM 932 Topics in General and Systematic Entomology.

Performance requirements for continuation

In order to maintain financial assistance from assistantships or fellowships for teaching or research, graduate students are expected to maintain a B average in all course work. Failure to maintain a B average will result in academic probation for one semester before reinstatement as a regular graduate student.

Doctor of Philosophy

Entomology (Ph.D.)

Admissions

All applicants for graduate study in Entomology are expected to have a background in biology, chemistry, mathematics and the physical sciences. An overall 3.0 GPA (B average) is expected and results of the Graduate Record Examination are encouraged but not required. International students must present evidence of proficiency in English (TOEFL or other acceptable examination). In addition to completing the application for admission to the graduate school, applicants must submit the following information directly to the entomology department:

- Transcripts of all previous academic training.
- A letter describing career objectives fill with the statement of purpose form.
- A resume or curriculum vita.
- An abstract of the Master's thesis if applicable.
- Three letters of recommendation. Letters of recommendation should be sent directly to the department by the author, and not the applicant.

Acceptance into the department is based upon approval by the graduate affairs committee, the department head, availability of an advisor and funding, and admission by the Graduate School.

Performance standards and evaluation

Students and their major advisor are responsible for the selection of a supervisory committee, which must approve a program of study by the end of the second semester for M.S. students or third semester for Ph.D. students. The plan should consist of a curriculum vitae, a proposed course of study and a thesis or dissertation research proposal. Dissertation research proposals should be written in the format of a grant proposal and students are encouraged to submit for funding. The program of study for all Ph.D. students should prepare them for proficiency in at least five of the following areas: morphology; systematics and evolution; anatomy and physiology; behavior; genetics; ecology; and principles of pest management [to include no more than two of: integrated pest management; biological control; toxicology; host resistance and at least one area of specialization outside the department (i.e., statistics, biochemistry, plant or animal physiology)]. Proficiency is demonstrated through satisfactory completion of written and oral preliminary exams. Teaching and/or extension training opportunities may be added to these minimum requirements by the student's supervisory committee. Both M.S. and Ph.D. students are required to enroll for a seminar credit to present their research proposal. Ph.D. students are required to have at least one semester of teaching experience.

The final oral examination at the master's level will be both comprehensive and a defense of the candidate's thesis or report. In case of failure, a second examination may be scheduled in accordance with university regulations. Ph.D. students take both written and oral preliminary examinations no later than the semester following completion of the second year of the student's program. Both examinations must be completed no later than seven months before the final Ph.D. examination. Oral examinations come after written examinations and may be taken only if written examinations are passed. No more than one additional attempt may be permitted without approval of the Graduate Council. The

circumstances under which a second attempt involves the entire written portion or merely a repetition of failed sections is governed by the policy within the program. The final oral examination for the Ph.D. degree will be a defense of the candidate's dissertation.

Master of Science

Entomology (M.S.)

Admissions

All applicants for graduate study in the Entomology program are expected to have a background in biology, chemistry, mathematics and the physical sciences. An overall 3.0 GPA (B average) is expected and results of the Graduate Record Examination are encouraged but not required. International students must present evidence of proficiency in English (TOEFL or other acceptable examination). In addition to completing the application for admission to the graduate school, applicants must submit the following information directly to the entomology department:

- Transcripts of all previous academic training.
- A letter describing career objectives fill with the statement of purpose form.
- A resume or curriculum vita.
- An abstract of the Master's thesis if applicable.
- Three letters of recommendation. Letters of recommendation should be sent directly to the department by the author, and not the applicant.

Acceptance into the department is based upon approval by the graduate affairs committee, the department head, availability of an advisor and funding, and admission by the Graduate School.

Performance standards and evaluation

Students and their major advisor are responsible for the selection of a supervisory committee, which must approve a program of study by the end of the second semester for M.S. students or third semester for Ph.D. students. The plan should consist of a curriculum vitae, a proposed course of study and a thesis or dissertation research proposal. Dissertation research proposals should be written in the format of a grant proposal and students are encouraged to submit for funding. The program of study for all Ph.D. students should prepare them for proficiency in at least five of the following areas: morphology; systematics and evolution; anatomy and physiology; behavior; genetics; ecology; and principles of pest management [to include no more than two of: integrated pest management; biological control; toxicology; host resistance and at least one area of specialization outside the department (i.e., statistics, biochemistry, plant or animal physiology)]. Proficiency is demonstrated through satisfactory completion of written and oral preliminary exams. Teaching and/or extension training opportunities may be added to these minimum requirements by the student's supervisory committee. Both M.S. and Ph.D. students must enroll in core areas of insect taxonomy, insect ecology, insect physiology, and pest management. If these courses have been taken previously at other institutions students will be tested to demonstrate proficiency. Both M.S. and Ph.D. students are required to enroll for a seminar credit to present their research proposal. In addition, Ph.D. students are required to enroll for a seminar credit during which they make an oral presentation on a topic unrelated to their research. Ph.D. students are required to have at least one semester of teaching experience.

The final oral examination at the master's level will be both comprehensive and a defense of the candidate's thesis or report. In case of failure, a second examination may be scheduled in accordance with university regulations. Ph.D.

students take both written and oral preliminary examinations no later than the semester following completion of the second year of the student's program. Both examinations must be completed no later than seven months before the final Ph.D. examination. Oral examinations come after written examinations and may be taken only if written examinations are passed. No more than one additional attempt may be permitted without approval of the Graduate Council. The circumstances under which a second attempt involves the entire written portion or merely a repetition of failed sections is governed by the policy within the program. The final oral examination for the Ph.D. degree will be a defense of the candidate's dissertation.

Graduate Certificate

Entomology Graduate Certificate

Contact: John Ruberson
E-mail: ruberson@ksu.edu
Home Page: http://www.entomology.k-state.edu/DesktopDefault.aspx?tabindex=149&tabid=100

Graduate students in several disciplines -- agronomy, animal science, biochemistry, biological sciences, genetics, veterinary diagnostic medicine and pathobiology, horticulture, and plant pathology -- are conducting research on topics that may include insects and plant protection/pest management. Such students may wish to demonstrate proficiency in entomology, making them more suitable for certain jobs. In order to strengthen their educational programs and the quality of graduate education without detracting from their existing graduate degree programs, an entomology graduate certificate program has been developed through the Department of Entomology. Its objectives are to prepare graduates for careers related to entomology or plant protection/pest management, encourage interdisciplinary educational experiences in entomology and enhance the educational experiences of participating graduate students.

Certification Requirements:

At the master's and Ph.D. level, 12 credit hours are required PLUS one credit of Entomology Seminar (ENTOM 995) in which the student presents an oral seminar to the Department. The list of courses can include BIOCH 907 (Advanced Topics in Insect Biochemistry). The certificate program will require a focused and thematic program of study in the various sub-disciplines of entomology, which would complement the student's interest and area of expertise, thus, helping develop additional skills. In lieu of a course based on classroom work, a student may register for ENTOM 899 or 999 Research in Entomology, and undertake a research project or register for ENTOM 799 Special Topics, and undertake specialized, independent study. The certificate program requires that it be a blend of traditional and experiential learning opportunities. Students will be advised by entomology faculty on thematic foci and requirements.

Entomology Courses:

- BIOCH 907 - Advanced Topics in Insect Biochemistry **Credits:** 3
- ENTOM 612 - Insect Pest Diagnosis **Credits:** 2
- ENTOM 620 - Insecticides: Properties and Laws **Credits:** 2
- ENTOM 732 - Introduction to Plant Resistance to Pests **Credits:** 2
- ENTOM 680 - Aquatic Entomology **Credits:** 3
- ENTOM 692 - Insect Ecology **Credits:** 3
- ENTOM 710 - Insect Taxonomy **Credits:** 3
- ENTOM 655 - Plant Resistance to Insects **Credits:** 2
- ENTOM 799 - Problems in Entomology **Credits:** 1-18
- ENTOM 805 - Insects of Stored Products **Credits:** 3
- ENTOM 815 - Experience in Extension Entomology **Credits:** 1-3

- ENTOM 821 - Biological Control **Credits:** 3
- ENTOM 857 - Toxicology of Insecticides **Credits:** 3
- ENTOM 875 - Insect Physiology **Credits:** 4
- ENTOM 885 - Conventional and Molecular Methods for Evaluation of Crop Plant Resistance to Pests **Credits:** 2
- ENTOM 892 - Advanced Insect Ecology **Credits:** 3
- ENTOM 898 - Master's Report in Entomology **Credits:** 1-18
- ENTOM 899 - Master's Research in Entomology **Credits:** 1-18
- ENTOM 860 - Insect Genetics **Credits:** 3
- ENTOM 825 - Advanced Integrative Behavioral Ecology **Credits:** 3
- ENTOM 930 - Topics in Entomology **Credits:** 1-9
- ENTOM 932 - Teaching Experience in Entomology **Credits:** 1-3
- ENTOM 995 - Entomology Seminar **Credits:** 1
- ENTOM 999 - Research in Entomology **Credits:** 1-18

Grain Science and Industry

303 Shellenberger Hall
785-532-6161
Fax: 785-532-7010
grains@k-state.edu
http://www.grains.ksu.edu

Department Head:

Gordon Smith

Director of Graduate Studies:

Yi Zheng

Graduate Faculty:

*Sajid Alavi, Ph.D., Agricultural Engineering, Cornell University
*C. Gregory Aldrich, Ph.D., Ruminant Nutrition, University of Illinois
*Subramanyam Bhadriraju Ph.D., Entomology, University of Minnesota
Carlos Campabadal, Ph.D., Purdue University
*Hulya Dogan, Ph.D., Food Engineering, Middle East Technical University - Turkey
*Jon Faubion, Ph.D., Grain Science, Kansas State University
*Yonghui Li, Ph.D., Grain Science, Kansas State University
Thomas N.N. Nortey, Ph.D., University of Saskatchewan
Chad Paulk, Ph.D., Animal Science, Kansas State University
*Rebecca A. Regan-Miller, Ph.D., Grain Science, Kansas State University
*Deborah Rogers, Ph.D., Grain Science, Kansas State University
Bradford Seabourn, Ph.D., Grain Science, Kansas State University
*Paul Seib, Ph.D., Biochemistry, Purdue University
*Yong-Cheng Shi, Ph.D., Cereal Chemistry, Kansas State University
*Kaliramesh Siliveru, Ph.D., Kansas State University

Gordon Smith, Ph.D., Food Science, Texas A&M University
*Charles Stark, Ph.D., Kansas State University
*X. Susan Sun, Ph.D., Agricultural Engineering, University of Illinois
Jess Sweley, Ph.D., University of Nebraska-Lincoln
*David Wetzel, Ph.D., Analytical Chemistry, Kansas State University
Jeffrey Wilson, Ph.D., Grain Science, Kansas State University
*Yi Zheng, Ph.D., University of California

Graduate Faculty Associates:

Elizabeth Bobeck, Ph.D., University of Wisconsin - Madison
Hikmet Boyacioglu, Ph.D., North Dakota State University
Aulus Carciofi, Ph.D., Univesidade de São Paulo - Brazil
Aaron Clanton, M.B.A., Baker College
Sherill Lynne Cropper, Ph.D., Kansas State University
Charles Fahrenholz, Ph.D., Kansas State University
Mehtap Fevzioglu, Ph.D., Purdue University
Sridevi Narayan-Sarathy, Ph.D., University of Massachusetts - Amherst
Michael Tilley, Ph.D., Kansas State University
Xiaorong "Shawn" Wu, Ph.D. Kansas State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Programs

The Department of Grain Science and Industry offers courses of study leading to degrees of master of science and doctor of philosophy in grain science. Grain science faculty collaborate with the scientists at the USDA Grain Marketing Research Laboratories and the American Institute of Baking and there are graduate programs that are collaborative with those laboratories.

Modern teaching and research facilities include a pilot flour mill, feed mill, bakery, extrusion laboratory, and grain storage and handling facility. In addition, more than 10 cereal chemistry laboratories are equipped with visible and ultraviolet spectrophotometers near infrared analyzers, an infrared microspectrometer, gas chromatographs, liquid chromatographs, ultra centrifuge, freeze drying apparatus, balances, rapid viscosity analyzer, differential scanning calorimeter, thermo-mechanical analyzer, classical rheometer (Instron), dynamic rheometers, gel electrophoresis apparatus, a full array of glassware, rapid analyzers for nitrogen, fiber, and glucose, as well as recording mixers and starch viscometers.

The department has academic interest in the milling industry with particular emphasis on milling and baking properties of wheat cultivars since 1905. The wheat milling facilities range from a bench-scale mill (batch of 0.5 kg of grain) to a pilot mill with a capacity of 1 MT/hour. Specialty dry mills also are available to purify, fractionate, and grind any seed-like material, including all cereals, legumes, pulses, spices, and gums. Plans for a wet-milling laboratory for grain are progressing.

Another unique feature of the department is its fully functional pilot feed mill for research and development studies by university, industry, and government organizations. The feed mill at Kansas State University houses the latest in equipment in the feed milling industry. Its capabilities include cleaning and receiving raw materials, classification of raw materials, grinding and pelleting, flaking, or extruding. A premix room for microingredients and a large-scale batching system facilitate accurate proportioning and weighing of feed ingredients. The feed mill is capable of producing nearly all physical forms of formulated animal feeds. Plans for construction of new facilities are in progress.

A food-grade extrusion processing facility, houses a Wenger model X-20 single-screw extruder, a Wenger model TX-52 twin-screw extruder, and a gas-fired belt dryer.

Departmental facilities for research include well-equipped laboratories for all areas of research in cereal chemistry. This includes laboratories equipped for chemical research and special laboratories equipped for studies of the physical properties of flour, doughs and food systems. Pilot bakery facilities provide an excellent environment for teaching and research. A fully-equipped computer laboratory is available to all students.

Admission

Correspondence and questions regarding Graduate School are handled by the chair of the Graduate Program Committee, and the graduate services coordinator. Information and application forms can be found on the department website. http://www.grains.ksu.edu/grad/

Applicants need to complete the Graduate School application form, obtain and submit the official transcripts and three letters of recommendation and form. Additionally, applicants should write a well-thought out statement of objectives which should include the discipline area in which the student has an interest and desires to perform research. Applicants should have a B average or better and have completed courses in Mathematics, including College Algebra, Calculus and Statistics; Chemistry, including Biochemistry and Organic Chemistry; Physics and Biological Sciences. Send all application materials to the attention of the Graduate Program.

All applicants whose native language is not English are required to submit a TOEFL or IELTS score. The Grain Science Graduate Program Committee prefers a minimum TOEFL score of 90, and a minimum score of 7 on the IELTS. We give preference to students with higher TOEFL scores and academic records.

The Graduate Record Exam (GRE) is required. The minimum scores are: verbal-146, quantitative-148, and 3.0-analytical. Copies should be submitted with the application.

International students must provide a completed financial form and evidence of financial support for their graduate training.

When the application materials are in hand, the department's graduate program committee will evaluate them and provide a recommendation of action. A student that is found to be acceptable will then be submitted to the graduate faculty for possible selection. No student will be admitted without a major professor identified. Once a student is matched with a major professor the application is then forwarded to the department head for approval and then to the Graduate School. The Graduate School has the ultimate authority for graduate admission.

Assistantships

Graduate research assistantships in grain science and industry are designed to support the research project areas of the individual faculty members. Those projects may be Kansas Agricultural Experiment Station projects directed by the faculty member or sponsored research projects funded by industrial, state, or federal agencies. In all cases, the decisions regarding support and awarding of assistantships are made on a competitive basis. Funds are not always adequate to award assistantships to all students who would like support. Decisions regarding initial and continuing support are based on both academic performance and research progress. Failure to maintain high quality academic work or research activity can be reason to cancel or discontinue an assistantship.

Doctor of Philosophy

Grain Science (Ph.D.)

The Ph.D. degree offered through the Grain Science and Industry graduate program normally requires at least three years beyond the master's degree. It is awarded to candidates who have demonstrated unique ability as scholars and

researchers and proficiency in communication. The degree also certifies that the candidate has an understanding of the subject matter in the discipline and possesses the ability to make original contributions to knowledge.

Doctoral degree requirements

Graduate study beyond the bachelor's degree equivalent to 90 or more semester hours is required for the doctor of philosophy degree. Those hours include enrollment in at least 30 hours of research and 30 hours earned previously for the master's degree. At least a year in residence at the university is required.

The student and major professor select an advisory committee. Selection of the committee is subject to approval by the Graduate School. The committee consists of the major professor and at least three other members of the graduate faculty. One member of the committee must be a member of the graduate faculty in a department other than that of the major professor.

The duties of the supervisory committee include advising the student on preparation of a plan of study and development of a doctoral research proposal, administration of a preliminary written examination, approval of the final form of the dissertation, and administration of the final oral examination.

It is expected that each graduate student's dissertation or thesis will be published in the scientific literature. Graduate students are expected to prepare draft manuscripts prior to or by the time of their final oral exam. Publication of some items can precede publication of thesis or dissertation but guidance regarding prior publication should be followed.

Students without the prerequisite must have the permission of the instructor.

Course work

Grain science includes the science and technology of cereals and other grains, their basic properties and their utilization in foods, feeds, and other industrial products. Knowledge of chemical, biological, physical, and mathematical sciences is fundamental to grain scientists. As part of their degree programs, students will develop strong written and oral communication skills.

The course requirements for each graduate student in grain science will be drawn from the fields listed above. Specific requirements for each individual will be determined by the major professor and approved by the student's graduate committee, with due consideration given the student's qualifications and professional plans and interests. Students may be required to make up deficiencies in course work in their undergraduate curriculums.

Suggested courses for the M.S. degree

All students:

- A graduate-level grain science course in at least one specialized area (i.e., baking, milling, feed science, extrusion)
- A statistics course at the 700 level
- BIOCH 521 - General Biochemistry **Credits:** 3
  or
- BIOCH 755 - Biochemistry I **Credits:** 3
- BIOCH 756 - Biochemistry I Laboratory **Credits:** 2
- GRSC 602 - Cereal Science **Credits:** 3
- GRSC 815 - Fundamentals of Processing Grains for Food **Credits:** 3
- GRSC 900 - Professional Development in Grain Science **Credits:** 1

Additional suggested courses for the Ph.D. degree

Graduate level courses in chemistry, biochemistry or other basic science in support of PhD research

- BIOCH 755 - Biochemistry I **Credits:** 3
- GRSC 900 - Professional Development in Grain Science **Credits:** 1
  or another graduate seminar

Cereal science programs

10 credit hours of chemistry and/or physics, including an advanced course in biochemistry and an acceptable course in physical chemistry which has calculus as a prerequisite.

Master of Science

Grain Science (M.S.)

Master's degree requirements

Except under special conditions, candidates for the Master of Science degree offered through the Grain Science and Industry graduate program are required to spend one academic year in residence.

A committee of at least three graduate faculty members supervises the program of study for the master's degree. The candidate's major professor serves as committee chair. The committee is selected by the student and his or her major professor, with selection of the committee subject to approval by the Graduate School. The supervisory committee's responsibilities include approval of a thesis research proposal, guidance in and approval of a written plan of study which describes course work to be completed, approval of the final copy of the thesis, and administration of a final oral examination.

A master's degree requires a minimum of 30 semester hours of graduate credit including 6 to 8 research credit hours resulting in a thesis.

The student must submit a written plan of study to the Graduate School prior to the end of the second semester that the candidate is enrolled at Kansas State University.

A candidate will submit the thesis to all committee members before the examination is scheduled. A copy is to be available at the final oral examination.

A final oral examination is required of all students. This must include a defense of the thesis in the grain science department, and may include interpretation of other scholarly work, and testing of the students' understanding of their fields of study.

Horticulture and Natural Resources

2021 Throckmorton Hall
785-532-6923
Fax: 785-532-5894
E-mail: kelleyb@k-state.edu
www.hnr.ksu.edu

Department Head

Steve Keeley

Director of Graduate Studies

Dale Bremer

Graduate Faculty:

*Adam Ahlers, Ph.D., University of Illinois
*Charles J. Barden, Ph.D., Pennsylvania State University
*Manreet Bhullar, Ph.D., Iowa State University
*Cheryl R. Boyer, Ph.D., Auburn University
*Dale J. Bremer, Ph.D., Kansas State University
*Ted T. Cable, Ph.D., Purdue University
*Jeremy Cowan, Ph.D., Washington State University
Gregory L. Davis, Ph.D., Kansas State University
*Jessica Fefer, Ph.D., Clemson University
*Jack D. Fry, Ph.D., Colorado State University
*Jason Griffin, Ph.D., North Carolina State University
*Steven J. Keeley, Ph.D., Colorado State University
Catherine C. Lavis, Ph.D., Kansas State University
*Chad Miller, Ph.D., Cornell University
*Sunghun Park, Ph.D., Texas A&M University
*Brian Peterson, Ph.D., Clemson University
*Eleni Pliakoni, Ph.D., University of Thessaly
*C. B. Rajashekar, Ph.D., Colorado State University
*Andrew Ricketts, Ph.D., Kansas State University
*Cary Rivard, Ph.D., North Carolina State University
*Ryan Sharp, Ph.D., University of Georgia
*Candice A. Shoemaker, Ph.D., Michigan State University
*Daniel Sullins, Ph.D., Kansas State University
*Kimberly Williams, Ph.D., North Carolina State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Introduction

The Department of Horticulture and Natural Resources offers courses of study leading to degrees of master of science and doctor of philosophy in diverse study areas and graduate certificates in advanced horticulture and horticultural therapy. Study areas include: environmental stress and molecular biology; forestry, recreation and natural resources; horticulture and human health; sustainable food production; and turf and ornamentals.

The department is housed in Throckmorton Plant Sciences Center and has over 15,000 square feet of modern office, laboratory and classroom space and 30,500 square feet of greenhouse space. Faculty have individual research labs, equipped for their specific type of research. Field research is conducted on our five off-campus research centers located in Manhattan and throughout the state. Cooperative research programs exist with the KSU departments of pathology, soil science, entomology, agronomy, biochemistry, microbiology, marketing, food science, health and nutrition, kinesiology, psychology, education and other disciplines.

The department consists of 22 faculty members, about 40 graduate students and 10 research associates, as well as post-doctoral fellows and visiting scientists. The faculty have received awards for excellence in research, teaching, and extension, and serve in leadership positions with various professional societies grants panels, etc. Faculty receive competitive research grants from the National Science Foundation, U.S. Department of Agriculture, U.S. Fisheries and Wildlife, National Park Service, foundations, and industry groups.

The graduate program is dedicated to providing advanced discipline training, breadth and depth in research training, and mentoring to our students. The goal is the scholarly and professional development of research scientists, extension specialists, teachers, and horticultural business leaders.

Admission

Applications are accepted at any time of the year, and graduate studies can begin during fall, spring or summer terms. Applying early increases the probability of being awarded an assistantship. Departmental admission requirements can be found at http://www.hnr.k-state.edu/graduate/admissions.html. Applications are completed online at http://www.k-state.edu/grad/admissions/application-process/.

Financial Support

Research and teaching assistantships are available on a competitive basis. All students on an assistantship qualify for in-state tuition. Students may also be eligible to apply for fellowships from private and federal sources.

Concurrent

Concurrent B.S./M.S. in Horticulture and Natural Resources

The combined B.S./M.S. Horticulture program in the Department of Horticulture and Natural Resources program in the Department of Horticulture and Natural Resources (HNR) provides exceptional undergraduates with the opportunity to obtain both a Bachelor of Science and a Master of Science in 5 years, a shorter time than typically required to earn a B.S. plus M.S. if both degrees are pursued separately. Students can obtain M.S. with thesis or nonthesis option.

The curriculum will include both course work and research experience. Graduates will be well equipped either to seek careers in the private sector or pursue advanced degrees. The advantages of the combined degree to students seeking private sector employment may be entry level positions with higher-level responsibilities, higher pay, and opportunities for more rapid advancement. The rigorous training and combined B.S./M.S. (thesis option) will offer a competitive advantage in the admissions process to students interested in pursuing doctoral (PhD) degrees.

Admission Requirements

The following requirements must be met before an individual can be admitted into this program.

- The student must be seeking a B.S. degree from the Department of Horticulture and Natural Resources.
- The student must have completed 45 to 90 hours toward the B.S. degree.
- The student's cumulative undergraduate GPA must be at least 3.0.
- The student must be nominated by a Graduate Faculty member of HNR at any time from the second semester of the sophomore year through the second semester of the junior year. A student may be nominated during the senior year with special permission from the HNR Director of Graduate Programs.

Application Process

The application process is the same as for the traditional M.S. degree except that completion of the B.S. degree is not required and the GRE score requirement will be waived.

- KSU graduate application form completed on-line and submitted before semester of enrollment. Application fee submitted with application.
- Applicant's statement of academic objective(s) and preferred primary advisor(s) must be submitted with application.
- Three letters of reference are required.
- Transcript(s) of all undergraduate work must be sent to the Director of Graduate Programs in HNR.

Once a student is admitted to the concurrent B.S./M.S degree program, the student should consult the graduate handbook for policies and procedures for M.S. degrees which include: supervisory committee, final examination, etc. The student will work closely with her/his major professor to form a supervisory committee and file a program of study by the end of the first semester of the senior year. The student's supervisory committee must approve the program of study, which is a statement of the student's graduation requirements. The undergraduate advisor will continue to advise the student in academic progress toward the B.S. degree, and the major professor will supervise the student's academic progress and research project for the M.S. degree. Research toward the M.S. thesis will begin as soon as possible, but will not begin later than the first semester of the senior year.

Should the student meet these requirements and be approved for admission by the HNR Graduate Admission Committee, admission will be provisional, pending the award of the B.S. degree. The student must complete all of the undergraduate requirements with the exception that up to nine (9) credit hours of graduate level classes taken for graduate credit may be applied toward the 126 credit hour requirement for the undergraduate degree and can also count toward the 30 credit hours required for the M.S. degree. The B.S. degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.S. and M.S. degrees may be awarded concurrently.

Doctor of Philosophy

Horticulture and Natural Resources (Ph.D.)

The Horticulture and Natural Resources graduate program offers a offers doctor of philosophy degree program in diverse horticultural and interdisciplinary areas and in Natural Resources disciplines related to Park Management and Conservation and Wildlife and Outdoor Enterprise Management. For areas of research focus, please visit http://www.hnr.ksu.edu/DesktopDefault.aspx?tabid=400. Graduate students are expected to excel in research, teaching, extension activities and develop professionally. Independent and original research is an important part of the graduate program and forms a basis for a graduate thesis. Research can be conducted within the department or in other cooperating departments.

For admission requirements, please see the Horticulture, Forestry & Recreation Resources website at: http://www.hnr.ksu.edu/DesktopDefault.aspx?tabid=933.

Master of Science

Horticulture and Natural Resources (M.S.)

The Horticulture and Natural Resources graduate program offers a Master of Science degree program in diverse interdiciplinary horticultural areas and in Natural Resources disciplines related to Park Management and Conservation and Wildlife and Outdoor Enterprise Management. For areas of research focus, please visit

http://www.hnr.ksu.edu/DesktopDefault.aspx?tabid=400. Graduate students are expected to excel in research, teaching, extension activities and develop professionally. Independent and original research is an important part of the graduate program and forms a basis for a graduate thesis. Research can be conducted within the department or in other cooperating departments.

For admission requirements, please see the Horticulture & Natural Resources website at: http://www.hnr.ksu.edu/DesktopDefault.aspx?tabid=933.

Master of Science Emphasis Area(s)

Horticulture and Natural Resources with Specialization in Urban Food Systems (M.S.)

This specialization will prepare professionals for positions such as director/program managers in not-for-profit organizations, city governments or extension programs in urban districts facilitating community gardens, urban farming, farmers markets, or farm-to-school programs. The specialization places an emphasis on sustainable agriculture, project management, and grant writing, in addition to having a solid foundation in horticultural science and food crop production.

Thesis Research or Report Track

Required Courses (8 credit hours)

- HORT 951 - Horticulture Graduate Seminar **Credits:** 1
- Must be taken for 2 credit hours.
- Research Methods and/or Scientific Writing at or above the 600 level **Credits:** (3)
- 700 level or above Statistics **Credits:** (3)

Thesis Research or Report (2-6 credit hours)

- HORT 898 - Master's Report **Credits:** 1-18
  OR
- HORT 899 - Research-MS **Credits:** 1-18

Additional Courses (8-12 credit hours)

To be determined by Supervisory Committee.

Specialization (8 credit hours)

- HORT 791 - Urban Agriculture **Credits:** 2
- HORT 792 - Urban Food Production Practicum **Credits:** 1
- HORT 794 - Urban Food Systems **Credits:** 2
- HORT 796 - Professional Development in Urban Food Systems **Credits:** 0-1
  (no credit requirement, but must enroll in it for 4 semesters)

Specialization Elective, must choose at least 3 credits from the following:

- HORT 725 - Postharvest Technology and Physiology of Horticultural Crops **Credits:** 3
- HORT 790 - Sustainable Agriculture **Credits:** 2
- HORT 793 - Farm to Fork Produce Safety **Credits:** 2
- HORT 795 - Urban Agriculture Study Tour **Credits:** 1

Total Hours Required (30 credit hours)

Professional Track

Required Courses (8 credit hours)

- HORT 898 - Master's Report **Credits:** 1-18
- HORT 951 - Horticulture Graduate Seminar **Credits:** 1
- Research Methods and/or Scientific Writing at or above the 600 level **Credits:** (3)
- 700 level or above Statistics **Credits:** (3)

Additional Courses (17 credit hours)

To be determined with Advisory Committee

Specialization (8 credit hours)

- HORT 791 - Urban Agriculture **Credits:** 2
- HORT 792 - Urban Food Production Practicum **Credits:** 1
- HORT 794 - Urban Food Systems **Credits:** 2

Specialization Elective, must choose at least 3 credits from the following:

- HORT 725 - Postharvest Technology and Physiology of Horticultural Crops **Credits:** 3
- HORT 790 - Sustainable Agriculture **Credits:** 2
- HORT 793 - Farm to Fork Produce Safety **Credits:** 2
- HORT 795 - Urban Agriculture Study Tour **Credits:** 1

Total Hours Required (36 credit hours)

Graduate Certificate

Advanced Horticulture Graduate Certificate

Contact: Candice Shoemaker
E-mail: cshoemak@ksu.edu

This certificate is offered through the Horticulture and Natural Resources graduate program.

Students, upon consultation with their advisors, will select a minimum of 12-credits of coursework from graduate courses available through Hort AG*IDEA and Kansas State University. At least one course with a basis in horticultural crop physiology should be included in the Plan of Work for the certificate.

Horticultural Crop Physiology (3 credits minimum)

- HORT 706 - Advanced Culture of Gold and Sports Turf **Credits:** 3
- HORT 800 - Horticultural Physiology **Credits:** 3
- HORT 815 - Plant Nutrition and Nutrient Management **Credits:** 3
- AGRON 820 - Plant Water Relations **Credits:** 3
- HORT 960 - Environmental Plant Stress **Credits:** 3

Cultural and Business Practices (up to 9 credit hours)

- HORT 600 - Herbaceous Plant Production **Credits:** 3
- HORT 625 - Floral Crops Production and Handling **Credits:** 2
- HORT 630 - General Viticulture **Credits:** 3
- HORT 695 - Introduction to Permaculture **Credits:** 3
- HORT 710 - Plant Cell, Tissue and Organ Culture. **Credits:** 3
- HORT 715 - Advanced Interiorscaping **Credits:** 3
- HORT 720 - Environmental Nursery Production **Credits:** 3
- HORT 760 - Business Management for Horticultural Enterprises **Credits:** 3
- HORT 775 - Plant Breeding Methods in Horticulture **Credits:** 3

Horticultural Therapy Graduate Certificate

Contact: Candice Shoemaker
E-mail: cshoemak@ksu.edu
Home Page: http://www.dce.k-state.edu/ag/horticultural-therapy/

Offered through the Horticulture and Natural Resources graduate program, the Graduate Certificate in Horticultural Therapy provides students with the fundamentals of horticultural therapy theory and practice. The 15-credit hour program is intended to meet the needs of professionals that work with people with disabilities, older adults, and those recovering from illness that want to apply horticultural therapy in their current profession and those individuals who seek introductory graduate training in horticultural therapy.

The program is offered primarily online. Two on-site week-long sessions provide intensive experiences in a variety of horticultural therapy settings, under the guidance of leading practitioners in the profession of horticultural therapy.

Required courses (12 credit hours):

- HORT 751 - Human Issues in Horticultural Therapy **Credits:** 3
- HORT 752 - Horticulture in Horticultural Therapy **Credits:** 3
- HORT 753 - Clinical Skills in Horticulture Therapy **Credits:** 3
- HORT 755 - Practicum in Horticultural Therapy **Credits:** 3

Urban Food Systems Graduate Certificate

This 12-credit interdisciplinary graduate certificate in Urban Food Systems (UFS) is designed for graduate students and professionals that wish to demonstrate proficiency in UFS. Through the 6-credits of core courses and 6-credits of electives students will learn:

- a systems perspective to understand the urban environment and its cultural, political, environmental, and economic roles in urban food systems
- the inter-relationships within urban food systems, specifically among diet, food production, the environment, climate, and public health
- approaches to urban food crop production
- selected skills (grant writing, fundraising, non-profit management, advocacy, communication, evidence-based decision rules) as a community organizer, educator, or leader in urban food systems.

This program can be completed online and on-campus. Students will interact regularly with each other and leaders in the field.

Admission Requirements

Current K-State graduate students who want to pursue the certificate should contact the Program Director for guidance on filling out a plan for completing the certificate.

Certificate only students must apply to the certificate program through the online graduate admissions application process. When asked to **Select a Degree Program** choose "Graduate Certificate" for degree and "Urban Food Systems – Graduate Certificate" for program. The program will be listed under the Interdisciplinary tab. Once your application is set up, you will be asked to provide the following documents that you will upload to the online application and pay the application fee:

- **Statement of Purpose** (1-2 pages) describing your interest in urban food systems, your objectives in pursuing this certificate, and plans for completion of the program requirements. The Statement of Purpose is an important component of your application.
- Copies of all **transcripts**. If accepted, you will need to provide "official" transcripts to the Graduate School.
- **One letter of reference** from your supervisor, advisor, or a professor that can address your ability to succeed in Graduate School. You will provide the name and e-mail address and the online system will email that person and provide them with a link.

To qualify, students must have:

- A bachelor's degree from an accredited institution
- GPA of 3.0 or higher in the final two years of undergraduate study or approximately the last 60 credit hours
- Computer proficiency sufficient to complete the online course work
- Test of English as a Foreign Language (TOEFL) scores for students whose native language is not English. Acceptable TOEFL score is 550 (paper-based test), or 79 (IBT-internet-based test).

Students not meeting the requirements above may be admitted on a provisional basis at the discretion of the certificate faculty if the student has demonstrated adequate preparation in this or an equivalent field and has successfully completed projects of equivalent difficulty.

Graduation Requirements

The Graduate Certificate in Urban Food Systems consists of 12 credit hours with 6 credits of core courses and 6 credits of elective courses.

Core Courses (6 credits):

- UFS 791 - Urban Agriculture **Credits:** 2
- UFS 794 - Urban Food Systems **Credits:** 2
- UFS 796 - Professional Development in Urban Food Systems **Credits:** 1
- UFS 798 - Urban Food Systems Field Experience **Credits:** 1

Elective Courses (6 credits): Select from the following:

Plant and Agricultural Sciences

- AGRON 605 - Soil and Environmental Chemistry **Credits:** 3
- AGRON 615 - Soil Problems **Credits:** 0-18
- AGRON 635 - Soil and Water Conservation **Credits:** 3
- ENTOM 612 - Insect Pest Diagnosis **Credits:** 2
- ENTOM 799 - Problems in Entomology **Credits:** 1-18
- HORT 725 - Postharvest Technology and Physiology of Horticultural Crops **Credits:** 3
- HORT 780 - Health-Promoting Phytochemicals: Fruits and Vegetables **Credits:** 2
- HORT 790 - Sustainable Agriculture **Credits:** 2
- HORT 793 - Farm to Fork Produce Safety **Credits:** 2
- HORT 795 - Urban Agriculture Study Tour **Credits:** 1
- PLPTH 765 - Integrated Plant Disease Management **Credits:** 2

Leadership and Management

- AGCOM 845 - Approaches to Public/Community Engagement **Credits:** 3 or
- COMM 845 - Approaches to Public/Community Engagement **Credits:** 3 or
- LEAD 845 - Approaches to Public/Community Engagement **Credits:** 3
- CDPLN 633 - Grantwriting **Credits:** 3
- CDPLN 700 - Foundations of Community Development **Credits:** 3
- CDPLN 704 - Community Leadership and Capacity Building **Credits:** 3
- CDPLN 713 - Nonprofit Management **Credits:** 3
- CDPLN 720 - Community and Regional Economic Analysis **Credits:** 3
- DMP 815 - Multidisciplinary Thought and Presentation **Credits:** 3
- LEAD 801 - Foundations of Leadership **Credits:** 3
- POLSC 740 - Nonprofit Financial Management **Credits:** 3

Sociology, Economics, Health

- CDPLN 711 - Immigrants in Communities **Credits:** 3
- CDPLN 712 - Sustainable Communities **Credits:** 3
- FDSCI 630 - Food Science Problems **Credits:** 0-18
- FDSCI 730 - A Multidisciplinary Overview of Food Safety and Security **Credits:** 2
- FDSCI 731 - Food Protection and Defense--Essential Concepts **Credits:** 2
- FNDH 600 - Public Health Nutrition **Credits:** 3
- FNDH 700 - Global Health and Nutrition **Credits:** 3
- FNDH 820 - Functional Foods for Chronic Disease Prevention **Credits:** 3
- FNDH 841 - Consumer Research - Fundamentals **Credits:** 1
- FNDH 862 - Maternal and Child Nutrition **Credits:** 3
- LAR 741 - Problems in Landscape Architecture **Credits:** 1-18 (for LAR 322 - Ethics in Environmental Dilemmas)
- MPH 818 - Social and Behavioral Bases of Public Health **Credits:** 3

- SOCIO 831 - Sociology of Agriculture **Credits:** 3
- SOCIO 832 - Sociology of Community **Credits:** 3
- SOCIO 835 - Environment and Society **Credits:** 3

Total Hours Required: 12

Plant Pathology

4024 Throckmorton Hall
1712 Claflin Rd
785-532-6176
Fax: 785-532-5692
plantpath@ksu.edu
www.plantpath.ksu.edu

Department Head

Megan Kennelly

Director of Graduate Studies

Megan Kennelly

Graduate Faculty

Alina Akhunova, Ph.D., St. Petersburg State University
*Eduard D. Akhunov, Ph.D., Institute of Genetics, Russia
*Kelsey Andersen Onofre, Ph.D., University of Florida
*David E. Cook, Ph.D., University of Wisconsin - Madison
*Erick D. DeWolf, Ph.D., North Dakota State University
*Martin Draper, Ph.D., North Dakota State University
*Bernd R. Friebe, Ph.D., Free University of Berlin
*Bikram S. "Bik" Gill, Ph.D., University of California - Davis
Jagger Harvey, Ph.D., University of California
*Megan A. Kennelly, Ph.D., Cornell University
*Dal-Hoe Koo, Ph.D., Chungnam National University
*John F. Leslie, Ph.D., University of Wisconsin - Madison
*Christopher R. Little, Ph.D., Texas A&M University
*Sanzhen Liu, Ph.D., Iowa State University
*Shahideh Nouri, Ph.D., University of Wisconsin
*Jesse Poland, Ph.D., Cornell University
*Jessica Rupp, Ph.D., Kansas State University
*James P. Stack, Ph.D., Cornell University
*Richard B. Todd, Ph.D., The University of Melbourne
Timothy C. "Tim" Todd, M.S., Oklahoma State University
*Christopher Toomajian, Ph.D., University of Chicago
*Harold N. Trick, Ph.D., Florida State University
*Barbara A. Valent, Ph.D., University of Colorado

Adjunct Faculty

*Robert L. "Bob" Bowden, Ph.D., University of Wisconsin - Madison
*John P. Fellers, Ph.D., University of Kentucky

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Description and Mission

Our mission is to understand and improve plant health. Plant pathology is the study of plant diseases, their cause, effects, biology, ecology, and control. The discipline is closely integrated with the other biological sciences, and we have unique strengths in basic and applied research. Our work has state, regional, national, and international impact.

Departmental Research and Teaching Emphasis

Our department offers broad training across all facets of plant pathology. Coursework and research include:

- bacteria, fungi, nematodes, and viruses
- bio-informatics, biological control, biotechnology (cell and tissue culture, plant transformation and regeneration)
- disease diagnosis and management for major field crops in Kansas: wheat, corn, sorghum, alfalfa, and soybeans, horticultural plants (trees, turf, vegetables, fruits, ornamentals)
- disease physiology
- ecology and epidemiology
- host and microbial genetics and genetics
- modeling/statistics
- molecular genetics
- molecular plant-microbe interactions
- biosecurity

Our Department administers the campus-wide Integrated Genomics Facility; the 9-state, Great Plains Diagnostic Network; the Wheat Genetics Resource Center; and the Fungal Genetics Stock Center.

Professional Development

Along with providing technical training, we offer professional development in science communication, networking, and leadership:

- Weekly departmental seminar series exposes students to visiting scholars from within KSU and across the globe
- Student proposal seminars and professional communications courses offer training in science communication
- Graduate student club activities provide leadership development opportunities
- Graduate students develop mentoring skills by mentoring undergraduate researchers
- Graduate students gain instructional experience by serving as teaching assistants

Personnel

Our Department currently has about 30 faculty members onsite, 25-35 graduate students, about 25 post-doctoral fellows, and visiting scientists, and about 20 technical assistants, who come from many different areas of the world. We are a diverse and inclusive Department with a global climate in which ideas thrive and people excel.

Facilities and Equipment

Our Department is housed in the Throckmorton Plant Sciences Center on the KSU campus. The Department has 39,000 sq. ft. of a modern office, laboratory, and classroom space. The building is connected to 100,000 sq. ft. (2.3 acres, or about 1 hectare) of greenhouse space. Faculty have individual research labs, all well-equipped for the types of research they do. We share equipment, materials, and ideas across the Department.

Degree Options

The department offers a full range of courses leading to the M.S. and Ph.D. degrees on the following topics:

- plant pathogenic bacteria, fungi, nematodes, and viruses
- fungal genetics
- plant genetics
- disease control, diagnosis, ecology, epidemiology, and physiology
- host plant resistance to disease and abiotic stress
- biotechnology
- genomic applications
- bioinformatics
- plant molecular biology
- student proposal seminar
- professional communications
- special problems and topics for individualized study

A detailed list of courses is provided below along with specific curriculum requirements for the M.S. and Ph.D. programs.

Many of our faculty also participate in the interdepartmental program in Genetics, described elsewhere, which leads to a degree in Genetics.

Admission

Please see our departmental page for current admission deadlines and other details:

https://www.plantpath.k-state.edu/graduate/application-information/index.html

General requirements

Applicants are accepted into the program only if they are accepted by a specific faculty member who will serve as the Major Professor.

- Applicants must have a bachelor's degree, or be on schedule to complete a bachelor's degree prior to enrolling at KSU
- Applicants should have coursework or training in most of the following areas:
    - Biological sciences (such as botany, biology, plant science, plant pathology, entomology, mycology, microbiology, genetics, agronomy, horticulture)

    - Chemistry (such as inorganic, organic, biochemistry)
    - Mathematics
    - Physics
    - Statistics
- Relevant work experience or other professional training will also be considered
- Overall grade point average should be at least a B (3.0 on 4.0 point scale)
    - Grades in background courses in biology, math, chemistry, etc., should be A or B
- We do not require a GRE score
- International students whose native language is not English must provide evidence of English proficiency (see our application website for details)

Applications are completed online at http://www.k-state.edu/grad/application/index.html

Financial Assistance

Financial support may be available to qualified students. Current graduate research assistantship (GRA) information is on our application information page:

https://www.plantpath.k-state.edu/graduate/application-information/index.html

All applications are evaluated for available assistantships. Students may also be eligible to apply for fellowships from private and federal sources.

Doctor of Philosophy

Plant Pathology (Ph.D.)

The Plant Pathology department offers a full range of courses leading to the Ph.D. degree. These cover diseases caused by bacteria, fungi, nematodes, and viruses; bacterial and fungal genetics; disease control, diagnosis, ecology, epidemiology, and physiology; host plant resistance to disease; plant pathology methods; plant tissue culture and regeneration; plant cytogenetics; and student seminar, special problems and topics, and research.

Degree Options and Requirements

Ph.D. students are required to take at least 90 credit hours beyond the B.S. degree; graduate committees normally require at least 24 credit hours of formal class work at KSU past the M.S. The Graduate School will usually allow 30 credit hours to be transferred from a completed M.S. program.

Three of the following (or their equivalents)

- PLPTH 730 - Plant Nematology **Credits:** 3
- PLPTH 835 - Plant Virology **Credits:** 3
- PLPTH 840 - Plant Pathogenic Bacteria **Credits:** 2
- PLPTH 845 - Plant Pathogenic Fungi **Credits:** 3

At least one of the following

- PLPTH 880 - Plant Molecular Biology **Credits:** 3
- PLPTH 910 - Molecular Plant-Microbe Interactions **Credits:** 3

At least one of the following

- PLPTH 820 - Population Genetics **Credits:** 3
- PLPTH 905 - Ecology and Epidemiology of Plant Pathogens **Credits:** 3

At least one of the following

- EDCI 943 - Principles of College Teaching **Credits:** 3
- PLPTH 922 - Teaching Practicum in Plant Pathology **Credits:** 1-2
  Alternate teaching experience approved by the student's graduate committee.

Seminar

PLPTH 870 Seminar must be taken for a total of 3 credit hours. One credit hour of PLPTH 870 must be used for a proposal seminar within the first 2
years of entering the graduate program. One credit hour of PLPTH 870 must be used for the thesis defense seminar. At least one hour of
seminar must be in an area not related to the thesis work unless approved by the Seminar Committee.

- PLPTH 870 - Thesis/ Dissertation Proposal Seminar **Credits:** 1

Electives

At least four additional credit hours of electives must be taken in Plant Pathology.

Research

The Graduate School requires 30 credit hours minimum and notes that the number of research credits should accurately reflect the emphasis on research inherent in the Ph.D. degree.

- PLPTH 999 - Research in Plant Pathology for the PhD Degree **Credits:** 1-18

Free electives

39-40 credit hours

Master of Science

Plant Pathology (M.S.)

The Plant Pathology graduate program offers a full range of courses leading to the M.S. degree. These cover diseases caused by bacteria, fungi, nematodes, and viruses; bacterial and fungal genetics; disease control, diagnosis, ecology, epidemiology, and physiology; host plant resistance to disease; plant pathology methods; plant tissue culture and regeneration; plant cytogenetics; and student seminar, special problems and topics, and research.

Degree Options and Requirements

Candidates may choose to complete the thesis option or the report option.

Most students in our Department choose the thesis option and sign up for PLPTH 899. Students who do not desire the intensive research experience may choose to do a report instead, and will sign up for PLPTH 898 instead of 899. Because research experience is considered a prelude for a Ph.D., the report option is sometimes considered a "terminal degree;" i.e., students who complete the report option are much less likely to be accepted into a Ph.D. program. It is recommended only for those students who do not intend to later pursue a Ph.D.

Students who start in the research option and have taken PLPTH 899 for credit, and then switch to a report option, sign up for 2 credits of PLPTH 898 and leave the PLPTH 899 credit on their transcripts; however, the PLPTH 899 credit does not count toward the 30 credit-hour minimum requirement for the M.S. degree.

Required Courses

At least two of the following (or their equivalents)

- PLPTH 730 - Plant Nematology **Credits:** 3
- PLPTH 835 - Plant Virology **Credits:** 3
- PLPTH 840 - Plant Pathogenic Bacteria **Credits:** 2
- PLPTH 845 - Plant Pathogenic Fungi **Credits:** 3

At least one of the following

- PLPTH 610 - Biotechnology **Credits:** 3
- PLPTH 880 - Plant Molecular Biology **Credits:** 3
- PLPTH 910 - Molecular Plant-Microbe Interactions **Credits:** 3

At least one of the following

- AGRON 732 - Introduction to Plant Resistance to Pests **Credits:** 2
  or
- ENTOM 732 - Introduction to Plant Resistance to Pests **Credits:** 2
  or
- PLPTH 732 - Introduction to Plant Resistance to Pests **Credits:** 2
  and
- PLPTH 755 - Plant Resistance to Diseases **Credits:** 2
- PLPTH 820 - Population Genetics **Credits:** 3
- PLPTH 905 - Ecology and Epidemiology of Plant Pathogens **Credits:** 3

Seminar

One credit hour of PLPTH 870 Thesis/Dissertation Proposal Seminar must be used for a proposal seminar within the first three semesters of
enrollment and a noncredit, public seminar and oral defense is required prior to completion of the graduate program.

- PLPTH 870 - Thesis/ Dissertation Proposal Seminar **Credits:** 1

Electives

At least two additional credit hours of electives must be taken in Plant Pathology.
Select one of the following, depending upon the option (report or research) selected:

1. PLPTH 898 Master's Report (2 credit hours)
2. PLPTH 899 Research in Plant Pathology for the M.S. degree (6 credit hours minimum, 8 credit hours maximum; students can take more than 8 credit hours of PLPTH 899, but only 8 credit hours will count toward the degree and only 8 credit hours can be listed on the Program of Study).

- PLPTH 898 - Master's Report **Credits:** 1-2
- PLPTH 899 - Research in Plant Pathology for the MS Degree **Credits:** 1-18

College of Architecture, Planning and Design

Timothy de Noble, Dean
Katie Kingery-Page, Associate Dean

1127 Regnier Hall
785-532-5047
Fax: 785-532-6722
Email: apdesign@k-state.edu

The College of Architecture, Planning, and Design offers accredited professional degree programs in architecture, interior architecture and industrial design, landscape architecture, and regional and community planning.

The college consists of three academic departments: architecture, interior architecture and industrial design, and landscape architecture and regional and community planning.

The curriculum in architecture is accredited by the National Architectural Accrediting Board (NAAB). The interior architecture curriculum is accredited by the Council for Interior Design Accreditation (CIDA), and approved by the National Association of Schools of Art and Design (NASAD). The industrial design curriculum is approved by the National Association of Schools of Art and Design (NASAD). The landscape architecture curriculum is accredited by the Landscape Architectural Accreditation Board (LAAB). The planning curriculum is accredited by the American Institute of Certified Planners (AICP) in cooperation with the Association of Collegiate Schools of Planning (ACSP).

APDesign offers both professional and post-professional degrees with several points of entry to the accredited programs including accredited 5-year non-baccalaureate Master's degrees designed for high school graduates and transfer students, accredited 2-3+ year post-baccalaureate Master's degrees designed for students who hold a bachelor's degree in any field, non-accredited 2-year post-professional degrees for students who hold accredited degrees in one of the design/planning professions, as well as an interdisciplinary Ph.D. designed for students who have either earned a master's or a bachelor's degree coupled with relevant professional, research or creative work experience. Learn more about our application process and admission requirements for all degrees offered in APDesign.

The accredited degree programs will lead to the respective professional licensing or certification in the states that require such exams.

Click on any of the following links for information:

- Student academic creations
- Study Abroad
- Internship
- Kansas City Design Center (KCDC)

Student academic creations

All programs involve extensive project work. Students are advised to budget sufficient funds to cover the cost of equipment, materials, and supplies. Material costs will be higher than those published for non-studio curricula.

Student academic creations are subject to Kansas State University and Board of Regents intellectual property policies. The Regents policy states:

"The ownership of student works submitted in fulfillment of academic requirements shall be with the creator(s). The student, by enrolling in the institution, gives the institution a non-exclusive royalty-free license to mark on, modify, retain the work as may be required by the process of instruction, or otherwise handle the work as set out in the institution's intellectual property policy or in the course syllabus. The institution shall not have the right to use work in any other manner without the written consent of the creator(s)." "Otherwise handle," as referenced in this policy, includes display of student work in various media and use for accreditation purposes.

K-State's intellectual property policy.

Study Abroad

Students can earn academic credit by studying abroad in Italy, Australia, Denmark, England, Germany or the Czech Republic. Specific information is available from the Director of International Programs. Requirements vary among the departments.

Internship

Internships are available with private practitioners, corporations, and government agencies. Students earn academic credit and a salary while on internship. Specific requirements vary among the departments.

The opportunity to study in the heart of downtown Kansas City, at a nationally recognized, nonprofit-partnership comprised of local civic leaders, professional designers and planners and students who are actively seeking urban design and planning solutions for this major metropolitan area. For additional information go to http:www.kcdesigncenter.org/

Extracurricular activities

The college offers opportunities for students to become involved in student government, student chapters of professional societies, college ambassadors, peer educators, Open House, and the student journal, *OZ*.

Architecture

1088 Seaton Hall
785-532-5953
Fax: 785-532-1086
architecture@ksu.edu
www.apdesign.kstate.edu/arch/

Department Head:

Matthew Knox

Associate Head and Graduate Program Director:

R. Todd Gabbard

Academic Advising:

http://apdesign.k-state.edu/current-students/advising.html

Graduate Faculty:

Grant Alford, M.Arch., Princeton University
Genevieve Baudoin, M.Arch., Harvard University
Adulsak Chanyakorn, M.Arch., Southern Illinois University
*Gary J. Coates, M.Arch., North Carolina State University
*Robert J. Condia, MS, Columbia University
Timothy de Noble, M. Arch., Syracuse University
Jonathan Dessi-Olive, M.Arch, University of Pennsylvania
Christopher Fein, M.Arch., Yale University
R. Todd Gabbard, M.Arch., University of Florida
*Michael Gibson, M.Arch., Harvard University
Judy Gordon, M.Arch., Columbia University
Michael Grogan, M.Arch., Yale University
Nathan J. Howe, M.Arch., University of Texas
Matthew A. Knox, M.Arch., University of Virginia
Vladimir Krstic, M.Eng/Arch., Kyoto University - Japan
Michael McGlynn, M.Arch., University of Oregon
Torgeir Norheim, M.Arch., California Polytechnic State University
Wendy Ornelas, M. Arch., Oklahoma State University
Chad Schwartz, M.Arch, Arizona State University
Joseph Watson Jr., Ph.D., University of Pennsylvania

Emeritus Faculty

Wayne M. Charney, Ph.D., Northwestern University
Richard Hoag, M.Arch., University of Washington
Peter Magyar, Dr.Arch., Technical University of Budapest – Hungary
Lyn Norris-Baker, Ph.D., University of Houston
David H. Sachs, D. Arch., University of Michigan
David R. Seamon, Ph.D., Clark University
Susanne Siepl-Coates, M.Arch., University of California - Berkeley
Raymond Streeter, M.Arch., Harvard University
Carol Martin Watts, Ph.D., University of Texas - Austin
Donald Watts, M.Arch., University of California - Berkeley

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Overview

The Department of Architecture, situated within the interdisciplinary College of Architecture, Planning and Design, offers two degrees at the graduate level: an accredited, professional Master of Architecture and a research based post-professional Master of Science in Architecture.

Master of Architecture (M.ARCH)

The NAAB-accredited Master of Architecture program is based firmly upon the complementary foundations of general and architectural education. We emphasize mastery of the knowledge, skills and understandings essential to the artful creation of buildings, spaces and places. The faculty seeks to assure that our students receive extensive exposure to social, political, economic and technological perspectives that will aid them in functioning as effective leaders in a rapidly changing global context.

In emphasizing the architect's role as a designer of environments that responsibly address individual and societal needs, the professional Master of Architecture curriculum includes a sequence of design studios providing holistic examination of environmental design issues. Courses in history, theory, human behavior, construction, structural and environmental systems, planning, programming, and professional practice compliment students' work in the carefully orchestrated series of design studios.

The M.ARCH degree has two entry points. Students with little or no college experience should apply for the five year plus Non-Baccalaureate Master of Architecture. Students who currently have a Bachelor's Degree, regardless of field of study, should apply for the Post-Baccalaureate Master of Architecture program.

Master of Science in Architecture (M.S.ARCH)

The M.S. Architecture program is for students with a scholarly interest in the field of architecture. The M.S.ARCH allows students to critically explore a wide range of design-related issues in one of three areas of emphasis: Design Theory, Ecological and Sustainable Design, and Environmental Behavior and Place Studies. The 30 credit graduate degree, normally completed in one to two years, is comprised of seminars and faculty-guided individual study, and leads to a capstone project or thesis.

Special Activities and Programs

Short, carefully structured visits to cities in Kansas and nearby states during the first year of study introduce students to techniques of urban and architectural analysis and extend the range of their experience. Longer trips are taken in subsequent years. Second year students travel to Dallas; third year students travel to major cities such as New York, Boston, San Francisco, and Seattle. Led by faculty, students visit leading architectural firms, contemporary and historical buildings of importance, and examine critical urban design features. Design studio projects are often located in the city visited, so the trips are also site visits, which provide opportunities for detailed urban analysis.

Fourth-year students have access to extended elective field study opportunities, including the 30-week Architectural Internship program and semester-long study abroad programs in Italy, the Czech Republic, Denmark, Germany or other countries. Architectural internship and study abroad students return with renewed purpose and fresh insights to share with fellow students and faculty during their final year in the Master of Architecture program.

Fifth year students have the option of international travel based on the focus of their studio projects. The College also offers a year-long fifth year urban design studio at the Kansas City Design Center in Kansas City, Missouri.

Accreditation and Professional Practice

The completion of the Master of Architecture degree and a professional internship qualify our graduates to sit for the Architectural Registration Examination administered by each American state and territory to candidates who wish to become licensed as architects.

In the United States, most registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit professional degree programs in architecture offered by institutions with U.S. regional accreditation, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted an eight-year, three-year, or two-year term of accreditation, depending on the extent of its conformance with established educational standards.

Doctor of Architecture and Master of Architecture degree programs may require a preprofessional undergraduate degree in architecture for admission. However, the preprofessional degree is not, by itself, recognized as an accredited degree.

Kansas State University, College of Architecture Planning and Design, Department of Architecture offers the following NAAB-accredited degree programs:
M. Arch. (139 undergraduate credits + 31 graduate credits)
Next accreditation visit for all programs: 2025
From the 2016 NAAB Conditions for Professional Degree programs in Architecture.

Resources

College of Architecture, Planning and Design resources include the Paul Weigel Library, a professionally staffed branch of the university's main facility. It includes over 44,000 bound volumes and approximately 200 periodical subscriptions as well as audio-visual resources. K-State's Library has subscriptions to a broad range of scholarly databases, including architecture and design-oriented scholarship. Among other facilities supporting instruction and research in the College are a computer laboratory, a photography studio, and an artificial sky. The College has an extensive shop for woodworking, metalwork, and other materials. The shop can accommodate everything from small-scale model building activities to full-scale prototyping. The shop includes CAD/CAM equipment such as a large-bed CNC machine and laser cutters. Faculty from the College's other departments, including planning, landscape, interiors, and industrial design, often offer expert criticism for student projects and help foster a holistic approach to the designed environment. Students in the college enjoy a diverse range of lectures, seminars, exhibits, and guest critics throughout the academic year.

Master

Master of Architecture (M.ARCH) (non-baccalaureate track)

First semester (17 credit hours)

- COMM 105 Public Speaking IA **Credits:** (2)
- ENVD 201 Environmental Design Studio I **Credits:** (4)
- ENVD 203 Survey of the Design Professions **Credits:** (1)
- ENVD 204 Studio Seminar **Credits:** (1)
- ENVD 250 History of the Designed Environment I **Credits:** (3)
- MATH 100 College Algebra **Credits:** (3)
- General Studies Elective* **Credits:** (3)

Second semester (15 credit hours)

- ENGL 100 Expository Writing I **Credits:** (3)
- ENVD 202 Environmental Design Studio II **Credits:** (4)
- ENVD 251 History of the Designed Environment II **Credits:** (3)
- PHYS 115 Descriptive Physics **Credits:** (5)

Third semester (18 credit hours)

- ARCH 248 Fundamentals of Arch Technology **Credits:** (3)
- ARCH 274 Digital Architecture I **Credits:** (1)
- ARCH 302 Architectural Design Studio I **Credits:** (5)
- ARCH 350 History of Designed Environment III **Credits:** (3)
- ENGL 200 Expository Writing 2 **Credits:** (3)
- General Studies Elective* **Credits:** (3)

Fourth semester (16 credit hours)

- ARCH 304 Architectural Design Studio II **Credits:** (5)
- ARCH 325 Environmental Design and Society **Credits:** (3)
- ARCH 347 Structural Systems in Architecture I **Credits:** (4)
- ARCH 373 Digital Architecture II **Credits:** (1)
- ARCH 433 Building Construction Systems in Architecture I **Credits:** (3)

Supplemental Study (6 credit hours)

- General Studies Electives* **Credits:** (6)

Fifth semester (17 credit hours)

- ARCH 374 Digital Architecture III **Credits:** (1)
- ARCH 403 Architectural Design Studio III **Credits:** (5)
- ARCH 413 Environmental Systems in Architecture I **Credits:** (4)
- ARCH 448 Structural Systems in Architecture II **Credits:** (4)
- General Studies Elective* **Credits:** (3)

Sixth semester (17 credit hours)

- ARCH 404 Architectural Design Studio IV **Credits:** (5)
- ARCH 434 Building Construction Systems in Architecture II **Credits:** (3)
- ARCH 514 - Environmental Systems in Architecture II **Credits:** (3)
- LAR 500 - Site Planning and Design **Credits:** (3)
- General Studies Elective* **Credits:** (3)

Seventh semester (16 credit hours) ***

- ARCH 605 - Architectural Design Studio V **Credits:** (5)

- Planning Elective** **Credits:** (3)
- General Studies Elective* **Credits:** (5)
- Professional Support Elective** **Credits:** (3)

Eighth semester (14 credit hours)

- ARCH 606 - Architectural Design Studio VI **Credits:** (5)
- Professional Support Electives** **Credits:** (9)

Ninth semester (17 credit hours)

- ARCH 750 - Writing Intensive Architecture Seminar** **Credits:** (3)
- General Studies Electives* **Credits:** (3)
- ARCH 805 - Comprehensive Design Preparation **Credits:** (3)
- ARCH 817 - Architectural Design Studio VII **Credits:** (5)
- ARCH 853 - Professional Practice: Professional Responsibility **Credits:** (1)
- ARCH 854 - Professional Practice: Office Practices **Credits:** (1)
- ARCH 855 - Professional Practice: Discipline-Specific Topics **Credits:** (1)

Tenth semester (17 credit hours)

- ARCH 818 - Architectural Design Studio VIII **Credits:** (5)
- Architecture Seminar** **Credits:** (3)
- Professional Support Elective** **Credits:** (6)
- General Studies Elective (Undergraduate Level)* **Credits:** (3)

Notes

A minimum of twenty-nine (29) general studies elective credits must be in non-architectural studies courses. Courses that are part of the K-State 8 General Education program, in addition to any course in communications, history, humanities, social sciences, natural sciences, foreign languages, or mathematics will fulfill this requirement. They may be taken in pursuit of a minor. They may be taken any time prior to or during the Architecture program and may include KSU approved AP, IB, CLEP and transfer credit. General studies electives may include KSU approved extracurricular work as allowed by university regulations.

** The M.Arch degree requires twenty-seven (27) hours of professional support (PSE) electives, twelve (12) for undergraduate credit and fifteen (15) for graduate credit. Of the undergraduate credits, at least three (3) hours must be planning elective credits; the other nine (9) are usually fulfilled in the 8th semester as part of the 4th year study options. At least six (6) hours of the graduate level PSE must be architecture seminars. See the M. Arch Handbook for further details. Students may not count more than three (3) total hours of department approved extracurricular PSE credits (such as Oz, NOMAS, Plot Club etc.) toward graduation. PSE credits correspond to optional studies as listed in the 2014 NAAB Conditions for Accreditation.

*** Students are encouraged to participate in off-campus study in the 4th year of the program. Alternative study options for ARCH 606 include study abroad or attending the Kansas City Design Center. An optional academic internship program is also available. Students interested in participating in one or more of these options should meet with their academic advisor.

Most K-State 8 General Education requirements are fulfilled by required courses in the curriculum. See Academic Advising page on the APDesign website for specific K-State 8 information.

Master of Architecture (M.ARCH) (post-baccalaureate track)

First semester (16 credit hours)

- ARCH 248 Fundamentals of Architectural Technology **Credits:** (3)
- ARCH 274 Digital Architecture **Credits:** (1)
- ARCH 350 History of the Designed Environment III **Credits:** (3)
- ARCH 401 Accelerated Architectural Design Studio I **Credits:** (5)
- Professional Support Elective **Credits:** (2)
- Professional Support Elective **Credits:** (3)

Second semester (16 credit hours)

- ARCH 325 Environmental Design and Society **Credits:** (3)
- ARCH 347 Structural Systems in Architecture I **Credits:** (4)
- ARCH 373 Digital Architecture II **Credits:** (1)
- ARCH 402 Accelerated Architectural Design Studio II **Credits:** (5)
- ARCH 433 Building Construction Systems in Arch. I **Credits:** (3)

Third semester (17 credit hours)

- ARCH 374 Digital Architecture III **Credits:** (1)
- ARCH 403 Architectural Design Studio III **Credits:** (5)
- ARCH 413 Environmental Systems in Architecture I **Credits:** (4)
- ARCH 448 Structural Systems in Architecture II **Credits:** (4)
- Professional Support Elective **Credits:** (3)

Fourth semester (14 credit hours)

- ARCH 404 Architectural Design Studio IV **Credits:** (5)
- ARCH 434 Building Construction Systems in Architecture II **Credits:** (3)
- ARCH 514 - Environmental Systems in Architecture II **Credits:** (3)
- LAR 500 - Site Planning and Design **Credits:** (3)

Summer semester (8 credit hours)

- ARCH 605 - Architectural Design Studio V **Credits:** (5)
- Professional Support Elective* **Credits:** (3)

Fifth semester (17 credit hours)

- ARCH 805 - Project Programming **Credits:** (3)

- ARCH 806 - Architectural Design Studio VII **Credits:** (5)
- ARCH 853 - Professional Practice: Professional Responsibility **Credits:** (1)
- ARCH 854 - Professional Practice: Office Practices **Credits:** (1)
- ARCH 855 - Professional Practice: Discipline-Specific Topics **Credits:** (1)
- Professional Support Electives* **Credits:** (3)
- ARCH 750 - Writing Intensive Architecture Seminar **Credits:** (3)

Sixth semester (14 credit hours)

- ARCH 807 - Architectural Design Studio VIII **Credits:** (5)
- ARCH 808 - Architectural Design Communication **Credits:** (3)
- Professional Support Elective* **Credits:** (3)
- Architecture Seminar* **Credits:** (3)

Notes

Undergraduate Hours 72
Graduate Hours 31
Total Degree Requirement 103

Incoming students must meet the minimum requirements of the Graduate School – completion of their undergraduate degree and a 3.0 GPA over the last 60 hours of undergraduate study. International students must meet additional requirements of English proficiency, visa status, etc.

The following courses (or their equivalents) must be completed prior to entry into the post-baccalaureate track: MATH 100, COMM 105, PHYS 113 or PHYS 115, ENGL 200, a studio-based art or design course, and a course in architecture or art history.

*The Post-Baccalaureate degree requires 23 hours of professional support (PSE) electives, 11 for undergraduate credit and 12 for graduate credit. At least 6 hours of the 12 graduate level PSE must be architecture seminars. PSE credits correspond to optional studies as listed in the 2014 NAAB Conditions for Accreditation. See the M.Arch Handbook for further details.

In the United States, most registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit professional degree programs in architecture offered by institutions with U.S. regional accreditation, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted an eight-year, three-year, or two-year term of accreditation, depending on the extent of its conformance with established educational standards.

Doctor of Architecture and Master of Architecture degree programs may require a preprofessional undergraduate degree in architecture for admission. However, the preprofessional degree is not, by itself, recognized as an accredited degree.

Kansas State University, College of Architecture, Planning & Design, Department of Architecture offers the following NAAB-accredited degree programs:

M. Arch. (139 undergraduate credits + 31 graduate credits)

M. Arch. (non-preprofessional degree + 72 undergraduate credits + 31 graduate credits)

Next accreditation visit for all programs: 2017

Master of Science

Architecture (M.S.)

The Master of Science in Architecture program at Kansas State University is a post-professional program of study requiring a minimum of 30 semester credit hours for completion of the degree. The program usually requires two years in residence, and is designed to enable students to pursue specialized study in specific Architectural topics. It is not a NAAB accredited degree.

Specializations are available in Design Theory, Ecological and Sustainable Design, and Environment Behavior and Place Studies. These areas of specialized study in the Master of Science in Architecture program accommodate graduates of five or six year programs in architecture, interior architecture, or landscape architecture, and of certain four year baccalaureate degrees. Applicants are considered upon the merits of their academic backgrounds and proposed programs of study. Minimum entrance requirements established by the Kansas State University Graduate School include a bachelor's degree from an accredited university and a grade point average of B (3.0) or better in the last two years of undergraduate study (or a "first class" degree).

This program focuses on research, and therefore does not include the full range of topics required to qualify a student to sit for the examination to become licensed to practice architecture. Since research is the mode of learning at the limits of knowledge, our objective is to develop the capacities needed for independent study and research.

Approximately 10 students matriculate each year, and the total enrollment in the program is about 20.

Required coursework

All M.S.ARCH students will be required to take a class that provides them with the tools to facilitate in-depth academic research. Other coursework will be determined by selected area of emphasis and individual programs of study.

Thesis and Non-Thesis Options

There are two options in the Master of Science in Architecture program. Students must, in conjunction with their advisory committee, choose to pursue either a Thesis or Non-Thesis (coursework only) option. Both options require the submittal of a proposal to the Graduate Committee for approval. Both options require a final examination, which can be the defense of the thesis, or an exam based on coursework taken by the student.

A non-thesis option should have a defined focus within the general area of emphasis. A number of courses must be taken that relate to this focus.

Students may undertake an applied or theoretical research-oriented thesis which involves qualitative and/or quantitative approaches to a problem, or a design-oriented thesis that examines a physical design problem in depth from a number of points of view, including but not limited to theoretical, behavioral, economic, social, and cultural issues.

Design theory emphasis

The graduate emphasis in Design Theory enables the student to study specific issues in architectural and urban theory and history. The studies are not based on a rigidly defined set of theoretical courses, but an association of the student's academic interests and faculty expertise. In general, studies consist of the development of a theoretical framework, through selected courses and readings, which is subsequently used as an instrument for the analysis and examination of a particular architectural or urban phenomenon. The so defined inquiry ranges qualitatively from the poetic and speculative to the applicative and pragmatic. Analytical methods encompass a wide range of potential techniques from critical literature review to in-depth building design.

Required curriculum credits

Choose one of the following:

Non-Thesis Option

- ARCH 715 - Topics in Architecture Seminar **Credits:** 3
- ARCH 725 - Architecture Research Methods **Credits:** 3
- ARCH 830 - Advanced Architectural Studies **Credits:** 1-18
  Departmental Electives (10-13 credits)
  Other Electives (6 credits)

Thesis Option

- ARCH 715 - Topics in Architecture Seminar **Credits:** 3
- ARCH 725 - Architecture Research Methods **Credits:** 3
- ARCH 899 - Thesis **Credits:** 1-18
  Departmental Electives (9 credits)
  Other Electives (7 credits)

Total (30 credit hours)

Recommended electives

Students consult with their advisors to select courses that match their educational and research objectives. Appropriate graduate-level history and theory courses will be identified each semester from among current course offerings. Normally, at least one three hour course on an aspect of contemporary architecture is taken by students in the design theory option. It is recommended that international students take one or more courses concerned with American architecture and urbanism. The Design Theory emphasis requires nine of the sixteen elective credits be taken within the discipline; seven may be taken outside the Department of Architecture. Outside electives should be related to the student's overall program of study, to reinforce or complement other courses and their thesis topic.

- ARCH 700 - Topics in History of the Designed Environment **Credits:** 3
- ARCH 711 - Topics in Architectural Design Methods **Credits:** 3
- ARCH 715 - Topics in Architecture Seminar **Credits:** 3
- ARCH 830 - Advanced Architectural Studies **Credits:** 1-18
- PLAN 815 - Planning Theory, Ethics and Practice **Credits:** 3

Ecological and sustainable design

Ecological and Sustainable Design (ESD) focuses on the theory and practice of architectural and environmental design that makes maximum use of the same renewable energy flows and material cycling processes by which all other living systems on earth are sustained. It is an approach to design that is holistic in nature, encompassing a concern for ecological systems, building technological systems, and socio-cultural/existential systems. Ecological systems are studied not only as the context for architecture but also as models for design, providing the fundamental principles by which sustainable buildings are designed and operated. Energy and resource conserving building technologies as well as healthy and ecologically benign building materials are studied so that ecological design principles can be implemented in environmentally appropriate architecture. The emphasis also stresses the socio-economic, political, and

cultural/existential context of design as a complexly structured framework within which questions of sustainability must be considered and building designs implemented. The ESD option necessarily involves the development of a broad understanding of architectural and environmental design that is as much philosophical as it is practical.

Required curriculum credits

Choose one of the following:

Non-Thesis Option

- ARCH 716 - Topics in Environmental Systems in Architecture **Credits:** 3
- ARCH 725 - Architecture Research Methods **Credits:** 3
- ARCH 830 - Advanced Architectural Studies **Credits:** 1-18
  Electives (16-19 credits)

Thesis Option

- ARCH 716 - Topics in Environmental Systems in Architecture **Credits:** 3
- ARCH 725 - Architecture Research Methods **Credits:** 3
- ARCH 899 - Thesis **Credits:** 1-18
  Electives (16 credits)

Total (30 credit hours)

Recommended elective credits

In addition to completing the required courses, students are encouraged to select an area of focus that will support their thesis. The Ecological and Sustainable Design emphasis recognizes the interdisciplinary and collaborative nature of the sustainable approach to design. As such, at least six elective credits should be taken outside the Department. Students consult with their faculty advisors to develop a program of study that meets their individual needs and interests.

- AGEC 525 - Natural Resource And Economics **Credits:** 3
- ARCH 715 - Topics in Architecture Seminar **Credits:** 3
- ARCH 716 - Topics in Environmental Systems in Architecture **Credits:** 3
- BIOL 529 - Ecology **Credits:** 3
- CE 563 - Environmental Engineering Fundamentals **Credits:** 3
- ECON 527 - Environmental Economics **Credits:** 3
- GEOG 605 - Remote Sensing of the Environment **Credits:** 3
- GEOG 761 - Human Impact on the Environment **Credits:** 3
- IARC 625 - Lighting **Credits:** 3
- IARC 760 - IARC Seminar **Credits:** 0-18
- LAR 704 - Environmental Landscape Planning and Design **Credits:** 3
- LAR 720 - Public Lands and Natural Resources Law **Credits:** 3
- PHILO 595 - Environmental Ethics **Credits:** 3
- SOCIO 536 - Society and Natural Resources **Credits:** 3

Environment behavior and place studies emphasis

Environment-Behavior and Place Studies (EBPS) focuses on the behavioral and experiential aspects of person-environment relationships and their implications for environmental design and research. The program examines varying philosophic and methodological approaches to issues in environmentbehavior and place experience. Approaches to these issues range from quantitative, explanatory styles of research, emphasizing analytic philosophies, pragmatic strategies and solutions, to qualitative, descriptive styles emphasizing continental philosophical concerns. Within this framework, students' programs of study and research are individualized to meet particular interests and needs. After completing an introductory core curriculum, students may choose to concentrate on a specific environmental problem or approach, or to work creatively to combine several approaches and issues. Within environment-behavior and place studies, areas of focus can include community and facility design for special populations, experience of place and landscape, project planning and programming, or a special focus meeting the particular educational and career goals of an individual student. Students, in consultation with the advisor, combine elective courses within and outside the College to meet the needs of their specific areas of focus.

Required curriculum credits

Choose one of the following:

Non-Thesis Option

- ARCH 704 - Topics in Environment and Behavior **Credits:** 3
- ARCH 720 - Environment and Behavior **Credits:** 3
- ARCH 725 - Architecture Research Methods **Credits:** 3
- ARCH 830 - Advanced Architectural Studies **Credits:** 1-18
  Elective Courses (13-16 credits)

Thesis Option

- ARCH 704 - Topics in Environment and Behavior **Credits:** 3
- ARCH 720 - Environment and Behavior **Credits:** 3
- ARCH 725 - Architecture Research Methods **Credits:** 3
- ARCH 899 - Thesis **Credits:** 1-18
  Electives (13 credits)

Total (30 credit hours)

Recommended elective credits

Any of the thirteen elective credits in the Environment-Behavior and Place Studies Emphasis may be taken outside the Department. Courses in other Departments including Philosophy, Anthropology, Art and History may be considered, pending approval of the student's advisory committee.

- ARCH 703 - Environmental Aesthetics **Credits:** 3
- ARCH 711 - Topics in Architectural Design Methods **Credits:** 3
- ARCH 715 - Topics in Architecture Seminar **Credits:** 3
- IARC 831 - Facilities Management **Credits:** 2

Application Procedures

Admission to the Master of Science in Architecture program requires the following. All application materials must be submitted online via the Graduate School website. No hard copy applications or supporting documentation will be accepted.

The deadline for international applicants is January 1 for the fall and August 1 for the spring semester. The priority deadline for domestic applicants is February 1 for the fall and August 1 for the spring semester.

- **A 3.0 graduate point average** (on a 4.0 scale) in all higher education work to-date
- **A baccalaureate degree**
- **Complete the K-State Graduate School application**
- **Pay the application fee (Domestic $90 & International $100)**
- **Letters of recommendation:** Three letters of recommendation from professors and/or employers
- **Statement of objectives**
- **Transcripts:** Please include official transcripts from any institution of higher education you have attended. If the transcripts are not in English, a translated copy to English must be provided.
- **Portfolio:** Samples of academic/professional work, including a description of each project, its objectives, and your role and responsibilities. Samples of written work are also highly recommended.
- **TOEFL/IELTS scores (international students):** Applicants who are submitting iBT TOEFL (internet based) scores must have a minimum total score of 95. Applicants who are submitting an IELTS score must have a minimum total score of 7.0.
- **Financial statement (international students)**
- There is a non-refundable application fee of $90.00 for U.S. citizens/permanent residents and $100 for international applicants, which includes the department and Graduate School fees. Applications will not be considered without this fee. Applicants will pay their application fee online by credit card, debit card or online check through CollegeNet prior to submitting their application materials. The credit card must be issued by a U.S. financial institution. Visa, Master Card, American Express, and Discover are all accepted.

Graduate Teaching Assistant

A limited number of graduate teaching assistantships are available for students with particularly strong qualifications. Appointment as a teaching assistant requires knowledge in the subject matter of the course, human relations skills, and excellence in spoken and written English. Continuation of an appointment is contingent upon availability of positions and the GTA's academic performance as well as performance as a GTA.

Environmental Design and Planning

2132 Regnier Hall
785-532-5950
Fax: 785-532-1086
phdinfo@ksu.edu
http://apdesign.k-state.edu/

Director of Graduate Studies:

Anne Beamish, Ph.D.

Graduate Faculty:

*Anne Beamish, Ph.D., Massachusetts Institute of Technology
*Robert Condia, M.Arch and Building Design., Columbia University
*Huston Gibson, Ph.D., Florida State University
*Michael Gibson, M.Arch., Harvard Graduate School of Design
*Timothy D. Keane, Ph.D., University of Michigan
*Hyung Jin Kim, Ph.D., Texas A&M University
*Mary Catherine "Katie" Kingery-Page, M.L.A., Kansas State University
*Stephanie A. Rolley, M.C.P., Massachusetts Institute of Technology
*Lee R. Skabelund, M.L.A., University of Michigan

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Overview

Since the founding of the College in 1963, the faculty has based their relationships on the mutually held realization that the practice of any one of the design professions benefits from the interaction of their varied approaches to (re)shaping the built environment. The interdisciplinary doctoral program takes advantage of the diverse but interrelated nature of the college's design and planning disciplines. The Ph.D. program represents the comprehensive nature of our professional community and reflects how our faculty and the profession interact in practice.

The Environmental Design and Planning Ph.D. at the College of Architecture, Planning and Design is an interdisciplinary research-based degree program, with the aim of contributing to a more livable and ecologically-sustainable society. Our doctoral students are members of the College at-large, rather than a particular department, allowing students to draw from the sizeable and wide-ranging knowledge of faculty from the university and all three of our departments:

- Architecture,
- Interior Architecture and Industrial Design, and
- Landscape Architecture and Regional & Community Planning.

This program is designed to prepare graduates to teach at the graduate level and/or conduct research. In addition to teaching, our graduates also are well-equipped to undertake research to inform design and/or planning for governmental, environmental and planning agencies; developers; professional design firms; and international corporations that focus on environmental stewardship.

Areas of Emphasis

Our Ph.D. students undertake a wide range of research, but most topics are in one of the following interconnected areas:

- **Design** emphasizes the role of the designed environment in contributing to human well-being and provides opportunities, through practice and research, to explore issues that include pedagogy, neuroscience, perception, sustainability, history, and theory.

- **Planning** considers the theory and methods of public decision-making and the development of models and tools to understand and improve decision-making processes, both public and private.

- **Sustainability** explores ways by which the design and planning professions can better provide for the environmental and resource needs of people without sacrificing the ability of future generations to meet their needs.

- **Place Making** explores the importance of place in human life and considers ways by which design and policy might help to create robust, engaging, and supportive human environments.

Admission procedures

Previous Degrees. Applicants are normally expected to have earned a master's degree in the design or planning fields, but applicants with a master's degree in other fields may also be considered on a case-by-case basis.

Major Professor/Advisor. One member of the core Ph.D. faculty must accept mentorship responsibility for any student prior to their admittance to the doctoral program. Applicants are strongly encouraged to be in contact with Ph.D. faculty members with whom they share interests, and if possible, obtain a commitment from a faculty member to support the application.

Application Review Committee. Even with faculty commitment, the application must be reviewed and approved by the PhD committee before an offer of acceptance can be made.

Application Requirements

- K-State Graduate School application
- **3.0 grade point average** (on a 4.0 scale) in all higher education to-date.
- **Transcripts**: Include transcripts from any institution of higher education you have attended.
- **Statement of intent**: Statement of intent should be one to two pages and should include the prospective student's background, research interests, objectives, and reason for applying to the program.
- **Research Proposal**: This is a short (approximately 5 page) proposal that outlines the student's intended research. The proposal should be in standard form (i.e. Introduction (problem, importance, goals, research question); Background (literature review); Research Design (methodology and methods). The research will likely change after completing the coursework and consulting with the major professor, but the proposal will help us better understand the student's interests.
- **Evidence of Past Research**: The "portfolio" should include the prospective student's work, whether design projects, research projects, samples of written work, or other examples of creative and/or research efforts. **We are particularly interested in seeing evidence of previous research and published scholarly writing**.
- **Letters of recommendation**: Three letters of recommendation are required. At least two should be from academic references.
- **GRE score report**: Ph.D. applicants should have attained a score of 300 or better on the combined verbal and quantitative components of the GRE. Analytical writing should be 4.0 or above.
- **TOEFL/IELTS** report (international students): Prospective international students are required to have attained a minimal TOEFL score of 100, or a minimal IELTS score of 7.0. We accept TOEFL iBT's new set of scores called MyBest scores.
- **Financial statement** (international students)
- **Application fee** (Domestic $90 and International $100)

PhD requirements

The PhD program requires four years of full-time on-campus study.

All doctoral students with a previous master's degree are required to take a minimum total of 60 credit hours — a minimum of 30 credit hours of coursework in addition to 30 credit hours of doctoral research. The coursework must include: 2 mandatory ENVD courses (ENVD900 and 901), 2 research tool courses, 2 cross-disciplinary elective seminars, 1 APDesign seminar, 1 course outside of APDesign, and 6 credit hours of independent study or other coursework. All courses must be selected in consultation with the student's major professor (committee chair).

In addition to the coursework and doctoral research, students will submit an approved dissertation proposal, complete a written and oral preliminary exam, submit an approved dissertation, and complete an oral dissertation defense.

Dissertation Research Proposal. The student will complete a written document about their proposed research and present their proposal to the committee. The student's doctoral committee will then have the opportunity to discuss and provide written feedback. The committee must approve the proposal.

Preliminary examination. Students who have filed their program of study with the Graduate School and have completed at least 21 of the 30 hours of coursework with a grade point average of 3.0 or better, and who have an approved dissertation proposal are eligible to take the preliminary examination. The preliminary examination consists of both a written and oral exam. The purpose of the preliminary examination is to test the student's breadth and depth of knowledge in the proposed field of specialization, as well as the student's ability to explore problems on the boundaries of knowledge. Satisfactory performance in the examination is an indication that the student is prepared to perform independent work toward the doctoral degree. After passing the preliminary exam, the students advances to candidacy and becomes a doctoral candidate.

Writing the Dissertation. The PhD student will complete 30 credit hours of ENVD 999 (Dissertation Research). The dissertation will be a cohesive, original, and an independent contribution to scholarship. The research is to be performed under the guidance of the major professor and the supervisory committee and must be acceptable to them. The dissertation must follow guidelines outlined by the Graduate School.

Dissertation Defense. A final oral examination in defense of the dissertation will be conducted and evaluated by the doctoral committee. Two weeks prior to the dissertation defense the written dissertation will be available for review by the doctoral committee, other faculty, and graduate students. Other faculty and students are encouraged to attend the defense.

Interior Architecture and Industrial Design

1087 Seaton Hall
785-532-5992
Fax: 785-532-1086
iaid@k-state.edu
http://apdesign.k-state.edu/iaid

Department Head:

Nathan Howe

Director of Graduate Studies:

Interior Architecture
Kutay Güler

Industrial Design
Hernán Gregorio

Academic Advisor:

https://apdesign.k-state.edu/current-students/advising.html

Graduate Faculty:

David Brown, M Product Design, North Carolina State University
Mekin Elcioglu, Ph.D., Mimar Sinan University of Fine Arts, Turkey
Hernán Gregorio, M.S., Barcelona Higher School of Design, Spain
Kutay Guler, PFA, Anadolu University
Nathan Howe, MArch, University of Texas Austin
Neal Hubbell, MArch, University of Texas at Austin
Vibhavari Jani, MA, Wayne State University
Mariana Junqeuira, Ph.D., University of California - Irvine
Byungsoo Kim, Ph.D., North Carolina State University
Kendra Kirchmer, MFA, Rhode Island School of Design
Katrina Lewis, MRCP, Kansas State University

Graduate Faculty Associates

Michelle Wempe, BIA, Kansas State University

The Interior Architecture & Industrial Design department offers two master's degrees. One that focuses on Interior Architecture, or MIARC, and another on Industrial Design, or MINDD. These degrees engage our students to (re)envision building interiors and the consumer products of the future. Our students are instructed in the essential process of inquiry, design and the making of space and form. With innovative curriculums, our degrees prepare our students to become professional leaders in their industry to shape places we live and work and the products we use every day.

Master

Master of Industrial Design (M.I.N.D.D.) (post-baccalaureate track)

The Interior Architecture and Industrial Design department offers an accredited 2/3-year Master's degree in Industrial Design (MINDD), developed for students entering with a previously completed bachelor's degree in any program of study. Applicants with previous degrees in design will be viewed on a case-by-case basis. Depending on how closely your degree aligns with our curriculum, the years needed to complete the MINDD may be reduced from the three-year-plan. This degree is approved by the National Association of Schools of Art & Design (NASAD), and incorporates coursework in industrial design and furniture design.

Summer Study (9 credit hours)

- ENVD 201 Environmental Design Studio I **Credits:** 4
- ENVD 202 Environmental Design Studio II **Credits:** 4
- ENVD 203 Survey of Design Professions **Credits:** 1

First Semester (18 credit hours)

- IARC 307 IARC & INDD Design Studio I **Credits:** 5
- IARC 248 Fundamentals of Arch Technology **Credits:** 3
- ENGL 455 Exploring Creativity **Credits:** 3
- IARC 430 Visual Communication I **Credits:** 2
- ARCH 350 History of the Designed Environment III **Credits:** 3
- INDD 456 Intro to Product/Industrial Design **Credits:** 2

Second Semester (16 credit hours)

- INDD 320 INDD Design Studio II **Credits:** 5
- IARC 407 Design Workshop I **Credits:** 3
- IARC 412 Design Workshop Studio I **Credits:** 1
- IARC 431 Visual Communication II **Credits:** 2
- IMSE 250 Intro Manufacturing Processes & Sys **Credits:** 2
- INDD 350 Product Semantics **Credits:** 3

Third semester (17 credit hours)

- INDD 435 INDD Design Studio III **Credits:** 5
- IARC 602 Design Workshop II **Credits:** 3
- IARC 603 Design Workshop Studio II **Credits:** 1
- INDD 310 INDD Digital Applications **Credits:** 2
- INDD 325 Human Factors **Credits:** 3
- ENTRP 340 Intro to Entrepreneurship **Credits:** 3

Fourth Semester (17 credit hours)

- INDD 440 INDD Design Studio IV **Credits:** 5
- INDD 500 - Materials and Manufacturing Processes **Credits:** 3
- INDD 811 - Design Research **Credits:** 3
- IARC 625 - Lighting **Credits:** 3
- ART 303 Graphic Design for Non-majors **Credits:** 3

Summer Semester II (9 credit hours)

- IARC 416 - History of Furniture **Credits:** 3
- IARC 813 - Furniture Design Workshop Studio **Credits:** 1
- IARC 814 - Furniture Design Workshop **Credits:** 3

Fifth Semester (13 credit hours)

- INDD 810 - INDD Capstone Studio **Credits:** 5
- INDD 815 - Advanced Studio Programming **Credits:** 2

- IARC 416 - History of Furniture **Credits:** 3
- ENTRP 350 - Technology and Innovation Management **Credits** 3

Sixth semester (12 credit hours)

- INDD 822 - Advanced Industrial Design Studio **Credits:** 6
  or
- IARC 824 - Advanced Furniture Design Studio & Workshop **Credits:** 6
- IARC 891 - Contemporary Design Seminar **Credits:** 3
- INDD 800 - Professional Practice **Credits:** 3

Undergraduate Credit Hours: 80
Graduate Credit Hours: 31
Total (MINDD) Degree Requirement: 111

Notes:
Total credit hours required for graduate school program of study is 31. The following courses (or their equivalents) must be completed prior to entry in the post-baccalaureate track: MATH 100 and PHYS 113 or PHYS 115.

Master of Industrial Design (M.I.N.D.D.)(non-baccalaureate track)

The Master of Industrial Design is a five-year non-baccalaureate degree. It is designed to give students a diverse exposure in the industrial design profession. Students will focus on ergonomics, human factors, manufacturing processes, product semantics and design theory. Throughout the curriculum there will be a series of workshop courses to expose students to furniture design and fabrication skills. This degree will also have built into the curriculum field trips to major metropolitans, study abroad experiences and internship opportunities. This is a hands-on degree where students are given a balance of design theory, the hard science of manufacturing and the art of craft. This degree will also provide students with three courses toward an entrepreneurship minor. With just two more courses students can opt to receive their minor in entrepreneurship with their general electives.

Housed within the College of Architecture, Planning and Design and in the department of Interior Architecture and Product Design this degree will leverage a wide variety of expertise in designing products for the built environment. Our building in Seaton and Regnier Hall boast large well-appointed design labs. We also have a 20,000 square feet state of the art Fabrication Lab allowing our students to create products as small as a flash drive to as large as the interior cabin of a helicopter.

Our faculty care deeply about teaching students how to innovate for the future needs of the consumer, while still maintaining practices that are sustainable and responsible for our environment. Our Master of Industrial Design is a 170 credit hour degree which will give students a full spectrum of exposure to industry partnerships, study abroad and internship experiences. Our students learn to not only dream up what is next to come tomorrow but learn how to execute that dream today.

Master's Degree Requirements

Environmental Design Studies Program

First Semester (17 credit hours)

- COMM 105 - Public Speaking IA **Credits:** 2
- ENVD 201 - Environmental Design Studio I **Credits:** 4
- ENVD 203 - Survey of Design Professions **Credits:** 1
- ENVD 204 - Studio Seminar **Credits:** 1
- ENVD 250 - History of the Designed Environ I **Credits:** 3
- MATH 100 - College Algebra **Credits:** 3
- *General Elective **Credits:** 3

Second semester (15 credit hours)

- ENGL 100 - Expository Writing I **Credits:** 3
- ENVD 202 - Environmental Design Studio II **Credits:** 4
- ENVD 251 - History of the Designed Environ II **Credits:** 3
- PHYS 115 - Descriptive Physics **Credits:** 5

Industrial Design Program

Third semester (18 credit hours)

- IAPD 307 - IAPD Design Studio I **Credits:** 5
- IAPD 248 - Fundamentals of Arch Technology **Credits:** 3
- IAPD 430 - Visual Communication I **Credits:** 2
- ARCH 350 - History of the Designed Environ III **Credits:** 3
- ENGL 200 - Expository Writing II **Credits:** 3
- IAPD 456 - Intro to Product/Industrial Design **Credits:** 2

Fourth semester (16 credit hours)

- INDD 320 - IAPD Design Studio II **Credits:** 5
- IAPD 407 - Design Workshop I **Credits:** 3
- IAPD 412 - Design Workshop I Studio **Credits:** 1
- IAPD 431 - Visual Communication II **Credits:** 2
- INDD 350 - Product Semantics **Credits:** 3
- IMSE 250 - Intro to Manufact. Processes & Systems **Credits:** 2

Fifth semester (17 credit hours)

- INDD 310 - INDD Digital Applications **Credits:** 2
- INDD 325 - Human Factors in Industrial Design **Credits:** 3
- INDD 435 - INDD Design Studio III **Credits:** 5
- IAPD 416 - History of Furniture **Credits:** 3
- IARC 602 - Design Workshop II **Credits: 3**
- IARC 603 - Design Workshop Studio II **Credits:** 1

Sixth semester (17 credit hours)

- INDD 440 - INDD Design Studio IV **Credits:** 5
- INDD 500 - Materials & Manufacturing Processes **Credits:** 3
- IARC 625 - Lighting **Credits:** 3
- ART 303 - Graphic Design **Credits:** 3
- ENGL 455 - Exploring Creativity **Credits:** 3
  or
- LAR 311Unlocking Creativity **Credits:** 3

Summer options (7 credit hours)

- IARC 664 - Summer Internship **Credits:** 6
- IARC 665 - Summer Internship Report **Credits:** 1
  or
- Study Abroad **Credits:** 7
  or
- **Focus Courses **Credits:** 7

Seventh semester(14 credit hours)

- INDD 606 - INDD Design Studio V **Credits:** 5
- ***Electives **Credits:** 9
  or
- IARC 644 Internship **Credits:** 9
- IARC 645 Internship Report **Credits:** 5

Eighth semester (18 credit hours)

- INDD 800 - Professional Practice **Credits:** 3
- INDD 801 - IAPD Design Studio VI **Credits:** 5
- INDD 811 - Design Research **Credits:** 3
- IARC 813 - Design Workshop III **Credits:** 3
- IARC 814 - Design Workshop Studio III **Credits:** 1
- ENTRP 340 - Intro to Entrepreneurship **Credits:** 3

Ninth semester (16 credit hours)

- INDD 810 - INDD Capstone Studio **Credits:** 5
- INDD 815 - Advanced Studio Programming **Credits:** 2
- ENTRP 350 - Technology & Innovation Mgmt **Credits:** 3
- *General Elective - **Credits:** 6

Tenth semester (15 credit hours)

- INDD 822 - Adv Industrial Design Studio **Credits:** 6
  or
- IARC 824 - Adv Furniture Design Studio & Workshop **Credits:** 6

- IARC 891 - Contemporary Design Seminar **Credits:** 3
- *General Elective **Credits:** 6

Undergraduate Hours: 139

Graduate Hours: 31

Total (MINDD) Degree Requirements: 170

Notes

*A minimum of fifteen (15) general elective credits must be taken. General electives may be taken in pursuit of a minor. They may be taken any time prior to or during the Interior Architecture and Product Design program and may include K-State approved AP, IB, CLEP and transfer credit. Students may not count more than three (3) total hours of recreation credits toward graduation.

**Focus Courses include IAPD 605 Problems in IAPD, as well as other department head approved courses, including those associated with a minor program.

***Electives taken in the seventh semester should support student interest including professional electives and study abroad courses. These may also be associated with a minor program.

Master of Interior Architecture (M.I.A.R.C.) (post-baccalaureate track)

Click here to view the Interior Architecture and Product Design graduate program page.

Summer semester I (9 credit hours)

- ENVD 201 Environmental Design Studio I **Credits:** 4
- ENVD 202 Environmental Design Studio II **Credits:** 4
- ENVD 203 Survey of the Design Professions **Credits:** 1

First semester (18 credit hours)

- IAPD 307 IAPD Design Studio I **Credits:** 5
- IAPD 248 Fundamentals of Architectural Technology **Credits:** 3
- IAPD 409 Materials and Finishes **Credits:** 3
- IAPD 430 Visual Communication **Credits:** 2
- ARCH 350 History of the Designed Environment III **Credits:** 3
- IAPD 456 Intro to Product/Industrial Design **Credits:** 2

Second semester (14 credit hours)

- IAPD 320 IAPD Design Studio II **Credits:** 5
- IAPD 431 Visual Communication II **Credits:** 2
- ARCH 347 Structural Systems in Architecture I **Credits:** 4

- ARCH 433 Building Construction Systems in Architecture I **Credits:** 3

Third semester (17 credit hours)

- IAPD 435 IAPD Design Studio III **Credits:** 5
- IAPD 310 IAPD Digital Applications **Credits:** 2
- ARCH 413 Environmental Systems in Architecture I **Credits:** 4
- ARCH 448 Structural Systems in Architecture II **Credits:** 4
- IARC 811 - Design Research **Credits:** 2

Fourth semester (18 credit hours)

- IAPD 407 Design Workshop I **Credits:** 3
- IAPD 412 Design Workshop I Studio **Credits:** 1
- IAPD 440 IAPD Design Studio IV **Credits:** 5
- ARCH 514 - Environmental Systems in Architecture II **Credits:** 3
- IARC 625 - Lighting **Credits:** 3
- IARC 628 - Building Construction Systems IA **Credits:** 3

Summer semester II (9 credit hours)

- IARC 801 - IARC Design Studio V **Credits:** 5

Fifth semester (17 credit hours)

- IAPD 416 History of Furniture (3)
- IARC 753 - Professional Practice: Professional Responsibility **Credits:** 1
- IARC 754 - Professional Practice: Office Practices **Credits:** 1
- IARC 755 - Professional Practice: Discipline-Specific Topics **Credits:** 1
- IARC 810 - IAPD Capstone Studio **Credits:** 5
- IARC 813 - Furniture Design Workshop Studio **Credits:** 1
- IARC 814 - Furniture Design Workshop **Credits:** 3
- IARC 815 - Advanced Studio Programming **Credits:** 2

Sixth semester (9 credit hours)

- IARC 823 - Advanced Interior Architecture Design Studio **Credits:** 6
  OR
- IARC 824 - Advanced Furniture Design Studio & Workshop **Credits:** 6
- IARC 891 - Contemporary Design Seminar **Credits:** 3

Notes

Undergraduate Hours (80)
Graduate Hours (31)
Total (MIAPD) Degree Requirement (111)

Total credit hours required for graduate school program of study is 31. The following courses (or their equivalents) must be completed prior to entry in the post-baccalaureate track: MATH 100 and PHYS 113 or PHYS 115.

Master of Interior Architecture (non-baccalaureate MIARC)

Click here to view the Interior Architecture and Product Design graduate program page.

First semester (17 credit hours)

- COMM 105 Public Speaking **Credits:** 2
- ENVD 201 Environmental Design Studio I **Credits:** 4
- ENVD 203 Survey of Design Professions **Credits:** 1
- ENVD 204 Studio Seminar **Credits:** 1
- ENVD 250 History of the Designed Environment I **Credits:** 3
- MATH 100 College Algebra **Credits:** 3
- General Elective **Credits:** 3

Second semester (15 credit hours)

- ENGL 100 Expository Writing I **Credits:** 3
- ENVD 202 Environmental Design Studio II **Credits:** 4
- ENVD 251 History of Designed Environment II **Credits:** 3
- PHYS 115 Descriptive Physics **Credits:** 5

Third semester (18 credit hours)

- ARCH 350 History of Design Environment III **Credits:** 3
- ENGL 200 Expository Writing II **Credits:** 3
- IAPD 248 Fund Arch Tech **Credits:** 3
- IAPD 307 Interior Arch Design Studio I **Credits:** 5
- IAPD 430 Visual Communication I **Credits:** 2
- IAPD 456 Intro to Product/Industrial Design **Credits:** 2

Fourth semester (18 credit hours)

- IAPD 320 Interior Arch Design Studio II **Credits:** 5
- IAPD 412 Design Workshop I Studio **Credits:** 1
- IAPD 431 Visual Communication II **Credits:** 2
- ARCH 347 Structural Systems in Arch I **Credits:** 4
- ARCH 433 Building Construction Systems in Arch I **Credits:** 3
- IAPD 407 Design Workshop I **Credits:** 3

Fifth semester (18 credit hours)

- ARCH 413 Environmental Systems in Architecture I **Credits:** 4
- ARCH 448 Structural Systems in Arch II **Credits:** 4
- IAPD 409 Materials and Finishes **Credits:** 3
- IAPD 310 IAPD Digital Applications **Credits:** 2
- IAPD 435 IAPD Design Studio III **Credits:** 5

Sixth semester (17 credit hours)

- ARCH 514 - Environmental Systems in Architecture II **Credits:** 3
- IAPD 440 IAPD Design Studio IV **Credits:** 3
- IARC 625 - Lighting **Credits:** 3
- IARC 628 - Building Construction Systems IA **Credits:** 3
- *General Electives **Credits:** 3

Summer options (7 credit hours)

One of these three options to be completed after the sixth or eighth semester:

- IARC 664 - Summer Internship **Credits:** 6
- IARC 665 - Summer Internship Report **Credits:** 1
  OR
- Study Abroad **Credits:** 7
  OR
- Focus Courses** **Credits:** 7

Seventh semester (17 credit hours)

- IAPD 416 History of Furniture **Credits:** 3
- IARC 602 - Design Workshop II **Credits:** 3
- IARC 603 - Design Workshop II Studio **Credits:** 1
- IARC 753 - Professional Practice: Professional Responsibility **Credits:** 1
- IARC 754 - Professional Practice: Office Practices **Credits:** 1
- IARC 755 - Professional Practice: Discipline-Specific Topics **Credits:** 1
- IARC 801 - IARC Design Studio V **Credits:** 5
- IARC 811 - Design Research **Credits:** 2

Eighth semester (14 credit hours)

- IARC 606 - IARC Design Studio VI **Credits:** 5
- Electives*** **Credits:** 9
  OR
- IARC 644 - Internship **Credits:** 9
- IARC 645 - Internship Report **Credits:** 5

Ninth semester (14 credit hours)

- IARC 810 - IAPD Capstone Studio **Credits:** 5
- IARC 813 - Furniture Design Workshop Studio **Credits:** 1
- IARC 814 - Furniture Design Workshop **Credits:** 3
- IARC 815 - Advanced Studio Programming **Credits:** 2
- General Elective* **Credits:** 3

Tenth semester (15 credit hours)

- IARC 823 - Advanced Interior Architecture Design Studio **Credits:** 6
  OR
- IARC 824 - Advanced Furniture Design Studio & Workshop **Credits:** 6
- IARC 891 - Contemporary Design Seminar **Credits:** 3
- General Electives* **Credits:** 6

Notes

Undergraduate Hours: 139
Graduate Hours: 31
Total (MIARC) Degree Requirement: 170

*A minimum of fifteen (15) general elective credits must be taken. General electives may be taken in pursuit of a minor. They may be taken any time prior to or during the Interior Architecture program and may include K-State approved AP, IB, CLEP and transfer credit. Students may not count more than three (3) total hours of recreation credits toward graduation.

**Focus Courses include IARC 605 Problems in IARC, as well as other department head approved courses, including those associated with a minor program.

***Electives taken in the eighth semester should support student interest including professional electives and study abroad courses. These may also be associated with a minor program.

Landscape Architecture and Regional & Community Planning

1086 Seaton Hall
785-532-5961
Fax: 785-532-6722
Email: lrcpdept@ksu.edu
apdesign.k-state.edu/larcp

Department Head:

Stephanie Rolley

Graduate Faculty:

Kirby Barrett, MLA, Kansas State University
*Anne Beamish, Ph.D., Massachusetts Institute of Technology
Blake M. Belanger, MLA, University of Colorado at Denver
Jessica Canfield, MLA, Harvard Graduate School of Design
*Huston Gibson, Ph.D., Florida State University
Sara Hadavi, Ph.D., University of Illinois
Howard Hahn, MA, Kansas State University
Jon Hunt, MA, University of Colorado at Denver
Md Shakil bin Kashem, Ph.D., University of Illinois - Urbana-Champaign
*Hyung Jin Kim, Ph.D., Texas A&M University
Katie Kingery-Page, MLA, Kansas State University
Susmita Rishi, Ph.D., University of Washington
*Stephanie A. Rolley, MCP, Massachusetts Institute of Technology
*Lee R. Skabelund, MLA, University of Michigan
La Barbara James Wigfall, MCRP, Harvard University
Leslie Wren, MLA, North Carolina State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Graduate Faculty Associate:

Summer Lewis, M.I.S., University of Queensland
Christy Rodriguez, M.U.P., Texas A&M
Andrew Willis, J.D., Ave Maria School of Law

The Department of Landscape Architecture and Regional & Community Planning (LARCP) offers two accredited professional degree options: a Master of Landscape Architecture and a Master of Regional & Community Planning; an online Master of Science in Community Development; and a Community Planning Minor. The programs provide nationally recognized and affordable education, real world engagement, and a strong LARCP community. Graduates of the programs are in demand throughout the country in private practice, governmental service, and academic setting.

The Master of Landscape Architecture (MLA) and Master of Regional & Community Planning (MRCP) degrees have two entry points. Undergraduate students complete a five-year plus Non-Baccalaureate Track, see Department of Landscape Architecture and Regional & Community Planning page in the Undergraduate Catalog. Students who have completed a bachelor's degree, regardless of the field of study, complete a Post-Baccalaureate Track of study (3-years plus for the MLA and 2-years for the MRCP).

The MLA program prepares students to create and protect outdoor places of significance to the human experience; address ecological and social needs; plan for inclusive and equitable communities: to design landscape. Information about the resources and opportunities supporting students' preparation for professional practice is available at https://apdesign.k-state.edu/larcp/la/.

The MRCP program prepares students to be advocates for resilient cities that enhance quality of life in ways that are sustainable, equitable, and accessible to all citizens. We help communities address challenges related to resource conservation, growing of diverse populations, and continually changing technologies and value systems. Information about the resources and opportunities supporting students' preparation for professional practice is available at https://apdesign.k-state.edu/larcp/rcp/.

The Master of Science in Community Development prepares students to promote participatory democracy, sustainable development, rights, equality, economic opportunity, and social justice, through the organization, education and empowerment of people within their communities. Information about the fully online degree is available at https://online.k-state.edu/programs/community-development-masters/.

Master of Landscape Architecture

Master of Landscape Architecture (M.L.A.) (non-baccalaureate track)

Click here to view the Landscape Architecture and Regional & Community Planning graduate program page.

Landscape planning and design have been part of the curriculum at Kansas State University since 1871, being part of the required curriculum of all students in the early days of the institution. The first MLA student graduated in 1968. The degree is offered through two tracks:

- The non-baccalaureate track for students without a previous degree allows students to enter as freshmen and progress through the professional graduate degree in landscape architecture
- The post-baccalaureate track for students with a previous degree allows completion of a first professional degree in landscape architecture.

The MLA program is fully accredited by the Landscape Architectural Accreditation Board of the American Society of Landscape Architects.

Program definition

Our definition of advanced landscape architecture education includes development of a strong foundation of traditional knowledge and skills as well as self-motivated and defined scholarship. Throughout the program, we are committed to research as a means of learning and serving communities and individuals.

Graduates of our program practice in a wide variety of natural and built environments including urban, suburban, rural, wilderness, domestic, and international. Their practice takes place in small and large firms, multidisciplinary firms, design/build, land development, facility management, public practice, academic settings, and within other fields. Kansas State University MLA graduates provide leadership in and advocacy for stewardship of the land and the interface of people with the land. They seek longterm solutions concerning land health, human dignity, and aesthetic quality.

Program mission and objectives

We prepare graduates to be leaders in the field of landscape architecture by integrating student learning with faculty research and creative pursuits and engaging with partners in communities and other disciplines. Through these activities we significantly advance the discipline of landscape architecture. We blend our understanding of ecological and societal needs to design, plan and manage the interface between humans and nature to shape environments in ways that benefit both through critical thinking, design processes and implementation. Focused on preparation for professional practice, we are highly skilled, diligent, passionate people dedicated and working together in vertically integrated studios that are collaborative and energetic.

The MLA program and curriculum

There are two track offerings to the Master of Landscape Architecture, non-baccalaureate and post-baccalaureate degrees, both of which result in a master's degree.

MLA program Master's Report Option

First semester (17 credit hours)

- COMM 105 Public Speaking 1A (2)
- ENVD 201 Environmental Design Studio I (4)
- ENVD 203 Survey of Design Professions (1)
- ENVD 204 Studio Seminar (1)
- ENVD 250 History of the Designed Environment I (3)
- MATH 100 College Algebra (3)
- *General Elective (3)

Second semester (15 credit hours)

- ENVD 202 Environmental Design Studio II (4)
- PHYS 115 Descriptive Physics (5)
- ENVD 251 History of Designed Environment II (3)
- ENGL 100 Expository Writing I (3)

Third semester (14 credit hours)

- LAR 220 - Drawing Landscapes Studio (5)
- LAR 230 - Modeling Landscapes Studio (5)
- LAR 101 - Introduction to Landscape Arch (3)
- LAR 350 - Introduction to Plants (1)
- LAR 010 - Travel: Regional 1 (0)

Fourth semester (17 credit hours)

- LAR 020 - Travel: Regional 2 (0)
- LAR 322 - Environmental Issues and Ethics (3)
- LAR 351 - Plant Patterns and Use (1)
- LAR 420 - Socio-Ecological Systems Studio (5)
- LAR 433 - Landscape History & Design Studio (5)
- ENGL 200 - Expository Writing II (3)

Summer Study

- LAR 030 - Travel: Narratives and Placemaking
- LAR 352 - Landscape Performance Lab (3)
- LAR 425 - Narratives and Placemaking Seminar (2)
- LAR 430 - Narratives and Placemaking Studio (4)

Fifth semester (16 credit hours)

- LAR 040 - Travel: Major City 1 (0)
- LAR 353 - Plant Selection (1)

- LAR 438 - Site Design Implementation (5)
- LAR 442 - Site Research & Design Studio (5)
- LAR 444 - Career and Academic Planning (2)
- PLAN 315 - Introduction to City Planning (3)

Sixth semester (15 credit hours)

- LAR 050 - Travel: Major City 2 (0)
- LAR 354 - Landscape Restoration (1)
- LAR 439 - Master Plan Design & Implementation (5)
- LAR 445 - Pro Prac: Career Development Comm (1)
- LAR 646 - Community Engagement Studio (5)
- *General Elective (3)

Seventh semester (14 credit hours)

- LAR 740 - Advanced Studio **Credits:** 5
- LAR 725 - Research Methods **Credits:** 3
- LAR 750 - Advanced Seminar **Credits:** 2
- LAR 754 - Professional Practice: Office Practices **Credits:** 1
  ***Professional Elective (3)

Eighth semester (12-14 credit hours)

KCDC or Study Abroad Option:

- LAR 703 - Landscape Architecture Off-Campus Studio **Credits:** 5
- ***Professional Electives **Credits: 9**
  OR
  Internship Option:
- LAR 703 - LA Off-Campus Studio (5)
- LAR 655 - Landscape Architecture Professional Internship **Credits:** 7-9

Ninth semester (11 credit hours)

- LAR 705 - Master's Project Studio 1 **Credits:** 5
- LAR 897 - Proposal Writing **Credits:** 2
- LAR 753 - Professional Practice: Professional Responsibility **Credits:** 1
- ***Professional Elective (3)

Tenth semester (11 credit hours)

- LAR 710 - Master's Project Studio 2 **Credits:** 3
- LAR 898 - Master's Report **Credits:** 2
- ***Professional Elective (6)

MLA program Master's Thesis Option

First Semester (17 credit hours)

- COMM 105 Public Speaking 1A (2)
- ENVD 201 Environmental Design Studio I (4)
- ENVD 203 Survey of Design Professions (1)
- ENVD 204 Studio Seminar (1)
- ENVD 250 History of the Designed Environment I (3)
- MATH 100 College Algebra (3)
- *General Elective (3)

Second semester (15 credit hours)

- ENGL 100 Expository Writing I (3)
- ENVD 202 Environmental Design Studio II (4)
- ENVD 251 History of the Designed Environment II (3)
- PHYS 115 Descriptive Physics (5)

Third semester (14 credit hours)

- LAR 220 Drawing Landscapes Studio (5)
- LAR 230 Modeling Landscapes Studio (5)
- LAR 101 Introduction to Landscape Arch (3)
- LAR 350 Introduction to Plants (1)
- LAR 010 Travel: Regional 1 (0)

Fourth semester (17 credit hours)

- LAR 433 Landscape History & Design Studio (5)
- LAR 420 Socio-Ecological Systems Studio (5)
- LAR 322 Ethics and Environmental Dilemmas (3)
- LAR 351 Plant Patters and Use (1)
- LAR 020 Travel: Regional 2 (0)
- ENGL 200 Expository Writing II (3)

Summer Study (9 credit hours)

- LAR 430 Narratives and Placemaking Studio (4)
- LAR 425 Narratives and Placemaking Seminar (2)
- LAR 352 Landscape Performance Lab (3)
- LAR 030 Travel: Narratives and Placemaking (0)

Fifth semester (16 credit hours)

- LAR 442 Site Research & Design Studio (5)
- LAR 438 Site Design Implementation (5)
- LAR 353 Plant Selection (1)
- LAR 040 Travel: Major City 1 (0)
- LAR 444 Career and Academic Planning (2)
- PLAN 315 Introduction to City Planning (3)

Sixth semester (15 credit hours)

- LAR 646 - Community Engagement Studio **Credits:** 5
- LAR 439 Master Plan Design & Implementation (5)
- LAR 354 Landscape Restoration (1)
- LAR 050 Travel: Major City 2 (0)
- LAR 445 Pro Prac: Career Development Comm. (1)
- *General Elective (3)

Seventh semester (12-14 credit hours)

- LAR 703 - Landscape Architecture Off-Campus Studio **Credits:** 5
- Professional Electives (9)
  OR
  Internship Option:
- LAR 703 LA Off-Campus Studio (5)
- LAR 655 - Landscape Architecture Professional Internship **Credits:** 7-9

Eight semester (15 credit hours)

- LAR 740 - Advanced Studio **Credits:** 5
- LAR 750 - Advanced Seminar **Credits:** 2
- LAR 897 - Proposal Writing **Credits:** 2
- LAR 725 - Research Methods **Credits:** 3
- ***Professional Elective (3)

Ninth semester (11 credit hours)

- LAR 753 - Professional Practice: Professional Responsibility **Credits:** 1
- LAR 754 - Professional Practice: Office Practices **Credits:** 1
- LAR 899 - Research in Landscape Architecture **Credits:** 1-18
- ***Professional Electives (6)

Tenth semester (10 credit hours)

- LAR 899 - Research in Landscape Architecture **Credits:** 1-18
- ***Professional Electives (6)

Notes

Undergraduate Hours: 118
Graduate Hours: 32
Total (MLA(Degree Requirement: 152

The K-State 8 General Education areas are covered by courses required in the Landscape Architecture curriculum. Information about the K-State 8 is available on the web and in the university catalog.

All required courses taught in the landscape architecture and regional & community planning programs that are counted toward the degree must be passed with a grade of C or better. Graduate School admission is contingent upon completion of all required courses in the 3rd - 6th semesters.

*A minimum of six (6) general elective credits must be taken. General elective may be taken in pursuit of a minor. They may be taken any time prior to or during the Landscape Architecture program and may include KSU approved AP, IB, CLEP and transfer credit. Students may not count more than 3 total hours of recreation credits toward graduation.

**Off-campus semester: Two distinct study opportunities are offered, each requiring 14 credit hours. The study abroad and the internship options have course requirements that substitute for the 9 professional elective credit requirements. If the internship option is not selected during the seventh or eighth semester, a summer internship is required before graduation.

*** Six (6) credit hours of the required graduate level professional electives must be LAR courses. Students may petition for an exception to this policy if there is a demonstrated academic benefit.

Master of Landscape Architecture (M.L.A.) (post-baccalaureate track)

Click here to view the Landscape Architecture and Regional & Community Planning graduate program page.

Landscape planning and design have been part of the curriculum at Kansas State University since 1871, being part of the required curriculum of all students in the early days of the institution. The first MLA student graduated in 1968. The degree is offered through two tracks:

- The non-baccalaureate track for students without a previous degree allows students to enter as freshmen and progress through the professional graduate degree in landscape architecture
- The post-baccalaureate track for students with a previous degree allows completion of a first professional degree in landscape architecture.

The MLA program is fully accredited by the Landscape Architectural Accreditation Board of the American Society of Landscape Architects.

Program Definition

Our definition of advanced landscape architecture education includes development of a strong foundation of traditional knowledge and skills as well as self-motivated and defined scholarship. Throughout the program, we are committed to research as a means of learning and serving communities and individuals.

Graduates of our program practice in a wide variety of natural and built environments including urban, suburban, rural, wilderness, domestic, and international. Their practice takes place in small and large firms, multidisciplinary firms, design/build, land development, facility management, public practice, academic settings, and within other fields. Kansas State University MLA graduates provide leadership in and advocacy for stewardship of the land and the

interface of people with the land. They seek longterm solutions concerning land health, human dignity, and aesthetic quality.

The MLA program and curriculum

There are two track offerings to the Master of Landscape Architecture, non-baccalaureate and post-baccalaureate degrees, both of which result in a master's degree.

MLA program Master's Report Option

First semester (14 credit hours)

- LAR 220 - Drawing Landscapes Studio (5)
- LAR 230 - Modeling Landscapes Studio (5)
- LAR 101 - Introduction to Landscape Architecture (3)
- LAR 350 - Introduction to Plants (1)
- LAR 010 - Travel: Regional 1 (0)

Second semester (14 credit hours)

- LAR 433 - Landscape History and Design Studio (5)
- LAR 420 - Socio-Ecological Systems Studio (5)
- LAR 351 - Plant Patterns and Use (1)
- LAR 020 - Travel: Regional 2 (0)
- ***Professional Elective (3)

Summer study (9 credit hours)

- LAR 430 - Narratives and Placemaking Studio (4)
- LAR 425 - Narratives and Placemaking Seminar (2)
- LAR 352 - Landscape Performance Lab (3)
- LAR 030 - Travel: Narratives and Placemaking (0)

Third semester (14 credit hours)

- LAR 353 - Plant Selection (1)
- LAR 040 - Travel: Major City 1 (0)
- LAR 438 - Site Design Implementation (5)
- LAR 442 - Site Research and Design Studio (5)
- ***Professional Elective (3)

Fourth semester (16 credit hours)

- LAR 439 - Master Plan Design and Implementation (5)
- LAR 648 - Advanced Studio (5)

- LAR 750 - Advanced Seminar (2)
- LAR 354 - Landscape Restoration (1)
- LAR 725 - Research Methods (3)

Fifth semester (9 credit hours)

- LAR 705 - Master's Project Studio 1 **Credits:** 5
- LAR 897 - Proposal Writing **Credits:** 2
- LAR 753 - Professional Practice: Professional Responsibility **Credits:** 1
- LAR 754 - Professional Practice: Office Practices **Credits:** 1

Sixth semester (11 credit hours)

- LAR 710 - Master's Project Studio 2 **Credits:** 3
- LAR 898 - Master's Report **Credits:** 2
- ***Professional Electives (6)

MLA program Master's Thesis Option

First semester (14 credit hours)

- LAR 220 Drawing Landscapes Studio (5)
- LAR 230 Modeling Landscapes Studio (5)
- LAR 101 Introduction to Landscape Arch (3)
- LAR 350 Introduction to Plants (1)
- LAR 010 Travel: Regional 1 (0)

Second semester (14 credit hours)

- LAR 433 Landscape History & Design Studio (5)
- LAR 420 Socio-Ecological Systems Studio (5)
- LAR 351 Plant Patters and Use (1)
- LAR 020 Travel: Regional 2 (0)
- Professional Elective (3)

Summer Study (9 credit hours)

- LAR 430 Narratives and Placemaking Studio (4)
- LAR 425 Narratives and Placemaking Seminar (2)
- LAR 352 Landscape Performance Lab (3)
- LAR 030 Travel: Narratives and Placemaking (0)

Third semester (14 credit hours)

- LAR 442 Site Research & Design Studio (5)

- LAR 438 Site Design Implementation (5)
- LAR 040 Travel: Major City 1 (0)
- LAR 353 Plant Selection (1)
- LAR 725 - Research Methods **Credits:** 3

Fourth semester (15 credit hours)

- LAR 439 Master Plan Design & Implementation (5)
- LAR 740 - Advanced Studio **Credits:** 5
- LAR 750 - Advanced Seminar **Credits:** 2
- LAR 354 Landscape Restoration (1)
- LAR 897 - Proposal Writing **Credits:** 2

Fifth semester (11 credit hours)

- LAR 753 - Professional Practice: Professional Responsibility **Credits:** 1
- LAR 754 - Professional Practice: Office Practices **Credits:** 1
- LAR 899 - Research in Landscape Architecture **Credits:** 1-18
- ***Professional Electives (6)

Sixth semester (10 credit hours)

- LAR 899 - Research in Landscape Architecture **Credits:** 1-18
- ***Professional Electives (6)

Notes

Undergraduate Hours: 53
Graduate Hours: 34
Total (MLA(Degree Requirement: 87

Total credit hours required for graduate school program of study = 34.

All required courses taught in the landscape architecture and regional & community planning programs that are counted toward the degree must be passed with a grade of C or better.

*** Six (6) credit hours of the required graduate level professional electives must be LAR courses. Students may petition for an exception to this policy if there is a demonstrated academic benefit.

Master of Regional and Community Planning

Master of Regional and Community Planning (M.R.C.P.)

Program Definition

The Master of Regional & Community Planning integrates the concept of comprehensive community development planning in an environmental context with considerations for social, economic, cultural and political issues in the community while recognizing the importance of financial management, private enterprise-government relations, and citizen participation in community decision making. Core courses reflect the impact of these key concerns on traditional planning activities, while exploring related ethical issues in depth.

With a firm educational foundation in basic planning and analytical techniques, management, human relations, and ethics, today's MRCP graduate will have the skills and judgment to become tomorrow's successful practicing planner.

Graduates of our program become directors or managers of community development / city planning departments, economic development agencies, housing or related departments and agencies in cities, small communities, counties and regions. Some graduates may use the same educational background to become directors of planning or related activities in private consulting firms and research organizations, while others may enter the field of real estate development and a host of related disciplines.

Program Mission and Objectives

We prepare graduates to be effective advocates of resilient cities and responsible for community growth and redevelopment. We engage in the exchange of ideas that develop strategic visioning to enhance quality of life in ways that are sustainable, equitable, and accessible to all our citizens. We contribute to the expansion of knowledge through research and its dissemination, outreach to various constituents, and professional education grounded in creative and critical thinking. Students and faculty engage in exploration, analysis, synthesis, and resolution of planning, design and management issues. Our aim is to help communities effectively address challenges related to resource conservation, growing of diverse populations, and continually changing technologies and value systems.

Non-Baccalaureate Master of Regional and Community Planning

First semester (15 credit hours)

- ENVD 203 - Survey of the Design Professions **Credits:** 1
- MATH 100 - College Algebra **Credits:** 3
- COMM 105 - Public Speaking 1A **Credits:** 2
- Humanities/Design Elective* **Credits:** 3
- Social Science/History Elective* **Credits:** 3
- Social Science/Sociology Elective* **Credits:** 3

Second semester (16 credit hours)

- ENGL 100 - Expository Writing 1 **Credits:** 3
- Humanities/Design Electives* **Credits:** 6
- Natural Science Elective with Lab* **Credits:** 4
- General Elective* **Credits:** 3

Third semester (15 credit hours)

- GEOG 302 - Cartography **Credits:** 3
- PLAN 315 - Introduction to City Planning **Credits:** 3

- PLAN 320 - Community Development Field Workshop **Credits:** 3
- Social Science/Economics Elective **Credits:** 3
- *General Elective **Credits:** 3

Fourth semester (16 credit hours)

- PLAN 215 - World Cities **Credits:** 3
- LAR 322 - Environmental Issues & Ethics **Credits:** 3
- ENGL 200 - Expository Writing II **Credits:** 3
- General Elective* **Credits:** 3
- GEOG 508 - Geographic Information Systems I **Credits:** 4

Fifth semester (13 credit hours)

- PLAN 010 - Field Trip 1 **Credits:** 0
- PLAN 510 - Composition and Representation for Planners **Credits:** 2
- PLAN 444 - Career and Academic Planning **Credits:** 2
- General Elective **Credits:** 6
- PLAN 640 - Urban Design and Development **Credits:** 3

Sixth semester (14 credit hours)

KCDC or Study Abroad Option:

- PLAN 703 - Off-Campus Studies **Credits:** 5
- Professional Electives **Credits:** 9

Internship Option:

- PLAN 655 - Land Development Planning **Credits:** 3
- PLAN 703 - Off-Campus Studies **Credits:** 5

Seventh semester (12 credit hours)

- PLAN 707 - Writing and Thinking the City **Credits:** 3
- PLAN 720 - Infrastructure and Plan Implementation **Credits:** 3
- PLAN 801 - Knowledge Methods **Credits:** 3
- Professional Elective **Credits:** 3

Eighth semester (13-14 credit hours)

Thesis Option (13 credit hours):

- LAR 500 - Site Planning and Design **Credits:** 3
- PLAN 020 - Planning Field Trip 2 **Credits:** 0
- PLAN 812 - Planning Theory & Law **Credits:** 3
- PLAN 836 - Plan Making **Credits:** 5
- PLAN 897 - Proposal Writing **Credits:** 2-3

Report Option (14 credit hours):
• LAR 500 - Site Planning and Design **Credits:** 3
• PLAN 020 - Planning Field Trip 2 **Credits:** 0
• PLAN 812 - Planning Theory & Law **Credits:** 3
• PLAN 836 - Plan Making **Credits:** 5
• PLAN 897 - Proposal Writing **Credits:** 3

Ninth semester (12 credit hours)

Thesis Option:

- PLAN 730 - Planning Professional Practice **Credits:** 3
- PLAN 899 - Research in Planning **Credits:** 0-18
- Professional Electives **Credits:** 6

Report Option:

- PLAN 730 - Planning Professional Practice **Credits:** 3
- Professional Electives **Credits:** 9

Tenth semester (11-12 credit hours)

Report Option (11 credit hours):

- PLAN 705 - Master's Project **Credits:** 3
- PLAN 898 - Master's Report **Credits:** 2

Professional Electives **Credits:** 6

Thesis Option (12 credit hours):

- PLAN 899 - Research in Planning **Credits:** 0-18
- Professional Electives **Credits:** 9

Total Credits Required for the Non-Baccalaureate MRCP Degree (138 hours)

Undergraduate Hours: 92

Graduate Hours: 46

*A minimum of fifteen (15) general elective credits must be taken. General electives may be taken in pursuit of a minor. They may be taken any time prior to or during the Regional and Community Planning program and may include KSU approved AP, IB, CLEP and transfer credit. Students may not count more than three (3) total hours of recreation credits toward graduation.

Professional Electives must include 6 graduate credit hours of PLAN courses.

All required courses taught in the Landscape Architecture and Regional & Community Planning Programs that are counted toward the degree must be passed with a grade of C or better.

Post-Baccalaureate Master of Regional and Community Planning

First semester (12 credit hours)

- PLAN 707 - Writing and Thinking the City **Credits:** 3
- PLAN 720 - Infrastructure and Plan Implementation **Credits:** 3
- PLAN 801 - Knowledge Methods **Credits:** 3
- Professional Elective **Credits:** 3

Second semester (10-11 credit hours)

Thesis Option (10 credit hours):

- PLAN 812 - Planning Theory & Law **Credits:** 3
- PLAN 836 - Plan Making **Credits:** 5
- PLAN 897 - Proposal Writing **Credits:** 2-3
- PLAN 020 - Field Trip 2 **Credits:** 0

Report Option (11 credit hours):
• PLAN 812 - Planning Theory & Law **Credits:** 3
• PLAN 836 - Plan Making **Credits:** 5
• PLAN 897 - Proposal Writing **Credits:** 3
• PLAN 020 - Planning Field Trip 2 **Credits:** 0

Third semester (12 credit hours)

Thesis Option (12 credit hours):

- PLAN 730 - Planning Professional Practice **Credits:** 3
- Professional Electives **Credits:** 6
- PLAN 899 - Research in Planning **Credits:** 0-18

Report Option (12 credit hours):
• PLAN 730 - Planning Professional Practice **Credits:** 3
• Professional Electives **Credits:** 9

Fourth semester (11-12 credit hours)

Report Option (11 credit hours):

- PLAN 705 - Master's Project **Credits:** 3
- PLAN 898 - Master's Report **Credits:** 2
- Professional Elective **Credits:** 3
- Professional Elective **Credits:** 3

Thesis Option (12 credit hours):

- PLAN 899 - Research in Planning **Credits:** 0-18
- Professional Elective **Credits:** 3
- Professional Elective **Credits:** 3
- Professional Elective **Credits:** 3

Total credits required for the post-baccalaureate MRCP degree (46 hours)

Students in the post-baccalaureate track must complete PLAN 315 Introduction to City Planning prior to their first semester of study or demonstrate proficiency through similar previous coursework. They must also demonstrate basic proficiency in Geographic Information Systems through previous coursework and/or employment prior to enrollment.

Professional Electives must include 6 graduate credit hours of PLAN courses.

All required courses taught in the landscape architecture and regional & community planning programs that are counted toward the degree must be passed with a grade of C or better.

Total credit hours required for Graduate School program of study = 46

Master of Science

Community Development (M.S.)

(Distance Education)

The program serves community leaders, practitioners and those committed to people and places in fields such as: community and regional planning, parks and recreation, housing, applied sociology, environmental and social justice, community economic development, cooperative extension services, and non-profit sectors. The community development master's degree program provides the skills, information and networks needed to facilitate sustainable and prosperous community change. It equips practitioners with the tools necessary to build a community in the 21st Century.

This Master of Science in Community Development is a 36 credit hour online collaborative inter-institutional Degree program offered through the department of Landscape Architecture and Regional & Community Planning in cooperation with the Great Plains Interactive Distance Education Alliance (GPIDEA). Participating universities include Kansas State University, Iowa State University, North Dakota State University, University of Nebraska, and South Dakota State University. Students may enroll in this collaborative program at any of the participating universities. The key distinction between the degrees offered by each university lies in the capstone experience of their graduates. Details about the K-State MS CD capstone experience are available here: http://apdesign.k-state.edu/larcp/academic/mscd/CommunityDevelopmentCapstone2014v121014.pdf. While the program name and degree name may vary by university, the curriculum will be comparable, and courses offered in the program will be the collaborative result of a divergent faculty from within the participating universities.

Program Mission:

The Community Development Program provides professional preparation for career development or advancement. We prepare graduates to address challenges faced by communities across rural to urban United States and other countries. Community Development graduates actively promote positive social, economic, cultural and environmental change and engage citizens in democratic decision-making and action. A diverse faculty from several institutions teaches critical thinking, ethical consideration, careful planning and involvement of all stakeholders.

Program of Study Requirements:

A Program of Study is required to be filed with the Graduate School upon completion of 14 credit hours.

Program Administration:

The MS program in Community Development is officially administered by the Department of Landscape Architecture and Regional & Community Planning, under the auspices of the Graduate School at Kansas State University, and in conjunction with the Institute for Academic Alliances at Kansas State University. The degree is awarded by the Graduate School, through the Department of Landscape Architecture and Regional & Community Planning, College of Architecture, Planning and Design. All courses in this program option are offered online through Global Campus at KSU but may be taught by any of the participating universities. Additional information may be obtained by contacting:

Dr. Huston Gibson
Director, Community Development Program
Department of Landscape Architecture and Regional & Community Planning
Kansas State University
302 Seaton Hall
Manhattan, KS 66506-2909
785-532-5961
hgibson@k-state.edu

Master's degree requirements

Core requirements:

Successful completion of the following courses with a minimum overall grade requirement of 3.0:

Core:

- Community Development Orientation
- CDPLN 705 - Organizing for Community Change **Credits:** 3
- CDPLN 710 - Community Analysis **Credits:** 3
- CDPLN 715 - Principles and Strategies of Community Change **Credits:** 3
- CDPLN 720 - Community and Regional Economic Analysis **Credits:** 3
- CDPLN 725 - Community and Natural Resource Management **Credits:** 3

Total core hours required: (17 credits)

Graduate Certificate

Community Development Graduate Certificate

The online graduate certificate in Community Development (CD) will provide foundations of the CD field and associated theories. Opportunity for elective selections allow students to pursue subtopics related to community development such as community leadership & capacity building, community economic strategies, international development, not-for-profit management, and/or sustainable communities.

This Community Development graduate certificate is a 12 credit hour online collaborative interinstitutional certificate offered through the Department of Landscape Architecture and Regional & Community Planning in cooperation with the Great Plains Interactive Distance Education Alliance (GPIDEA). Participating universities include Kansas State

University, Iowa State University, North Dakota State University, University of Nebraska, and South Dakota State University. Students may enroll in this collaborative program at any of the participating universities. While the certificate name may vary by university, the curriculum will be comparable, and courses offered in the program will be the collaborative result of a divergent faculty from within the participating universities.

Program Administration

The Community Development graduate certificate is officially administered by the Department of Landscape Architecture and Regional & Community Planning, under the auspices of the Graduate School at Kansas State University, and in conjunction with the Institute for Academic Alliances at Kansas State University. The certificate is awarded by the Graduate School, through the Department of Landscape Architecture and Regional & Community Planning, College of Architecture, Planning & Design. All courses in this program option are offered online through Global Campus at KSU but may be taught by any of the participating universities. Additional information may be obtained by contacting:

Dr. Huston Gibson
Director, Community Development Program
Department of Landscape Architecture and Regional & Community Planning
Kansas State University
1086 Regnier Hall
Manhattan, KS 66506-2909
(785) 532-5961
hgibson@ksu.edu

Program Requirements

Completion of core requirements and 6 credit hours of CDPLN electives, plus a certification summary reflection for assessment.

Core Requirements (6 credit hours)

- CDPLN 705 - Organizing for Community Change **Credits:** 3
- CDPLN 715 - Principles and Strategies of Community Change **Credits:** 3

Additional Requirements

Minimum of 6 credit hours of CDPLN electives.

- CDPLN 710 - Community Analysis **Credits:** 3
- CDPLN 720 - Community and Regional Economic Analysis **Credits:** 3
- CDPLN 725 - Community and Natural Resource Management **Credits:** 3
- CDPLN 700 - Foundations of Community Development **Credits:** 3
- CDPLN 620 - Ecological Economics **Credits:** 3
- CDPLN 712 - Sustainable Communities **Credits:** 3
- CDPLN 713 - Nonprofit Management **Credits:** 3
- CDPLN 633 - Grantwriting **Credits:** 3
- CDPLN 704 - Community Leadership and Capacity Building **Credits:** 3
- CDPLN 711 - Immigrants in Communities **Credits:** 3
- CDPLN 706 - Economic Development Strategies and Programs **Credits:** 3

- CDPLN 655 - Land Development Planning **Credits:** 3
- CDPLN 701 - Special Studies in Community Development **Credits:** 1-3
- CDPLN 703 - Applied Community Development **Credits:** 1
- Or the successful completion of any total of 6 credit hours of CDPLN electives

College of Arts and Sciences

117 Eisenhower Hall
785-532-6900
Fax: 785-532-7004
http://www.k-state.edu/artsci/

At the heart of every great university is a college that serves as its academic center. The College of Arts and Sciences is the intellectual heart of Kansas State University.

The College of Arts and Sciences contains more than 20 departments and offers a number of special programs and secondary majors. With more than 7,000 students, it has the largest enrollment of any K-State college. It also offers approximately 85 percent of all freshman courses and 65 percent of all credits taught.

Encompassing studies in the natural sciences, social sciences, humanities and fine arts, the College of Arts and Sciences gives you an exciting range of options. You can choose from more than 115 degree programs, study abroad experiences, and pre-professional options.

Arts and Sciences professors are committed to the art of teaching. They combine lectures, labs, and small-group discussions so that even the most complex theories will be within your grasp. And your class projects will test what you're learning--from painting a self-portrait to setting up your own psychology experiment to writing a news report that airs on campus radio.

Our professors are also internationally recognized researchers and scientists, building such world-class programs as a NASA Specialized Center of Research and Training and the Macdonald Laboratory particle accelerator. You can work with distinguished scholars on exciting projects in ecology, gravitation, atomic energy, laser technology, numerical analysis, and cancer research using state-of-the-art facilities and equipment.

Arts and Sciences grads go on to great things. Our students have built an outstanding record of winning prestigious scholarships and gaining acceptance into professional and graduate programs at rates far above the national average. And they have achieved success in careers ranging from medicine to playwriting.

The Arts and Sciences experience, with its provocative courses, respected faculty, and opportunities for individual research, will enable you to follow your interests and pursue your career ambitions.

American Ethnic Studies

104 Leasure Hall
785-532-2112
Fax: 785-532-2116
http://www.ksu.edu/ameth

Head:

Yolanda Broyles-González

The department offers no graduate degree. Most faculty affiliated with the program are members of the graduate faculty.

Graduate Faculty:

*Yolanda Broyles-González, Ph.D., Stanford University
*Isabel Millan, Ph.D., University of Michigan
April Petillo, Ph.D., University of Arizona

Art

111 Willard Hall
785-532-6605
Fax: 785-532-0334
art@k-state.edu
http://art.ksu.edu/grad/admission.html

Department Head:

Matthew Gaynor

Director of Graduate Studies:

Nancy Morrow

Graduate Faculty:

Kevin Bernstein, M.F.A., University of Washington
Glen R. Brown, Ph.D., Stanford University
Carlos Castellanos, Ph.D., Simon Fraser University
Geraldine Craig, M.F.A., Cranbrook Academy of Art
Douglas Dow, Ph.D., Pennsylvania State University
Matthew Gaynor, M.F.A., Yale University
Nicholas Geankoplis, M.F.A., Alfred University
Shreepad Joglekar, M.F.A., Texas Tech University
Nancy Morrow, M.F.A., University of Washington
Mervi Pakaste, M.F.A., Penn State University
Teresa Schmidt, M.F.A., Washington State University
Jason Scuilla, M.F.A., Temple University
Daniel Warner, M.F.A., University of Notre Dame
Anthony Warnick, M.F.A., Cranbrook Academy of Art
Erin Wiersma, M.F.A., University of Connecticut
Dukno Yoon, M.F.A., Miami University

Graduate Faculty Emeriti:

Lynda Andrus, M.F.A., University of Iowa
Thomas Bookwalter, B.A., Emporia State University
LouAnn Faris Culley, Ph.D., Stanford University
Yoshiro Ikeda, M.F.A., University of California, Santa Barbara
Margo Kren, M.F.A., University of Iowa
Oscar Vance Larmer, M.F.A., Wichita University
Judith Love, M.F.A., University of Nebraska
James C. Munce, M.F.A., Indiana University
Duane P. Noblett, M.F.A., University of Iowa
Kristin Nowlin, M.F.A., Columbus College of Arts and Design
John William O'Shea, M.F.A., State University of Iowa
Elliott Pujol, M.F.A., Southern Illinois University
Rex Replogle, M.F.A., University of Kansas
Roger Routson, M.F.A., University of Illinois
Edward Sturr, Ed.D., Illinois State University
James P. Swiler, M.F.A., Wichita State University
John L. Vogt, M.F.A., University of Illinois
Gary L. Woodward, M.F.A., University of Washington

Graduate Faculty Associates:

Heather Bayless, M.F.A., Kookmin University, Seoul, Korea
Kristin Nowlin, M.F.A., Ohio University
Elizabeth Seaton, Ph.D., Northwestern University

As established by the College Art Association and accepted by all accredited universities, the Master of Fine Arts degree is the terminal degree in visual arts education and is equivalent to terminal degrees in other fields, such as the Ph.D. or Ed.D. It is a graduate program wherein the emphasis is placed upon the studio practice of art, with the intent of educating students for professional careers as artists and designers or as university teachers of the visual arts.

First and foremost, the profession demands from the recipient of the M.F.A. a certifiable level of technical proficiency and the ability to make art. When work toward the M.F.A. has been concentrated in a particular medium, there should be complete professional mastery of that medium. The generalist, whose preparation has been broader and less specialized, must still meet the critical demands of the profession by convincingly demonstrating expertise and knowledge in a number of areas. In any case, the need for thorough training of the mind, the eye, and the hand is self-evident.

The Department of Art offers a 60-hour graduate program leading to the Master of Fine Arts degree in the fields of ceramics, drawing, graphic design,DX Media painting, printmaking, photography, metalsmithing and jewelry. There are 18 full-time graduate faculty members who, in addition to their teaching, are active in exhibiting or publishing.

The department has fully equipped workshop facilities as well as provides some individual studios for graduate students. Graduate teaching assistantships are available, with the added benefit of 100 percent tuition remission for full-time GTAs.

The university provides a variety of experiences for learning and development through a stimulating series of exhibitions, lectures, theatre presentations, concerts, and recitals. Additionally, the Art Department sponsors its own regular series of visiting lecturers, artists, and critics-including, Julie Heffernan, Mary Elizabeth Brim, Matthew Shlian, Michael Kline, Eric C. Benson, Roger Shimomura, Bilyana Dimitrova, John E. Dowell, Ryan Bussens, Richard Elaver, William Wallace, Benjamin Edwards, Chris Jungjohann, & Robert Rivers.

Admission procedures

For information regarding admission procedures, please see the Department of Art website at http://art.ksu.edu/grad/admission.html.

Entrance requirements

To be admitted as a graduate student in the M.F.A. program, the applicant must have a B.A., or B.F.A. degree from an accredited institution, adequate undergraduate education in the visual arts, and an undergraduate average of B (3.0) or better in the junior and senior years. The applicant should have at least 60 undergraduate semester credit hours in visual arts, with a minimum of 20 semester hours in the area of concentration.

All international students applying to the M.F.A. program must meet the same level of achievement as U.S. students.

Applicants with the M.A. degree

Students with an M.A. degree from an accredited institution who wish to apply for the M.F.A. program at Kansas State University should follow the same general application procedures outlined above.

Students who hold an M.A. degree may apply up to 10 hours of that degree toward an M.F.A. The number of hours to be accepted will depend on the relevance of the course work to the M.F.A. After the applicant has been accepted into the M.F.A. program, the director of graduate studies will meet with the graduate studies committee, the proposed major professor and the coordinator of the student's studio area to evaluate the student's transcript and to determine the number of credits which may be applied to the M.F.A. degree.

Master of Fine Arts

Master of Fine Arts (M.F.A.)

The Department of Art offers the Master of Fine Arts degree with emphasis in one of the following areas: ceramics, drawing, graphic design, Digital/Experimental Media (D/X media), painting, printmaking, photography, metalsmithing and jewelry, and sculpture. There are 18 full-time Graduate Faculty members who in addition to teaching, are active in exhibiting, performing client work, engaging in social practice, or publishing.

Master's degree requirements

The graduate course requirements for the M.F.A. consist of 60 credit hours, normally distributed over six semesters of the three year program. M.F.A. program students are expected to be in residence working in their studio on campus each semester of the academic year, for the duration of his or her program. The 60 credits include courses in art history and cognate areas of study. Required program credits may not include course work that is necessary to resolve undergraduate deficiencies.

Course requirements:

Area of Concentration	35-40 credit hours
Supporting Studio Courses	3-8 credit hours

Art History Electives	6 credit hours
Contemporary Art Theory	3 credit hours
Graduate Seminar	2 credit hours
Free Electives	6 credit hours

Courses outside the area of emphasis should be taken from faculty other than the major professor, in order to get as much experience as possible with other members of the Graduate Faculty. Students are also encouraged to take a portion or all of their free electives outside the Department of Art.

Each student's program of study is subject to the approval of their major professor and their supervisory committee. It is emphasized that this is a Graduate School and departmental policy and not a student's option.

Graduate Exhibition and Final Exam

The M.F.A. is a degree program that culminates in a final, solo graduate exhibition. This exhibition includes a substantial body of original works and is exhibited on campus during the final semester of the student's program.

An accompanying written document is required in which the candidate demonstrates proficiency in analyzing, interpreting and organizing material, and provides evidence of the ability to communicate perceptions, insights, and conclusions. A digital portfolio of the graduate exhibition and related written materials is required and will be kept by the Department of Art as documentation. Satisfactory completion of both the visual and written portions of the graduate exhibition is required for the awarding of the M.F.A. degree.

The final oral examination for the M.F.A. degree will be taken when the student is in the final semester of completing their program of study, has installed his or her graduate exhibition, and has delivered a copy of the written document to each member of the supervisory committee.

Biology

116 Ackert Hall
785-532-6615
Fax: 785-532-6653
mcungere@ksu.edu
http://www.ksu.edu/biology/

Director:

Mark Ungerer

Director of graduate studies:

Keith Gido, Interim

Graduate faculty:

*Katsura Asano, Ph.D., University of Tokyo, Japan
*Pankaj Baral, Ph.D., Mahidol University, Thailand

*John M. Blair, Ph.D., University of Georgia
Daniel L. Boyle, Ph.D., University of Louisville
*W. Alice Boyle, Ph.D., University of Arizona
*Susan A. Brown, Ph.D., University of Missouri
*Rollie J. Clem, Ph.D., University of Georgia
*Walter K. Dodds, Ph.D., University of Oregon
*Carolyn Ferguson, Ph.D., University of Texas, Austin
*Sherry D. Fleming, Ph.D., University of Colorado
*Keith B. Gido, Ph.D., University of Oklahoma
*Revathi Govind, Ph.D., Texas Tech University
*David A. Haukos, Ph.D., Texas Tech University
*Andrew Hope, Ph.D., University of New Mexico
Eva A. Horne, Ph.D., Kansas State University
*Loretta C. Johnson, Ph.D., University of Connecticut
*Ari Jumpponen, Ph.D., Oregon State University
Joanna Kelley, Ph.D., University of Washington
*Sonny TM Lee, Ph.D., University of Auckland
*Allison Louthan, Ph.D., University of Colorado
*Martha Mather, Ph.D., Ohio State University
Mark H. Mayfield, Ph.D., University of Texas, Austin
*Jocelyn McDonald, Ph.D., University of Illinois
*Kristin Michel, Ph.D., University of California Riverside
*Beth A. Montelone, Ph.D., University of Rochester
Thomas Mueller, Ph.D., University of Bremen
*Jesse Nippert, Ph.D., Colorado State University
*Bradley Olson, Ph.D., Michigan State University
*A. Lorena Passarelli, Ph.D., University of Georgia
*Thomas Platt, Ph.D., Indiana University
*Kalyani Pyaram, Ph.D., University of Pune, India
*Zak Ratajczak, Ph.D., Kansas State University
Ashley Rhodes, Ph.D., Kansas State University
*Kathrin Schrick, Ph.D., University of Washington, Seattle
*Stephanie Shames, Ph.D., University of British Columbia
*Brian S. Spooner, Ph.D., Temple University
*Michael Tobler, Dr. Sci. Nat., University of Zurich
*Mark Ungerer, Ph.D., Indiana University
*Govindsamy Vediyappan, Ph.D., University of Madras, India
*Michael Veeman, Ph.D., University of Washington
*Nicholas Wallace, Ph.D., Tulane University Health Science Center
*Ruth Welti, Ph.D., Washington University in St. Louis
*Kimberly A. With, Ph.D., Colorado State University
*Lydia Zeglin, Ph.D., University of New Mexico
*Anna Zinovyeva, Ph.D., Indiana University

Ancillary faculty

*Erika Geisbrecht, Ph.D., The John Hopkins University School of Medicine, Baltimore, MD

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Program overview

The Division of Biology offers a master of science degree in biology, and doctor of philosophy degrees in Biology and Microbiology. The graduate faculty members are committed to a vigorous research and instructional program.

Biology and Microbiology are very broad disciplines, so the faculty members in the Division of Biology are also affiliated with one or more areas of interest (sections) to encourage faculty members to interact with others, and to develop and sustain curricular initiatives in more specific research areas. These sections are:

Genetics, cell, and developmental biology
Asano, D. Boyle, Brown, Clem, Herren, Lee, McDonald, Michel, Montelone, Morgan, Olson, Passarelli, Schrick, Singh, Smith Caldas, Spooner, Ungerer, Vediyappan, Veeman, Wallace, Welti, Zinovyeva

Microbiology and Immunology
Dodds, Fleming, Govind, Herrer, Jumpponen, Michel, Platt, Shames, Smith Caldas, Vediyappan, Zeglin

Ecology and evolutionary biology
Blair, WA Boyle, Dodds, Ferguson, Gido, Haukos, Hope, Horne, Johnson, Jumpponen, Mather, Mayfield, McCulloch, Nippert, Olson, Platt, Tobler, Ungerer, With, Zeglin

For more detailed information on faculty research interests, see http://www.k-state.edu/biology/people/tenure/index.html.

Programs

Biology and Microbiology are broad and innovative disciplines, and our graduate program reflects both of these characteristics. Our faculty members are research scientists with a breadth and depth of research expertise, and they apply that expertise in their roles as graduate mentors. The graduate faculty members of the Division of Biology strongly believe that independent research is the preeminent feature of our graduate programs. Research expertise represented within the Division of Biology ranges from studies of cell development and cell signaling to the influence of grazers and fire with plant and animal communities on the tallgrass prairie. Graduate opportunities are available in all areas of biology, including molecular, cellular and developmental biology; community, ecosystem and landscape ecology; wildlife biology; cancer biology; microbiology; virology; immunology; parasitology; and genetics.

In partnership with a major professor and a supervisory committee, each graduate student develops an individualized program of study, consisting of course work and laboratory or field research. Each program of study is tailored to meet the specific needs of the individual student. Unlike more formal curricula with rigid requirements, our flexible approach allows students to pursue their professional goals more efficiently and more effectively. All beginning graduate students are required to take BIOL 863 (Professional Skills in Biology), where they learn about grant-writing, presentation skills, research ethics, effective instructional techniques, and other skills that will be useful to them throughout their careers as professional scientists. This course is the only required course; all other courses are chosen in consultation with the advisory committee. A minimum of 30 credit hours beyond the bachelor's degree is required to earn a master of science degree; a minimum of 90 credit hours beyond the bachelor's degree is required to earn a doctoral degree. In addition, we require that each student write a thesis or dissertation based on their original research; this work should be of sufficient quality and importance to merit publication in a refereed journal. For additional details regarding responsibilities and expectations for our graduate students, see http://www.ksu.edu/biology/grad/responsibilities.html.

Facilities

Graduate research and education takes place primarily in four on-campus sites--Ackert Hall, Bushnell Hall, Chalmers Hall, and Leasure Hall--as well as at the off-campus site of the Konza Prairie Biological Station.

Ackert Hall

Ackert Hall is the main biology facility, containing 130,000 square feet of research and instructional space. Ackert Hall provides modern, well-equipped laboratories for teaching and research, and, contains the Division offices, a rooftop greenhouse, an electronics shop, a research supply storeroom, and animal care facilities. Equipment available for research includes ultracentrifuges, growth chambers, a research microscope facility (with confocal and transmission electron microscope plus image processing capabilities), mass spectroscopy facilities, and many other research and support equipment items that are required for a modern biology research program. Research labs overseen by faculty members in all three of our sections (see above) can be found in Ackert Hall.

Bushnell Hall

Graduate faculty members with an interest in ecological studies have offices and laboratory space in Bushnell Hall. Included in this building are the herbarium, environmental chambers, dark rooms, analytical laboratories, and tanks for fish culture ranging from 100- to 2,000-liter capacity. Extensive computing and imaging facilities support the climatologic and remote sensing activities.

Chalmers Hall

Chalmers Hall was completed in November 2002 and is adjacent to Ackert Hall. This modern facility houses ten Division of Biology faculty and research programs in 12,300 square feet on the second floor of the building. Faculty members with laboratories in Chalmers Hall have research interests in developmental biology, immunology, virology, bioinformatics, ecological genomics, and vector biology.

Leasure Hall

Leasure Hall houses the Kansas Cooperative Fish and Wildlife Research Unit. This unit is a partnership of the U.S. Department of the Interior, Kansas State University, the Kansas Department of Wildlife and Parks, and the Wildlife Management Institute. Two U.S. Department of the Interior employees, with appointments as Division of Biology adjunct graduate faculty members, oversee fisheries and wildlife research programs as part of their duties in the Kansas Cooperative Fish and Wildlife Research Unit.

Konza Prairie Biological Station

The Konza Prairie Biological Station is located only a few miles south of the main KSU campus, allowing for ease of access for faculty members and graduate students working there. This station contains approximately 8,616 acres of native tall grass prairie, and has been set aside by the Nature Conservancy as a unique outdoor laboratory for long-term research. This land was purchased with funds provided by Katharine Ordway, and leased to the Division of Biology by the Nature Conservancy. Experimental manipulations of the landscape, involving grazing and/or burning, allow researchers to focus on patterns and processes which might be important in maintenance of the tall grass prairie ecosystem.

Research strengths

The graduate faculty members of the Division of Biology have a proven track record in scientific achievement, and they continue to excel in competition for extramural research funding. Our research programs are funded by the state of Kansas, via support from the Kansas Agricultural Experiment Station and Kansas Wildlife and Parks, and by direct grants to our faculty members from a diverse group of agencies and foundations, including the National Science Foundation, the National Institutes of Health, the Environmental Protection Agency, the Department of Interior, the Department of Energy, DOD, the American Heart Association, the American Cancer Society, as well as others. Areas of particular research strength, which provide collaborative research opportunities for our graduate students, include:

Long-Term Ecological Research

The National Science Foundation has supported Division of Biology research activities on the Konza Prairie continuously since 1980. This long-term approach is designed to investigate gradual and subtle changes in microbe,

plant and animal diversity and numbers on the tall grass prairie, the impact of human activities on ecosystem productivity, and changes in ecological processes caused by burning and/or grazing.

Kansas Lipidomics Research Center

The Kansas Lipidomics Research Center is a collaborative venture of scientists in the Division of Biology, in the Department of Biochemistry and Molecular Biophysics, and at the University of Kansas. The Center performs comprehensive, quantitative profiling of lipid molecular species with high sample throughput, using mass spectrometry and other innovative technologies. Diversity and concentrations of lipid metabolites in genomically altered and physiologically manipulated organisms are investigated in order to identify the functions of genes that encode proteins involved in lipid metabolism. The Center is also dedicated to improving lipid analytical technologies, to promoting collaborative research among lipid scientists, and to providing training opportunities for post doctoral, graduate, and undergraduate students. More information is available at http://www.k-state.edu/lipid/lipidomics/.

Ecological Genomics

The Ecological Genomics initiative is an interdisciplinary research enterprise, aimed at exploring the genetic bases for organismal responses to the environment. Students involved in the program engage in a truly multidisciplinary program, working with faculty members in ecology and molecular biology/genetics. These research efforts employ functional genomic techniques to probe the interface between ecology and genetics. More information about the Kansas Ecological Genomics collaborative research groups can be found at http://www.ksu.edu/ecogen/.

Other multi-investigator research initiatives

Information about many other exciting collaborative research efforts can be found at http://www.k-state.edu/biology/interdisciplinary/index.html.

Admission and financial support

For detailed information on admission and financial support, see http://www.k-state.edu/biology/grad/index.html.

Concurrent

Concurrent B.S./M.S. in Biology

The concurrent B.A./M.S. or B.S./M.S. option for degree programs in Biology provides exceptional undergraduates with the opportunity to obtain both a Bachelor degree and a Master of Science in 5 years, a shorter time than typically required to earn these degrees if both are pursued separately. The B.A./M.S or B.S./M.S. option is available to undergraduates pursuing a B.A. or B.S. degree in Biology, Microbiology, or Fisheries, Wildlife, and Conservation Biology. The M.S. degree awarded is in Biology. The goal of the program is to produce biologists with in-depth understanding of a sub-area of biology and extensive laboratory and/or field research experience. The curriculum will include both course work and research experience. Completion of the program will provide students with an advantage both in pursuing work in the private sector and in pursuing a further advanced degree.

Admission Requirements

To enter this program a student must be nominated by a Biology graduate faculty member who also will serve as the student's major professor. The nomination can take place any time from the second semester of the sophomore year through the second semester of the junior year when he/she has accumulated 45-90 credit hours toward the Bachelor

degree. By the time of nomination, students must have completed at least one course from each of the following two blocks: Block 1 – [BIOL 201, BIOL 455], Block 2 – [BIOL 450, BIOL 520, BIOL 529], his/her math requirement, and at least two semesters of chemistry. A student may be nominated during the senior year with special permission from the chair of the Biology Graduate Affairs Committee. After nomination, the application process is the same as for the traditional M.S. degree with the following exceptions:

- Completion of a bachelor degree is not required prior to acceptance into the program.
- The GRE score requirement will be waived.
- The application must include a recommendation from a member of the Division of Biology faculty, who will serve as the student's major professor and who agrees to support the student as a graduate research assistant during the 5th year.
- Minimum standards for regular admission in the program require a cumulative GPA of 3.5 and a GPA of 3.5 in required math and science courses.

Should the student meet these requirements and the standards of the Graduate Affairs Committee, admission will be provisional, pending the award of the Bachelor degree. The Bachelor degree may be awarded any time following the completion of the undergraduate requirements. Alternatively, the Bachelor and M.S. degrees may be awarded concurrently. The student will work closely with the major professor to form a supervisory committee and submit a program of study by the end of the second semester of the junior year. The undergraduate advisor will continue to advise the student in academic progress toward the B.A. or B.S. degree, and the major professor will supervise the student's academic progress and research project for the M.S. degree. Research toward the M.S. thesis will begin as soon as possible, but typically will begin during the junior year.

Doctor of Philosophy

Biology (Ph.D.)

Doctoral degree requirements

The Biology Ph.D. degree requires a minimum of 24-30 hrs course work including 15 hours of courses at the 800 level, depending on the student's background. Students may chose from all graduate courses, including all Division of Biology Graduate Courses listed in the Graduate catalog. Course selection is done in consultation and approval of the student's supervisory committee. All students are required to take 3 hrs BIOL 862 Professional Skills in Biology.

Microbiology (Ph.D.)

Doctoral degree requirements

The Microbiology Ph.D. degree, offered through the Biology graduate program, requires a minimum of 24-30 hrs course work, including 15 hours of courses at the 800 level. Course selection is done in consultation and approval of the student's supervisory committee and should include the following.

I. Required core courses:

- BIOCH 755 - Biochemistry I **Credits:** 3
- BIOCH 765 - Biochemistry II **Credits:** 3

- BIOL 863 - Professional Skills and Ethics **Credits:** 3

II. Suggested courses for the specialization in ecological microbiology:

- AGRON 645 - Soil Microbiology **Credits:** 3
- BIOCH 766 - Recombinant DNA Laboratory I **Credits:** 1
- BIOCH 767 - Recombinant DNA Laboratory II **Credits:** 1
- BIOL 604 - Biology of the Fungi **Credits:** 3
- BIOL 632 - Ecology Laboratory **Credits:** 1
- BIOL 805 - Advanced Mycology **Credits:** 3
- BIOL 818 - Advanced Aquatic Ecology **Credits:** 3
- BIOL 823 - Demographic Methods **Credits:** 3
- BIOL 826 - Nutrient Dynamics **Credits:** 3
- BIOL 860 - Modern Molecular Approaches **Credits:** 3
- BIOL 865 - Advanced Plant Ecology **Credits:** 4
- BIOL 870 - Advanced Plant Systematics **Credits:** 4
- BIOL 886 - Confocal, Fluorescence and Light Microscopy **Credits:** 3
- BIOL 888 - Electron Microscopy Techniques **Credits:** 3
- PLPTH 835 - Plant Virology **Credits:** 3
- PLPTH 840 - Plant Pathogenic Bacteria **Credits:** 2
- PLPTH 845 - Plant Pathogenic Fungi **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3

III Suggested courses for the specialization in molecular microbiology

- BIOCH 766 - Recombinant DNA Laboratory I **Credits:** 1
- BIOCH 767 - Recombinant DNA Laboratory II **Credits:** 1
- BIOCH 920 - Nucleic Acids **Credits:** 2
- BIOCH 930 - Proteins **Credits:** 2
- BIOCH 950 - Advanced Topics in Protein Science **Credits:** 3
- BIOL 670 - Immunology **Credits:** 4
- BIOL 671 - Immunology Lab **Credits:** 2
- BIOL 676 - Molecular Genetics Laboratory **Credits:** 3
- BIOL 705 - Eukaryotic Genetics **Credits:** 3
- BIOL 707 - Advanced Cell Biology **Credits:** 3
- BIOL 730 - General Virology **Credits:** 3
- BIOL 830 - Advanced Virology **Credits:** 3
- BIOL 835 - Cellular and Molecular Parasitology **Credits:** 3
- BIOL 840 - Molecular and Cellular Immunology **Credits:** 3
- BIOL 850 - Advanced Topics in Immunology **Credits:** 1-2
- BIOL 860 - Modern Molecular Approaches **Credits:** 3
- BIOL 886 - Confocal, Fluorescence and Light Microscopy **Credits:** 3
- BIOL 888 - Electron Microscopy Techniques **Credits:** 3
- DMP 860 - Bacterial Pathogenesis and Host Response **Credits:** 3
- DMP 871 - Molecular Diagnostics of Infectious Diseases **Credits:** 3

- DMP 878 - Applications of Flow Cytometry **Credits:** 1-3

Master of Science

Biology (M.S.)

The M.S. program in Biology requires 30 hours past the bachelor's degree. 22 hours of classes must be taken; at least 18 hours should be at the 700 level and above, including the thesis research credit. Courses at the 600-level may be included. All students are required to take 3 hrs BIOL 862 Professional Skills in Biology.

The combined B.S./M.S. program in biology provides exceptional undergraduates with the opportunity to obtain both a bachelor of science and a master of science in 5 years, a shorter time than typically required to earn a B.S. plus M.S. if these degrees are pursued separately. The curriculum includes both course work and research experience. Degree requirements for the M.S. are similar to those for the more typical M.S. degree described above, with the exception that up to 9 credit hours can be used toward both the B.S. and the M.S. degrees. Admission requirements do not include submission of a score for the GRE, but do require that the applicant has substantial undergraduate research experience and support from a faculty member in the Division of Biology. Completion of the program will provide students with an advantage both in pursuing work in the private sector and in pursuing a further advanced degree.

Chemistry

213 Chemistry and Biochemistry Bldg
785-532-6665
Fax: 785-532-6666
chemdept@ksu.edu
http://www.ksu.edu/chem

Department Head:

Daniel A. Higgins

Directors of graduate studies:

Christer B. Aakeröy
Paul E. Smith

Graduate faculty:

*Christer B. Aakeröy, Ph.D., University of Sussex, United Kingdom
*Christine M. Aikens, Ph.D., Iowa State University
*Viktor Chikan, Ph.D., Kansas State University
*Christopher T. Culbertson, Ph.D., University of North Carolina at Chapel Hill
*Tendai Gadzikwa, Ph.D., Northwestern University
*Daniel A. Higgins, Ph.D., University of Wisconsin-Madison
*Duy H. Hua, Ph.D., Southern Illinois University at Carbondale
*Takashi Ito, Ph.D., University of Tokyo
*Jun Li, Ph.D., Princeton University
*Ping Li, Ph.D., Duke University
*Ryan Rafferty, Ph.D., Colorado State University
Shing Wo Sham, Ph.D., University of Arkansas

*Paul E. Smith, Ph.D., University of Liverpool, England
*Peter Sues, University of Toronto

Graduate faculty emeriti:

*Stefan Bossmann, Ph.D., University of Saarland, Germany
*Robert M. Hammaker, Ph.D., Northwestern University
*M. Dale Hawley, Ph.D., University of Kansas
*Ryszard Jankowiak, Ph.D., Gdansk Technical University, Poland
Robert E. Kruh, Ph.D., Washington University, St. Louis
*Eric A. Maatta, Ph.D., Indiana University
*Clifton E. Meloan, Ph.D., Purdue University
*Donald W. Setser, Ph.D., University of Washington
*Peter Sherwood, Ph.D., Cambridge University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Research Facilities

As a medium-sized department, K-State Chemistry is large enough to ensure that our students are provided access to a variety of first-rate equipment, yet small enough to assure our students of a close personal interaction with faculty. We recognize that our students are individuals, and our programs are structured so as to allow each student to reach his or her potential at an appropriate pace. The Department of Chemistry occupies two adjoining buildings – CBC and King Hall – that provide over 81,000 square feet of research, teaching and office space for the activities of our 21 faculty, 11 staff and 90 graduate students and research associates.

Computing resources for research and teaching are provided by the KSU research computing cluster, Beocat. Beocat is currently the largest academic supercomputer in Kansas, and includes nearly 400 researcher-funded computers. All Faculty, staff and students have access to the Beocat compute nodes. Chemistry researchers have access to a broad array of microscopy techniques, including AFM, STM, TEM, confocal and wide-field fluorescence microscopy (with demonstrated single molecule capability), and ultrafast video microscopy.

The department houses extensive computational resources including two Beowulf clusters, and numerous and broad electrochemical research capabilities. Chemistry researchers have access to broad array of microscopy techniques, including AFM, STM, TEM, near-field scanning optical microscopy, multiphoton-excited fluorescence microscopy (with demonstrated single molecule capability), and ultrafast video microscopy.

The Chemistry Department possesses substantial instrumentation for the synthesis of nanoscale materials: chemical vapor deposition, plasma-enhanced chemical vapor deposition, electrochemical deposition and metal-vapor deposition methods are all available in faculty research groups. An extensive set of materials characterization methods are available within the department including surface plasmon resonance, ellipsometry, chemisorption and temperature-programmed desorption techniques, thermogravimetric analysis, differential scanning calorimetry and FT-IR/Raman/DRIFT spectra of gases, liquids and solids.

Apart from routine spectroscopic instrumentation, the department houses many custom-built systems for time-resolved terahertz spectroscopy, fluorescence line-narrowing spectroscopy, hole-burning spectroscopy, single-molecule spectroscopy and high-resolution FT spectroscopy.

The Department also has a well-stocked chemical storeroom, electronics and machine shops (staffed by full-time personnel), and a dedicated glass shop operated by a Senior Scientific Glassblower. Safety in our research and teaching laboratories is of paramount importance to us, and we are fortunate to have a full-time safety officer.

The Kansas State University Libraries provide excellent facilities and support for research in the chemical sciences. Apart from electronic access to a full spectrum of research journals, the libraries maintain an extensive collection of print holdings. The library also participates in an interlibrary loan service that provides rapid access to work that has been published in obscure journals. The department enjoys round-the-clock access to all the resources of SciFinder Scholar and other online databases.
Programs of study and group structure

Programs of study and group structure

The Department of Chemistry offers programs leading to the M.S. and Ph.D. degrees specializing in analytical, biological, inorganic, materials, organic, and physical chemistry. The department faculty and research programs are operated through six overlapping "groups". Each "group" has faculty and adjunct faculty who work together to coordinate a "group" graduate program involving graduate courses, seminar programs and a cumulative examination system.

Entering students are administered diagnostic exams in each of the traditional areas of chemistry (analytical, inorganic, organic, and physical) designed to assess their preparation for graduate studies. A minimum grade of C must be obtained in all courses in order to earn credit and a minimum overall grade point average of 3.0 (out of a possible 4.0) is necessary. Original research is the most important part of the graduate program, and selection of a research director is made during the first semester in residence in order to allow students to start work on their research projects at an early date.

Financial support

Most graduate students are supported for the duration of their studies by various teaching assistantships, research assistantships, and fellowships. Incoming students are generally awarded teaching assistantships; summer support also is provided if performance in course work and teaching duties during the academic year is satisfactory. Students with excellent undergraduate credentials frequently receive supplemental departmental fellowships and are considered for graduate fellowships on a university-wide competitive basis. Outstanding graduate students are recognized annually through teaching and research awards.

Doctor of Philosophy

Chemistry (Ph.D.)

Applicants admitted to the Chemistry graduate program must select a program of study from a "group program" that will include at least 20 hours of graduate course work, which may include courses from all areas of chemistry, and must include at least 16 hours of graduate course work in Chemistry. A total of 90 semester hours is required, including at least 50 hours of research for students entering with a bachelor's degree and 36 hours for students entering with a master's degree.

The preliminary exam for the Ph.D. degree consists of a series of written cumulative exams on topics within the student's area of specialization and an oral research proposition examination that the student must prepare and defend before his or her supervisory committee. Completion of the Ph.D. degree requires the submission of a written dissertation and its oral defense before one's supervisory committee.

Group programs

There are six programs of graduate course work that can be followed for the Ph.D. degree:

- Analytical Group Program
- Biological Group Program
- Inorganic Group Program
- Materials Group Program
- Organic Group Program
- Physical Group Program

The program of study is different in each program, but has the following common features:

Departmental requirements:

Two credit hours of common course work are required for all group programs.

Credit seminar programs:

Two credit hours of credit seminar are required together with attendance at a seminar program throughout the entire program of study. Students register for 0 credit hours in the seminar course when the seminar program is not taken for credit.

Group programs:

- Substantive Group Courses: A number of credit hours are required in course work specific to a particular group.
- Other Chemistry Department Courses: A number of credit hours are required in chemistry department courses.
- Additional Courses: A number of credit hours may be required that may be taken from chemistry department courses and sometimes from courses offered in other departments.

Cumulative examinations:

There are separate cumulative examinations in the Analytical, Inorganic, Materials, Organic and Physical groups.

Department requirements (2 credit hours)

Every student in the Chemistry Department is required to take the following one credit hour courses:

- CHM 601 - Safe Chemical Laboratory Practices **Credits:** 1
- CHM 700 - Practicum in Teaching Chemistry **Credits:** 1

Credit seminar programs (2 hours)

All students in the Chemistry Department are required to attend the appropriate group seminar program every semester (registering for 0 or 1 credit hour), and to register for a total of 2 credit hours during their Ph.D. program. When the seminar program is taken for credit, the student will be evaluated on a 50 minute seminar.

Analytical group program

- CHM 901 - Graduate Seminar in Analytical Chemistry **Credits:** 0-1

Biological group program

one from:

- CHM 901 - Graduate Seminar in Analytical Chemistry **Credits:** 0-1
- CHM 902 - Graduate Seminar in Inorganic Chemistry **Credits:** 0-1
- CHM 903 - Graduate Seminar in Organic Chemistry **Credits:** 0-1
- CHM 904 - Graduate Seminar in Physical Chemistry **Credits:** 0-1

Inorganic group program

- CHM 902 - Graduate Seminar in Inorganic Chemistry **Credits:** 0-1

Materials group program

one from:

- CHM 901 - Graduate Seminar in Analytical Chemistry **Credits:** 0-1
- CHM 902 - Graduate Seminar in Inorganic Chemistry **Credits:** 0-1
- CHM 903 - Graduate Seminar in Organic Chemistry **Credits:** 0-1
- CHM 904 - Graduate Seminar in Physical Chemistry **Credits:** 0-1

Organic group program

- CHM 903 - Graduate Seminar in Organic Chemistry **Credits:** 0-1

Physical group program

- CHM 904 - Graduate Seminar in Physical Chemistry **Credits:** 0-1

Group programs (16 credit hours)

Analytical group program

Substantive group courses:

9 credit hours required consisting of at least **three** 3-credit-hour analytical group courses that can be chosen from the following courses:

- CHM 920 - Analytical Separations **Credits:** 3
- CHM 937 - Applications of Surface Science to Chemistry **Credits:** 3
- CHM 939 - Topics in Analytical Chemistry **Credits:** 1-3
- CHM 940 - Chemical Microscopy **Credits:** 3
- CHM 944 - Electroanalytical Chemistry **Credits:** 2-3

- CHM 947 - Applied Molecular Spectroscopy **Credits:** 3

Other chemistry department courses:

3 to 6 credit hours are required consisting of one or two 3-credit-hour courses chosen from the following courses:

- CHM 711 - Inorganic Chemistry I **Credits:** 3
- CHM 712 - Inorganic Chemistry II **Credits:** 3
- CHM 752 - Advanced Organic Chemistry **Credits:** 3
- CHM 801 - Chemical Thermodynamics **Credits:** 3
- CHM 820 - Materials Chemistry **Credits:** 3
- CHM 854 - Theoretical Chemistry I **Credits:** 3
- CHM 856 - Chemical Kinetics **Credits:** 3
- CHM 862 - Organic Spectroscopy **Credits:** 3
- CHM 929 - Physical Methods in Inorganic Chemistry **Credits:** 3
- CHM 954 - Theoretical Chemistry II **Credits:** 3
- CHM 965 - Physical Organic Chemistry **Credits:** 3

Additional courses:

The remaining 1 to 4 credit hours may be taken from the two previous lists or from:

Any science or engineering courses at the 600 level or higher in any department other than Chemistry in the colleges of Arts and Sciences, Agriculture, Human Ecology, or Engineering.

- CHM 600 - Scientific Glassblowing **Credits:** 1
- CHM 657 - Inorganic Techniques **Credits:** 1-2
- CHM 800 - Chemistry in Outer Space and in the Laboratory **Credits:** 2
- CHM 930 - Homogeneous Catalysis **Credits:** 2

Biological group program

Students must meet the group requirement by completing one of the other group programs (Analytical, Inorganic, Materials, Organic or Physical). In addition, students in the biological group may select additional courses offered either inside or outside the Department of Chemistry. A list of possible courses that students may choose to take that are offered outside the department include the following:

- BIOCH 755 - Biochemistry I **Credits:** 3
- BIOCH 765 - Biochemistry II **Credits:** 3
- BIOL 855 - Molecular Biology of Cellular Membranes **Credits:** 3
- BIOL 860 - Modern Molecular Approaches **Credits:** 3

Inorganic group program

Substantive group courses:

9 credit hours required consisting of the following courses:

- CHM 711 - Inorganic Chemistry I **Credits:** 3
- CHM 712 - Inorganic Chemistry II **Credits:** 3
- CHM 929 - Physical Methods in Inorganic Chemistry **Credits:** 3

Other chemistry department courses:

3 to 6 credit hours from the following courses:

- CHM 752 - Advanced Organic Chemistry **Credits:** 3
- CHM 801 - Chemical Thermodynamics **Credits:** 3
- CHM 820 - Materials Chemistry **Credits:** 3
- CHM 854 - Theoretical Chemistry I **Credits:** 3
- CHM 856 - Chemical Kinetics **Credits:** 3
- CHM 862 - Organic Spectroscopy **Credits:** 3
- CHM 920 - Analytical Separations **Credits:** 3
- CHM 935 - Selected Topics in Inorganic Chemistry **Credits:** 1-3
- CHM 937 - Applications of Surface Science to Chemistry **Credits:** 3
- CHM 940 - Chemical Microscopy **Credits:** 3
- CHM 944 - Electroanalytical Chemistry **Credits:** 2-3
- CHM 947 - Applied Molecular Spectroscopy **Credits:** 3
- CHM 954 - Theoretical Chemistry II **Credits:** 3
- CHM 965 - Physical Organic Chemistry **Credits:** 3

Additional courses:

The remaining 1 to 4 credit hours may be taken from the two previous lists or from:

Any science or engineering courses at the 500 level or higher in any department other than Chemistry in the colleges of Arts and Sciences, Agriculture, Human Ecology, or Engineering.

- CHM 600 - Scientific Glassblowing **Credits:** 1
- CHM 657 - Inorganic Techniques **Credits:** 1-2
- CHM 800 - Chemistry in Outer Space and in the Laboratory **Credits:** 2
- CHM 930 - Homogeneous Catalysis **Credits:** 2

Materials group program

Substantive group courses:

3 credit hours required consisting of the following course:

- CHM 820 - Materials Chemistry **Credits:** 3

Other chemistry department courses:

9 to 12 credit hours from the following courses:

- CHM 711 - Inorganic Chemistry I **Credits:** 3

- CHM 712 - Inorganic Chemistry II **Credits:** 3
- CHM 752 - Advanced Organic Chemistry **Credits:** 3
- CHM 801 - Chemical Thermodynamics **Credits:** 3
- CHM 854 - Theoretical Chemistry I **Credits:** 3
- CHM 856 - Chemical Kinetics **Credits:** 3
- CHM 862 - Organic Spectroscopy **Credits:** 3
- CHM 920 - Analytical Separations **Credits:** 3
- CHM 929 - Physical Methods in Inorganic Chemistry **Credits:** 3
- CHM 935 - Selected Topics in Inorganic Chemistry **Credits:** 1-3
- CHM 937 - Applications of Surface Science to Chemistry **Credits:** 3
- CHM 940 - Chemical Microscopy **Credits:** 3
- CHM 944 - Electroanalytical Chemistry **Credits:** 2-3
- CHM 947 - Applied Molecular Spectroscopy **Credits:** 3
- CHM 954 - Theoretical Chemistry II **Credits:** 3
- CHM 965 - Physical Organic Chemistry **Credits:** 3

Additional courses:

The remaining 1 to 4 credit hours may be taken from the two previous lists or from:

Any Science or Engineering courses at the 500 level or higher in any department other than chemistry in the College of Arts and Sciences, Agriculture, Human Ecology, or Engineering. Special consideration should be given to the following courses:

- CHM 600 - Scientific Glassblowing **Credits:** 1
- CHM 657 - Inorganic Techniques **Credits:** 1-2
- CHM 800 - Chemistry in Outer Space and in the Laboratory **Credits:** 2
- CHM 930 - Homogeneous Catalysis **Credits:** 2
- PHYS 655 - Physics of Solids **Credits:** 3

Organic group program

Substantive group courses:

13 credit hours required consisting of the following courses:

- CHM 752 - Advanced Organic Chemistry **Credits:** 3
- CHM 860 - Synthetic Organic Chemistry **Credits:** 4
- CHM 862 - Organic Spectroscopy **Credits:** 3
- CHM 965 - Physical Organic Chemistry **Credits:** 3

Other chemistry department courses:

0 to 3 credit hours from any Chemistry Department courses with numbers above 710 excluding seminar courses.

Additional courses:

0 to 3 credit from any science or engineering courses at the 500 level or higher in any department other than Chemistry in the colleges of Arts and Sciences, Agriculture, Human Ecology, or Engineering.

Physical group program

Substantive group courses:

3 credit hours consisting of the following course:

- CHM 854 - Theoretical Chemistry I **Credits:** 3

And 3 credit hours from the following list of courses:

- CHM 801 - Chemical Thermodynamics **Credits:** 3
- CHM 856 - Chemical Kinetics **Credits:** 3
- CHM 937 - Applications of Surface Science to Chemistry **Credits:** 3
- CHM 947 - Applied Molecular Spectroscopy **Credits:** 3
- CHM 950 - Chemical Statistical Mechanics **Credits:** 3
- CHM 954 - Theoretical Chemistry II **Credits:** 3
- CHM 965 - Physical Organic Chemistry **Credits:** 3

Other chemistry department courses:

6 credit hours from any Chemistry Department courses with numbers above 710 excluding seminar courses.

Additional courses:

The remaining 4 credit hours may be taken from the two previous lists or from:

Any Science or Engineering courses at the 600 level or higher in any department other than chemistry in the College of Arts and Sciences, Agriculture, Human Ecology, or Engineering.

- CHM 600 - Scientific Glassblowing **Credits:** 1
- CHM 657 - Inorganic Techniques **Credits:** 1-2
- CHM 800 - Chemistry in Outer Space and in the Laboratory **Credits:** 2
- CHM 930 - Homogeneous Catalysis **Credits:** 2

Master of Science

Chemistry (M.S.)

A minimum of 30 semester hours of graduate credit is required for the Chemistry Master of Science degree program, of which no less than 22 hours will be earned in course work. The program of study for the master's degree will normally include up to 15 hours in the student's major area of study, 6 to 12 hours in related areas, and one hour of graduate seminar. At least two semester hours of credit must be earned at the 700 level or higher in each of three of the following groups: analytical, inorganic, organic, physical, materials, and biological. A master's thesis that is based on 6 to 8 semester hours of original research must also be defended before one's supervisory committee.

Admission to advanced degree programs

Undergraduate transcripts are required as are letters of recommendation from persons familiar with your chemistry background. Applicants are strongly encouraged to take the GRE, including both the general test and the subject test in chemistry. Students considering graduate work at Kansas State are encouraged to visit the department, to meet with members of the faculty and with other students, and to observe our facilities and educational environment.

We welcome applications from well-qualified international students. Two requirements must be satisfied in order to demonstrate proficiency in English: a score of 550 or higher on the TOEFL and a score of 50 or higher on the TSE. International applicants must also submit the results of the Graduate Record Examinations, including the chemistry subject test.

Group programs (up to 15 credit hours):

Analytical group program

- CHM 920 - Analytical Separations **Credits:** 3
- CHM 937 - Applications of Surface Science to Chemistry **Credits:** 3
- CHM 940 - Chemical Microscopy **Credits:** 3
- CHM 944 - Electroanalytical Chemistry **Credits:** 2-3
- CHM 947 - Applied Molecular Spectroscopy **Credits:** 3
- CHM 939 - Topics in Analytical Chemistry **Credits:** 1-3

Inorganic group program

- CHM 711 - Inorganic Chemistry I **Credits:** 3
- CHM 712 - Inorganic Chemistry II **Credits:** 3
- CHM 929 - Physical Methods in Inorganic Chemistry **Credits:** 3
- CHM 930 - Homogeneous Catalysis **Credits:** 2
- CHM 935 - Selected Topics in Inorganic Chemistry **Credits:** 1-3

Materials group program

- CHM 820 - Materials Chemistry **Credits:** 3

Organic group program

- CHM 752 - Advanced Organic Chemistry **Credits:** 3
- CHM 860 - Synthetic Organic Chemistry **Credits:** 4
- CHM 862 - Organic Spectroscopy **Credits:** 3
- CHM 965 - Physical Organic Chemistry **Credits:** 3

Physical group program

- CHM 801 - Chemical Thermodynamics **Credits:** 3
- CHM 854 - Theoretical Chemistry I **Credits:** 3

- CHM 856 - Chemical Kinetics **Credits:** 3
- CHM 937 - Applications of Surface Science to Chemistry **Credits:** 3
- CHM 947 - Applied Molecular Spectroscopy **Credits:** 3
- CHM 950 - Chemical Statistical Mechanics **Credits:** 3
- CHM 954 - Theoretical Chemistry II **Credits:** 3
- CHM 955 - Selected Topics in Physical Chemistry **Credits:** 1-3

Biological group program

- Any 700 level or higher Biochemistry course

Communication Studies

234 Nichols Hall
785-532-6875
Fax: 785-532-3714
commstudies@ksu.edu
http://commstudies.k-state.edu/

Department Head:

Gregory Paul

Director of Graduate Studies:

Heather Woods

Graduate Faculty:

*Sean Eddington, Ph.D., Purdue University
Charles J. G. Griffin, Emeritus, Ph.D., University of Missouri-Columbia
*Soo-Hye Han, Ph.D., The University of Texas at Austin
*Colene Lind, Ph.D., The University of Texas at Austin
*James Alex McVey, Ph.D., University of North Carolina
*Gregory Paul, Ph.D., Texas A&M University
*David E. Procter, Ph.D., University of Nebraska-Lincoln
*Tim Shaffer, Ph.D., Cornell University
William J. Schenck-Hamlin, Emeritus, Ph.D., University of Oregon
*Timothy R. Steffensmeier, Ph.D., University of Texas, Austin
*Heather Woods, Ph.D., University of North Carolina

The Department of Communication Studies offers a master of arts degree in communication studies. The Department offers a number of Graduate Teaching Assistantships. Graduate assistants receive a waiver of tuition and a stipend. Most graduate assistants teach the basic speech course, but there are also assistantships available which include coaching duties in debate and forensics. Students interested in an assistantship should submit their application by February 15 for the coming academic year.

Admission

Students enter the graduate program from a variety of undergraduate majors. However, applicants should possess a strong academic record and appropriate background work in the field of communication studies. Students whose undergraduate record reflects deficiencies may be granted admission on a provisional basis.

Admission is based upon review of the applicant's undergraduate transcript, three letters of recommendation, statement of objectives, and writing sample (such as an undergraduate term paper). Applicants are encouraged to take the Graduate Record Examination.

Progress through the program

Continuation in the program is contingent upon the student making satisfactory progress towards the degree. Satisfactory progress is defined as follows: (1) The student must maintain an overall grade point average of 3.0 (on a 4.0 scale). (2) The student must earn a grade of B or better in all required courses. A student who receives a grade below B in a required course must retake the course as a condition for continuation in the program. A student whose overall grade point average falls below 3.0 will be placed on probationary status. Continuation in the program will be contingent upon the student raising his or her grade point average to the minimum (3.0) within one semester.

Master of Arts

Communication Studies (M.A.)

The graduate program in communication studies within the Communication Studies department, offers students a broad-based education in the theory and criticism of human communication. The objective of the program is to provide students with a program of instruction that exposes them to diverse perspectives within the field of communication studies in preparation for careers in higher education, business, law, ministry, government, and community service.

The communication studies program is housed in Nichols Hall, one of the architectural showpieces of the K-State campus. Facilities include semi-private office accommodations for graduate teaching assistants, a departmental library, seminar room, and practice facilities for debate and forensics activities. The K-State campus is ideally situated for students interested in the study of political communication because of the proximity of the Eisenhower and Truman presidential libraries.

The graduate program in communication studies has been recognized as one of the top graduate programs in communication studies in the midwest region. The graduate faculty is committed to providing every student with individual attention in the planning and conduct of his or her program of study. Classes are small, allowing faculty and students to work closely together on projects of mutual interest. Graduate students may also work with K-State's nationally recognized debate and forensics programs.

Master's degree requirements

Students become eligible for the master of arts in communication studies upon recommendation of the graduate faculty and completion of the following requirements:

Degree Options

Students may elect either a thesis or nonthesis (report) program of study. A master's thesis identifies an original research problem, implements an appropriate methodology and reports and interprets its findings. Completion of a thesis project demonstrates the student's ability to carry out sustained, independent research that makes an original

contribution to the discipline. A master's report is an academic essay that reviews and analyzes research literature within the discipline. Completion of a report project demonstrates the student's ability to interpret and synthesize scholarly literature in a given subject area.

Completion of the coursework only option provides students with additional classroom exposure to the discipline and may be appropriate for students who do not intend to pursure doctoral study in the discipline.

Both the master's thesis and research report options require prospectus approval by the graduate faculty and adherence to Graduate School and departmental guidelines.

Courses (12 credit hours)

- COMM 710 - Introduction to Communication Research Methods **Credits:** 3
- COMM 720 - Perspectives on Communication **Credits:** 3
- COMM 730 - Classical Rhetorical Theory **Credits:** 3
  and one of the following:
- COMM 733 - Rhetorical Criticism **Credits:** 3
- COMM 821 - Experimental Research in Communication Studies **Credits:** 3
  OR
- COMM 822 - Field Research in Communication Studies **Credits:** 3

Additional Requirements (18 credit hours)

An additional 18 credit hours in communication studies courses numbered at the 600 level or above, including six credit hours of COMM 899 (for students electing the thesis option); or an additional 18 credit hours, including 2 credit hours of COMM 899 (for students electing the nonthesis (report) option).

Submission of an acceptable thesis or report.

Or

Successful completion of a comprehensive (written and oral) examination over coursework for those electing the coursework only degree option.

In consultation with his or her advisor, a student may develop a minor emphasis of up to 6 credit hours at the 500 level or above in academic areas outside the communication studies program.

Graduate Certificate

Dialogue, Deliberation, and Public Engagement Graduate Certificate

Designed to be a transformative experience for graduate students and professionals, this program covers the practice and theory of leading groups through collaborative decision-making. Through a series of four courses, students will learn:

- approaches to participatory planning and collaborative decision-making that are supported by sound scholarship
- communication and leadership skills for designing and leading productive meetings
- dialogic practices for developing and maintaining constructive working relationships and managing conflict

- proven frameworks selecting or designing engagement processes for organizations, stakeholders, or whole communities
- a wide range of tools and techniques for engaging small and large groups to address conflicts, explore alternatives and inform policy
- principles and practices that move groups toward sustainable action that changes lives

Courses are presented in a hybrid format, with some offered online and others face-to-face. Students will interact regularly with each other and leaders in the field.

Admission

Acceptance into the program is contingent on satisfactory standing with the graduate school. Approval must be granted by the student's graduate committee and the DDPE director.

Courses (12 credit hours)

Once admitted to the program, students must complete 12 credit hours as follows:

Required (6 credit hours):

- COMM 790 - Deliberation & Dialogue Theory **Credits:** 3
  AND
- COMM 816 - Small Group Communication **Credits:** 3
  OR
- COMM 837 - Practicum in Communication and Conflict **Credits:** 3-6
  Electives (6 credit hours):
  COMM 716 - Small Group Communication Credits: 3
  COMM 756 Practicum in Communication & Conflict Credits: 3-6
- COMM 835 - Leadership Communication **Credits:** 3
- COMM 831 - Deliberation & Dialogue Process Models **Credits:** 3
- COMM 845 - Approaches to Public/Community Engagement **Credits:** 3
- COMM 916 - Communication Theories and Engagement **Credits:** 3
- COMM 840 - Intercultural Communication **Credits:** 3

Economics

327 Waters Hall
785-532-7357
Fax: 785-532-6919
econ@ksu.edu
http://www.ksu.edu/economics/

Department Head:

Philip Gayle

Director of Graduate Studies:

Lance Bachmeier

Graduate Faculty:

*Lance Bachmeier, Ph.D., Texas A&M University
*William F. Blankenau, Ph.D., University of Iowa
Valerie Bostwick, Ph.D., University of California
*Hugh Cassidy, Ph.D., University of Western Ontario
*Steven P. Cassou, Ph.D., University of Minnesota
*Yang-Ming Chang, Ph.D., State University of New York at Buffalo
*Peri da Silva, Ph.D., University of Illinois at Urbana-Champaign
Hamilton Fout, Ph.D., University of North Carolina, Chapel Hill
Amanda Gaulke, Ph.D., University of Wisconsin
*Philip Gayle, Ph.D., University of Colorado
*Yoon-Jin Lee, Ph.D., Cornell University
Ross Milton, Ph.D., Cornell University
Kyle D. Ross, Ph.D., Kansas State University
*Leilei Shen, Ph.D., University of Toronto
Jin Wang, Ph.D., University of Southern California

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Program description

The Department of Economics offers graduate programs leading to the M.A. and Ph.D. degrees. The M. A. degree can be completed in one to two years, and course work for the Ph.D. degree can be completed in three years. The Ph.D. degree also requires passage of preliminary examinations and the completion of a doctoral dissertation.

The graduate program in economics provides a strong foundation in macroeconomic theory, microeconomic theory, and quantitative analysis. In addition, it offers course work by nationally recognized scholars in such fields as development economics, econometrics, urban and regional economics, international economics, industrial organization, labor economics, and monetary theory and policy. Advanced course work and secondary fields are also available in agricultural economics, computer science, finance, mathematics, political science, statistics, regional planning, and other disciplines.

Financial assistance

Graduate research and teaching assistantships provide apprenticeship experiences for future teachers and researchers. Graduate research assistants work with faculty researchers on grant projects. There are two types of graduate teaching assistants: those who teach their own course and those who assist others by grading exams, proctoring, and carrying out other assignments. Teaching assistants may receive full waiver of tuition. In addition, the department offers supplemental awards: the Carroll B. Greene Fellowship, to the outstanding female graduate student, the M. Jarvin Emerson Memorial Scholarship to a top doctoral student, the John Nordin Award for outstanding performance in economic theory, the Ed Bagley Fellowship to an outstanding graduate student, and annual departmental awards for teaching and the best research paper.

Doctor of Philosophy

Economics (Ph.D.)

Admission

In addition to general Graduate School requirements, the Department of Economics has the following requirements for admission.

Course requirements

- 3 credit hours of intermediate macroeconomic theory
- 3 credit hours of intermediate microeconomic theory
- 3 credit hours of statistics
- 3 credit hours of calculus

If these courses are not part of the student's undergraduate program, admission will be provisional upon completing these courses.

Grade requirements

A 3.0 GPA in the last 60 credit hours taken with no C's, or lower, in the courses listed above. Although students with academic performance below these standards may be admitted because of other considerations such as high GRE scores, admission will be probationary.

Graduate record examination

Applicants for admission to either M.A. or Ph.D. programs are normally expected to provide their Graduate Record Examination general test scores.

Required course work

As part of the 90 hours required for a Ph.D. degree, each Ph.D. degree program must contain the following 30 hours of course work or equivalent:

- ECON 735 - Mathematical Economics **Credits:** 3
- ECON 805 - Macroeconomic Theory I **Credits:** 3
- ECON 830 - Econometrics I **Credits:** 3
- ECON 905 - Macroeconomic Theory II **Credits:** 3
- ECON 930 - Econometrics II **Credits:** 3
- ECON 940 - Advanced Microeconomic Theory I **Credits:** 3
- ECON 945 - Advanced Microeconomic Theory II **Credits:** 3

  Two graduate economics courses at the 800-level or above, one of which is in a third field. **Credits: 6**

  and select one of these four courses:
- AGEC 901 - Research Methods in Economics **Credits:** 3
- AGEC 905 - Agricultural Demand and Commodity Marketing **Credits:** 3
- AGEC 923 - Economics of Agricultural Production **Credits:** 3
- AGEC 936 - Quantitative Topics in Agricultural Economics **Credits:** 3

Additional requirement

Also required is course work in two fields of specialization. Normally a field consists of 6 additional hours of course work in economics or in related departments. Students entering the Ph.D. program with a master's degree in economics may receive 30 hours of credit for that degree.

Ph.D. dissertation

In the process of completing the research and writing of a Ph.D. dissertation, the student must enroll in at least 30 hours of the following:

- ECON 999 - PhD Research in Economics **Credits:** 1-18

Ph.D. qualifying exams

Students must pass qualifying exams in macroeconomic theory and microeconomic theory. Students are normally expected to take these exams immediately after completing the aforementioned course work. The courses preparing the students for these exams are:

- ECON 805 - Macroeconomic Theory I **Credits:** 3
- ECON 905 - Macroeconomic Theory II **Credits:** 3
- ECON 940 - Advanced Microeconomic Theory I **Credits:** 3
- ECON 945 - Advanced Microeconomic Theory II **Credits:** 3

Additional Requirements

A preliminary exam must also be passed in one other fields. This field must include at least six hours of course work at the 800-level or above. The field exam may not be taken until the macroeconomic theory and microeconomic theory exams are passed.

Master of Arts

Economics (M.A.)

The M.A. program in Economics can be tailored to prepare students for positions in business or government or to provide a solid foundation for Ph.D. level studies. The master's degree program consists of at least 30 credit hours and includes courses in microeconomic theory, macroeconomic theory and statistics. Beyond this, students have considerable flexibility in choosing coursework. Remaining courses are selected and agreed upon by the student and his or her advisory committee based on the student's background, objectives, and undergraduate preparation. The M.A. degree can be completed in one to two years.

Admission

In addition to general Graduate School requirements, the Department of Economics has the following requirements for admission.

Course requirements

- 3 credit hours of intermediate macroeconomic theory
- 3 credit hours of intermediate microeconomic theory

- 3 credit hours of statistics
- 3 credit hours of calculus

If these courses are not part of the student's undergraduate program, admission will be provisional upon completing these courses.

Grade requirements

A 3.0 GPA in the last 60 credit hours taken with no C's, or lower, in the courses listed above. Although students with academic performance below these standards may be admitted because of other considerations such as high GRE scores, admission will be probationary.

Graduate record examination

Applicants for admission to either M.A. or Ph.D. programs are normally expected to provide their Graduate Record Examination general test scores.

Degree options

Three options are available to complete the master's degree:

thesis option, report option, and Ph.D. qualifying-exam option.

Thesis option:

As part of the required 30 hours of course work, the student must complete a master's thesis, for which 6 semester credit hours are given.

Report option:

As part of the required 30 hours of course work, the student must complete a master's report for which 2 semester hours of credit are given.

Required course work

Each master's degree program must consist of at least 30 hours and include courses in microeconomic theory (ECON 720) and macroeconomic theory (ECON 805) along with a course in statistics, unless the student has previously taken a statistics course for graduate credit.

Specific course requirements beyond these core requirements are selected and agreed upon by the student and his or her advisory committee based on the student's background, objectives, and undergraduate preparation. The program may include a minor consisting of 6 to 12 hours of course credit in a single field (outside the Department of Economics).

Note:

Ph.D. qualifying-exam option: The Ph.D. qualifying-exam option requires successful completion (a grade of B or higher) of a graduate economics course that has as one of its requirements the writing of a term paper, and a master's-level pass in the Ph.D. qualifying exams in microeconomic theory and macroeconomic theory.

English

108 English/Counseling Services Bldg.
785-532-6716
Fax: 785-532-2192
gradeng@ksu.edu
http://www.ksu.edu/english/

Department Head:

Karin Westman

Director of Graduate Studies:

Anne Longmuir

Graduate Faculty:

Cydney Alexis, Ph.D., University of Wisconsin- Madison
Traci Brimhall, Ph.D., Western Michigan University
Mark Crosby, Ph.D., University College Oxford
Timothy Dayton, Ph.D., Duke University
Steffi Dippold, Ph.D., Stanford University
Elizabeth Dodd, M.F.A., Ph.D., Indiana University
Gregory Eiselein, Ph.D., University of Iowa
Carol Franko, Ph.D., University of Wisconsin
Tanya Gonzalez, Ph.D., University of California, Riverside
Christina Hauck, Ph.D., University of California, Berkeley
Donald Hedrick, Ph.D., Cornell University
Daniel A. Hoyt, Ph.D., University of Kansas
Charlotte Hyde, Ph.D., Purdue University
Michele Janette, Ph.D., Yale University
Katherine Karlin, Ph.D., University of Southern California
Alison A. Knoblauch, Ph.D., University of New Hampshire
Mary Kohn, Ph.D., University of North Carolina, Chapel Hill
Cameron Leader-Picone, Ph.D., Harvard University
Anne Longmuir, Ph.D., University of Edinburgh
James Machor, Ph.D., University of Illinois
Anuja Madan, Ph.D., University of Florida
Phillip Marzluf, Ph.D., University of Oklahoma
Wendy A. Matlock, Ph.D., The Ohio State University
Philip W. Nel, Ph.D., Vanderbilt University
Kara Northway, Ph.D., University of Kansas
Anne Phillips, Ph.D., University of Connecticut
Tosha Sampson-Choma, Ph.D., University of Nebraska- Lincoln
Tom Sarmiento, Ph.D., University of Minnesota
D. Kimball Smith, Ph.D., University of Iowa
Lisa Tatonetti, Ph.D., Ohio State University
Shirley Tung, Ph.D., University of California
Karin E. Westman, Ph.D., Vanderbilt University

Alison Wheatley, Ph.D., University of Virginia
Naomi Wood, Ph.D., Duke University
Han Yu, Ph.D., Illinois State University

Graduate Faculty Associates:

Roger Friedmann, M.A., Kansas State University
Ania Payne, M.F.A.,Northern Michigan University
Christopher Nelson, M.F.A., North Carolina State University

Admission procedures

All applications are reviewed by the director of graduate studies and the graduate advisory committee within the department. Applicants are expected to have performed at a B level or better in all of their undergraduate work, but the committee bases its judgment primarily on the student's performance in English courses.

Because some persons do not mature as students until late in their undergraduate careers, the department may sometimes accept students with less than the expected grade average if the students' final semesters indicate the ability to do graduate work. Moreover, the department recognizes that students who have majored in fields other than English as undergraduates may choose English for their graduate work. Such students are usually admitted with provisional standing and are enrolled in courses for undergraduate credit until any deficiencies are made up.

Applications need to include the following:

1. Completed application form.
2. Two copies of the official transcript from each college or university the applicant has attended. Only official copies are accepted by the Graduate School. (If the transcripts do not show an undergraduate major comparable to that of K-State with a minimum of 24 credit hours in English above the freshman level, the applicant may be admitted with provisional standing and enrolled in courses for undergraduate credit until the deficiency has been removed.)
3. Three letters of recommendation from persons qualified to speak informatively of the applicant's academic performance and his or her potential for advanced study in English.
4. A statement of objectives (a succinct account of aims and interests).
5. A copy of the applicant's GRE scores (general section only).
6. A writing sample of 8-15 pages of analytical or persuasive prose.
7. Application fee.
8. For applicants who expect to enter the creative writing track, a writing sample of either 10-30 pages of fiction or 6-10 poems.
9. For international students, an official TOEFL score report and Kansas State University's financial affidavit.

Financial support

Most M.A. students qualify to be graduate teaching assistants and are provided valuable teaching experience as well as financial support. GTAs receive a nine-month stipend and a full tuition waiver. The Department of English also offers a small number of scholarships; awarded on a competitive basis, these may be held in addition to an assistantship. Students in the creative writing track may apply for the Seaton Fellowships; students in all tracks may apply for the Edwards, Glenn, Grindell, and Popkins Scholarships.

Master of Arts

English (M.A.)

Return to: English

Master's degree requirements

The M.A. degree in English is awarded in one of five tracks, each of which can be completed in 30 to 33 hours. All tracks include a literature core (9 hours); courses in the chosen track (9 hours); electives (9 hours); a seminar (3 hours); foreign language certification (or equivalent research tool); a final writing project or thesis; and a final oral examination, a defense and discussion of the writing project or thesis.

Degree Track Options

British and American Literature

Concentration in this track is on the study of British and American literature; a student may emphasize any time period in either national literature and will work with graduate faculty who are experts in that period.

Children's Literature

Concentration in this track is on the study of children's and young adult literature; a student may emphasize a particular period or region, such as nineteenth-century American literature, or a particular genre, such as picture books. Students will work with faculty who have expertise in the area, or in a field that complements the student's focus.

Creative Writing and Literature

Concentration in this track is on the student's creative work in fiction, poetry, creative nonfiction, or drama; the student will work closely with graduate faculty well-published in the genre the student chooses to emphasize. The department's visiting writers program brings several writers of national stature to campus each year. In addition, opportunities for editorial experience are open to graduate students in this track.

Cultural Studies and Literature

Concentration in this track is on training in Marxist, feminist, poststructuralist, and psychoanalytic theory. A student may complement the study of literature with the study of politics, sociology, political economy, popular and mass culture, film, and other art forms.

Composition, Rhetoric and Literature

Concentration in this track is on composition and rhetorical theory. Like the other M.A. tracks, this one can prepare students for Ph.D. work, for teaching in community colleges, and for a career in technical writing.

Graduate Certificate

Technical Writing and Professional Communication Graduate Certificate

Contact: Han Yu
E-mail: hyu1@ksu.edu
Home page: www.ksu.edu/english/programs/techwriting.html

Offered through the English department, the graduate certificate in technical writing and professional communication recognizes the complexities and demands of written, oral, and digital communication in the workplace as well as the interdisciplinary character of writing and communication studies in the academy. Thus, while centered on writing, the certificate includes course options in rhetoric, communication, design, digital media, speech, and group dynamics.

The certificate is available to any student with an undergraduate degree. A current undergraduate may take courses toward the graduate certificate if they enroll and pay for graduate credit. Classes for the certificate do not count toward their undergraduate degree. In some cases, courses may count toward a graduate degree. Interested students should meet with the program contact for advising and planning a course of study before taking any courses.

The certificate requires four courses (12 credit hours): one in writing and three electives.

At least one course must be from outside the student's home discipline. Because of the wide variety of electives available, students can craft much of the certificate to meet their own career and educational goals. As with graduate degrees, participants are required to map out a coherent Program of Study with the certificate coordinator. The structure of the certificate is flexible enough so that most students, with advance planning, can pursue it without impeding regular degree progress.

Certificate Requirements:

This certificate recognizes the multiple demands of written, oral, and digital communication in the workplace, as well as the interdisciplinary character of writing and communication studies in the academy. Thus, while centered on writing, the certificate also includes course options in rhetoric, communication, design, digital media, speech, and group dynamics. It emphasizes the rich theoretical and rhetorical principles that govern effective communication across a range of contexts as well as the pragmatic skills needed in the workplace.

The certificate requires four courses (12 credits) in two categories: one in writing and three in electives.

Students map out a coherent plan of study with the certificate coordinator for submission to the Graduate School. The structure of the certificate is flexible enough so that most students, with advance planning, can pursue it without impeding regular degree progress.

To complete the certificate, students must submit sample work from their courses to be evaluated by graduate faculty in the area of Technical Communication.

Courses for the Graduate Certificate in Technical Writing and Professional Communication

The certificate requires four courses (12 credits) from among the categories below.

Writing

Students choose one

- ENGL 759 - Studies in Technical Communication **Credits:** 3

Related Electives

Students choose three from the following:
(Students can petition to use additional courses as electives by discussing with the Certificate Director, preferably before they take the course, and by demonstrating that course meets Certificate SLOs)

- AGCOM 610 - Crisis Communication **Credits:** 3
- AGCOM 712 - Environmental Communication **Credits:** 3
- AGCOM 810 - Scientific Communication **Credits:** 3
- COMM 726 - Seminar in Persuasion **Credits:** 3
- COMM 730 - Classical Rhetorical Theory **Credits:** 3
- COMM 733 - Rhetorical Criticism **Credits:** 3
- COMM 834 - The Rhetoric of Social Movements **Credits:** 3
- EDACE 786 - Topics in Adult Learning and Leadership **Credits:** 1-3
  (Grant Writing)
- ENGL 665 - Advanced Creative Writing: Nonfiction **Credits:** 3
  or
- ENGL 753 - Theories of Composition and Rhetoric **Credits:** 3
- ENGL 755 - Studies in Composition and Rhetoric **Credits:** 3
- ENGL 756 - Business Communication **Credits:** 3
- ENGL 758 - Scientific Writing **Credits:** 3
- ENGL 765 - Creative Writing Workshop: Creative Nonfiction **Credits:** 3
- ENGL 797 - Professional Writing Internship **Credits:** 0-18
- MC 750 - Strategic Health Communication **Credits:** 3
- MC 712 - Environmental Communications **Credits:** 3
- MC 760 - Issues, Risk, and Reputation **Credits:** 3
- MC 765 - Communication Theory **Credits:** 3

Note:

Note: ENGL 510, AGCOM 590, ART 575, COMM 526, and MANGT 520 no longer count towards the Graduate Certificate Technical Writing and Professional Communication as a result of changes to the regulations governing Graduate Certificate Programs. See the Graduate Handbook Chapter 4 B.2 for information.

Gender, Women, and Sexuality Studies

3 Leasure Hall
785-532-5738
Fax: 785-532-3299
gwss@k-state.edu
www.k-state.edu/GWSS

Department Head:

Christie Launius

Graduate Certificate Coordinator:

Valerie Padilla Carroll

Graduate Faculty:

Angela Hubler, Ph.D., Duke University
Valerie Padilla Carroll, Ph.D., Saint Louis University
Christie Launius, Ph.D., University of Wisconsin-Milwaukee
Rachel Levitt, Ph.D., University of New Mexico
Harlan Weaver, Ph.D., University of California at Santa Cruz

Graduate Faculty Associates:

Susan Rensing, Ph.D., University of Minnesota

Affiliated Faculty:

Kathleen Antonioli, Ph.D., Duke University
Chardie Baird, Ph.D., Florida State University
Soumia Bardhan, Ph.D., University of New Mexico
*Kakali Bhattacharya, Ph.D., University of Georgia
*Louise Breen, Ph.D., University of Connecticut
Traci Brimhall, Ph.D., Western Michigan University
*Yolanda Broyles-González, Ph.D., Stanford University
Necia Chronister, Ph.D., Washington University- St. Louis
Cora Cooper, D.M., Florida State University
Maria Teresa DePaoli, Ph.D., Purdue University
Janice Dinkel, MSW, University of Kansas
Elizabeth Dodd, Ph.D., Indiana University
Jessica Falcone, Ph.D., Cornell University
Leigh Fine, Ph.D., The Ohio State University
Abby Franchitti, Ph.D., University Francois Rabelais, France
Alisa Garni, Ph.D., University of California Los Angeles
Tanya Gonzalez, Ph.D., University of California Riverside
Don Hedrick, Ph.D., Cornell University
Michele Janette, Ph.D., Yale University
Laura Kanost, Ph.D., University of Kansas
Katherine Karlin, Ph.D., University of Southern California
Alison A. Knoblauch, Ph.D., University of New Hampshire
Don Kurtz, Ph.D., Kansas State University
Cameron Leader-Picone, Ph.D., Harvard University
Anne Longmuir, Ph.D., University of Edinburgh
Sara Luly, Ph.D., The Ohio State University
Wendy A. Matlock, Ph.D., The Ohio State University
Heather L. McCrea, Ph.D., SUNY-Stony Brook
Lisa Melander, Ph.D., University of Nebraska-Lincoln
Isabel Millan, Ph.D., University of Michigan
Nancy Muturi, Ph.D., University of Iowa
Philip W. Nel, Ph.D., Vanderbilt University
Mervi Pakaste, M.F.A., Penn State University
April Petillo, Ph.D., University of Arizona
Shireen Roshanravan, Ph.D., Binghamton University

Tom Sarmiento, Ph.D., University of Minnesota
Nadia Shapkina, Ph.D., Georgia State University
*Jacqueline Spears, Ph.D., Kansas State University
Lisa Tatonetti, Ph.D., The Ohio State University
Phil Tiemeyer, Ph.D., University of Texas at Austin
Mary Tolar, Ed.D., Kansas State University
Caroline Tushabe, Ph.D., SUNY Binghamton
Jennifer Vellenga, M.F.A., Ohio University
Alison Wheatley, Ph.D., University of Virginia
Naomi Wood, Ph.D., Duke University
*Susan Yelich-Biniecki, Ph.D., University of Wisconsin-Milwaukee

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Emeritus Faculty:

Torry Dickinson, Ph.D., University of New York-Binghamton
Bonnie Nelson, Ph.D., Pennsylvania State University

Program description

The program offers a Graduate Certificate for students in M.A., M.S., doctoral, and professional programs at Kansas State. Students have the opportunity to work with specialists in feminist theory, scholarship, and pedagogy from different disciplines. The certificate will enhance job opportunities by broadening students' perspective on gender issues and by preparing them to teach Gender, Women, and Sexuality Studies courses.

Graduate Certificate

Gender, Women, and Sexuality Studies Graduate Certificate

Contact: Valerie Padilla Carroll
E-mail: padillacarroll@ksu.edu
Home Page: http://www.k-state.edu/gwss/
Gender, Women, and Sexuality Studies

The Department of Gender, Women, and Sexuality Studies offers a graduate certificate for students in M.A., M.S., Ph.D and professional programs at Kansas State or those wishing to complete the certificate independent of another degree. It consists of 12 hours of graduate level courses in gender, women, and sexuality studies. One core course–GWSS 810, Gender: Interdisciplinary Perspectives on Feminist Thought and Practice–is required. Three other courses at the 600 level and above can be chosen from an approved list of electives from a variety of disciplines.

To apply to the graduate certificate program, admitted students enrolled in a master's or doctoral program at K-State should email the graduate certificate coordinator, outlining their goals in pursuing the certificate, and copying their major professor or director of graduate studies in their degree program. Students wishing to pursue the certificate independently of another degree program at K-State should apply online through the graduate school. After they have been accepted, students should meet with the coordinator to identify the courses most congruent with their chosen program of study.

Program requirements

The certificate consists of 12 hours of approved graduate level courses at the 600 level or above in gender, women, and sexuality studies.

Core course required (3 hours):

- GWSS 810 - Theories and Methodologies **Credits:** 3

Elective courses (choose 9 hours from the following list of courses)

Courses followed by a subtitle in parentheses vary and count toward the Gender, Women, and Sexuality Studies Graduate Certificate only when offered with the indicated subtitle.

- GWSS 605 - Social Change Field-Experience **Credits:** 3
- GWSS 610 - Capstone Seminar in Gender, Women, and Sexuality Studies **Credits:** 3
- GWSS 700 - Advanced Topics in Gender, Women, and Sexuality Studies **Credits:** 1-3
- GWSS 784 - Internship in Gender, Women, and Sexuality Studies **Credits:** 1-12
- GWSS 799 - Independent Study for Graduate Students or Advanced Undergraduate Students **Credits:** 1-3
- ANTH 710 - Writing Cultures: Ethnographic Methods **Credits:** 3
- COMM 630 - Special Topics in Rhetoric and Communication **Credits:** 3 (Gender and Communication)
- EDACE 816 - Foundations of Social Justice Education: Research, Theory, and Practice **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- EDACE 750 - Women, Education, Leadership, and Work **Credits:** 3
- EDCI 735 - Gender Implications for Education **Credits:** 3
- EDCI 886 - Seminar in Curriculum and Instruction **Credits:** 1-18 (Women, Education, and Leadership)
- ENGL 605 - Readings in Medieval Literature **Credits:** 3 (Medieval Others: Dragons, Damsels, & Death, The Idea of Work in the Middle Ages)
- ENGL 625 - Readings in Eighteenth-Century British Literature **Credits:** 3 (Austen, Readings in 18th Century Women, Restoration Drama, or Ghosts and Goths)
- ENGL 630 - Readings in Nineteenth-Century British Literature **Credits:** 3 (Victorian Childhoods)
- ENGL 635 - Readings in Twentieth-and Twenty-First Century British Literature **Credits:** 3 (Bloomsbury Group)
- ENGL 650 - Readings in Twentieth- and Twenty-First-Century American Literature **Credits:** 3 (Queer Native Literatures or Dream Acts)
- ENGL 655 - Readings in American Ethnic Literature **Credits:** 3 (What is African American Literature? or Dream Acts: Immigration in Ethnic Literature)
- ENGL 660 - Readings in Major Authors **Credits:** 3 (The Brontes, Gender and Performance, George Eliot, Louise Erdrich and Sherman Alexie, Shakespeare, Austen and Her Legacy, Whitman and Dickinson, American Indian Literatures, American Gothic, or Louise Erdrich)
- ENGL 670 - Topics in British Literature **Credits:** 3 (18th Century British Women Writers, Downton Abbey in Context)
- ENGL 680 - Topics in American Literature **Credits:** 3 (In the Shadows of American Literature, Latino/a Literature, or Asian American Literature, or Two-Spirit Literature)

- ENGL 695 - Topics in Literature **Credits:** 3
  (African American Children's Literature, Innocence and Experience, or Postcolonial Literature)
- ENGL 705 - Theories of Cultural Studies **Credits:** 3
- ENGL 710 - Studies in a Literary Genre **Credits:** 3
  (Back to the Future) (Gender and Sexuality in American Indian Literature, Romances and Saints' Lives)
- ENGL 720 - Studies in a Major Author **Credits:** 3
  (The Brontes, Drama, Shakespeare, or Extreme Shakespeare)
- ENGL 725 - Studies in Children's/Young Adult Literature **Credits:** 3
  (African American Children's Literature)
- ENGL 730 - Studies in a Literary Period **Credits:** 3
  (Alcott and Twain)
- ENGL 740 - Studies in Literary Theory **Credits:** 3
  (African American Literary Theory)
- ENGL 745 - Cultural Studies **Credits:** 3 (Queer Cinema in Context)
- ENGL 745 - Cultural Studies **Credits:** 3 (Welcome to Apocalypse)
- ENGL 755 - Studies in Composition and Rhetoric **Credits:** 3
  (Power and Persuasion)
- ENGL 825 - Seminar in Literature **Credits:** 3
  (Golden Age of Children's Literature, Medieval Endings, Harry Potter and Literary History, Econ/Vict. Lit)
- ENGL 830 - Seminar in Cultural Studies **Credits:** 3
  (Affect Theory, Queer Native Literature, American Feminisms, US Latino Studies, Victorian Women Writers, or Literature of Mad Men)
- ENGL 840 - Seminar in Composition and Rhetoric **Credits:** 3
  (Maverick Rhetorics)
- GRMN 701 - Topics in Eighteenth Century German Literature and Culture **Credits:** 3
  (Judaism in Germany)
- GRMN 705 - Topics in Twentieth and Twenty-First Century German Literature and Culture **Credits:** 3 (The Graphic Novel and Postmemory)
- FSHS 865 - Human Sexuality **Credits:** 3
- HIST 984 - Topics in American History **Credits:** 1-3
  (Gender in American History, or Gender and Sexuality in the United States)
- MC 612 - Gender, Class, Race, and the Media **Credits:** 3
- CFT 869 - Systematic Treatment of Trauma Violence and Substance Abuse **Credits:** 3
- POLSC 606 - Gender and Politics **Credits:** 3
- POLSC 799 - Pro-Seminar in Political Science **Credits:** 3
  (Women and Law)
- SOCIO 633 - Gender, Power, and Development **Credits:** 3
- SOCIO 635 - Sociology of Human Trafficking **Credits:** 3
- SOCIO 665 - Women and Crime **Credits:** 3
- SOCIO 670 - Diversity and Social Interaction in the Workplace **Credits:** 3
- SOCIO 833 - Gender Differentiation and Inequality **Credits:** 3
- SOCIO 933 - Gender and Society **Credits:** 3
- THTRE 782 - Women in Theatre **Credits:** 3

Note

Other appropriate graduate level Topics and Readings courses are offered every year in a variety of disciplines. Thus, students have a large selection of classes to choose from each year.

Geography and Geospatial Sciences

1002 Seaton Hall
785-532-6727
Fax: 785-532-7310
arnaudtemme@ksu.edu
http://www.ksu.edu/geography

Department Head:

Charles W. Martin

Graduate program director:

Arnaud J. Temme

Graduate faculty:

*Marcellus M. Caldas, PhD, Michigan State University
*Douglas G. Goodin, PhD, University of Nebraska
*J.M. Shawn Hutchinson, PhD, Kansas State University
*Audrey Joslin, PhD, Texas A&M University
*Abigail Langston, PhD, University of Colorado
*Max Lu, PhD, University of Indiana
*Charles W. Martin, PhD, University of Kansas
Laura Moley, Ph.D., University of Kansas
*Katherine S. Nelson,Ph.D., Vanderbilt University
*Jeffrey S. Smith, PhD, Arizona State University
*Arnaud Temme, PhD, Wageningen University, the Netherlands
*Jida Wang, PhD, University of California, Los Angeles

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Ancillary Faculty:

*Kendra K. McLauchlan (National Science Foundation), PhD, University of Minnesota
*Charles W. Rice (Agronomy), PhD, University of Kentucky
*David R. Seamon (Architecture), PhD, Clark University

Emeritus Faculty:

*Kevin Blake, PhD, Arizona State University
*John A. Harrington Jr., PhD, Michigan State University
*Richard A. Marston, PhD, Emeritus, Oregon State University

Overview

The Department of Geography and Geospatial Sciences graduate program at Kansas State University offers a Master of Science (MS) degree and a Philosophy (PhD) degree in Geography. Discovery and dissemination of new knowledge are the cornerstones of our mission. Drawing upon the research interests and experience of the faculty, the department's core areas of geographic inquiry are illustrated in the figure below. Much of the research conducted by faculty and graduate students incorporates more than one of these themes, and we accomplish these research activities in an atmosphere of open inquiry and academic freedom.

The department's research mission incorporates studies that reinforce the land-grant mandate of the institution, including agricultural water management and rural community development, examination of the role on climatic variability on Great Plains ecosystems, and assessment of changes in stream systems and reservoirs related to human activity. Research themes include:

- Research into human spatial behavior, regional and place identity, and the relationship between humans and the environment, such as societal adjustments to floods, population redistribution in the Great Plains, cultural, social, and ethnic change in the landscape, and assessments of migration decisions associated with residential satisfaction;
- Examination of the applicability of new geographic knowledge and the emerging technologies associated with computer cartography, geographic information systems, and remote sensing; and
- A symbiotic relationship among discovery of new knowledge, graduate and undergraduate education, and improvement in the quality of life through research application to societal issues.

In accomplishing the University's instructional mission, we stress quality teaching and advising and strive to provide all students with opportunities to develop the knowledge, understanding, and skills characteristic of an educated person. Our contributions include:

- Providing undergraduate and graduate students with a thorough grounding in the discipline of geography from a liberal arts perspective;
- Teaching service courses that provide students with an opportunity to meet a number of either general education or college distribution requirements with classes and seminars that deal with international awareness, social and cultural diversity, and human interactions with the physical environment;
- Preparing students to better appreciate local, regional, and global affairs by promoting attainment of knowledge and modes of thought that will help individuals make meaningful lifetime decisions;
- Educating students so that they are successful in either further academic study or professional employment;
- Offering extracurricular learning experiences, including geographically oriented internships and seminars by internationally renowned geographic scholars, that promote academic excellence and cultural diversity; and
- Using educational approaches that permit the communication and application of basic geographic concepts and techniques that have broad implications for other disciplines.

The benefits of the graduate program at K-State include a balanced curriculum and a commitment to a broad-based approach to geographic research and scholarship. The moderate size of the department fosters an informal, friendly atmosphere with the opportunity to work closely with faculty. Teams of students and faculty frequently collaborate on research and publications. A graduate certificate in GIScience is also available, which can be earned as a stand-alone certificate or in conjunction with a master's or doctoral degree.

The department is centrally located on campus in Seaton Hall near the libraries, most classrooms, and the Student Union. Departmental resources include the Geographic Information Systems/Spatial Analysis Laboratory (GISSAL) for geospatial analysis, the Remote Sensing Research Lab, with capability for collection and analysis of imagery and proximal remote sensing data, the Paleoenvironment Lab, with a full suite of instrumentation for sediment and pollen analysis, The Soil-Geomorphology lab, equipped to characterize pedogenic and geomorphic processes, and the Geospatial Teaching Lab, equipped for interactive and distance teaching across the range of GIScience. Software resources for research and teaching include a campus site license from ESRI and a range of widely used statistical and remote sensing programs.

Admission procedures and requirements

For complete information on how to apply to a geography graduate program, visit the Department of Geography and Geospatial Sciences website.

Regular admission to the Graduate School and the Department of Geography and Geospatial Sciences requires a 3.0 grade point average on a 4.0 scale, three letters of recommendation, official transcripts, and a one- to two-page statement of interests and objectives. Admission to the graduate program is contingent upon the willingness of a geography faculty member to serve as the student's advisor. The Graduate Program Committee, currently consisting of Drs. Temme (director), Goodin, Joslin, Langston, and Nelson, administers the admissions process. Ph.D. students who have not completed the master's degree by the end of their first semester in the Ph.D. program are subject to dismissal. In some cases, applicants with less than a 3.0 grade point average may be admitted to the M.A. program on a probationary basis.

For non-degree applicants the Department of Geography and Geospatial Sciences requires official transcripts, a one- to two-page statement of interests and objectives, and two letters of recommendation.

Student applicants should Graduate School application deadlines, which are usually earlier for international students. The faculty contact for questions about admission is Dr. Arnaud Temme (arnaudtemme@ksu.edu).

Financial support

Several positions as a Graduate Teaching Assistant (GTA) or Graduate Research Assistant (GRA) are available each year on a competitive basis for nine-month appointments; some support may also be available for summer months. Full-time GTAs receive a stipend, a full tuition waiver and a start-of-year Steve R. Kale scholarship. GRAs, supported from geography faculty research grants, receive a stipend, tuition support, and a tuition reduction from out-of-state to in-state rates. A limited number of competitive Timothy R. Donoghue Scholarships may also be available from the Graduate School to enhance graduate stipends; the Department of Geography applies for these on behalf of qualified students.

Graduate assistantships are generally awarded for two years for M.A. students and three years for Ph.D. students, contingent upon satisfactory performance of the GTA or GRA duties and academic progress, including the achievement of a minimum cumulative 3.33 grade point average in graduate studies at Kansas State University. Doctoral students may be eligible for a fourth year of GTA funding, depending on the needs and resources of the department and their performance. For a student to receive a fourth year of GTA funding the student must have demonstrated good departmental citizenship and high-quality teaching. The student must also have achieved PhD Candidacy by passing the preliminary examination and presenting an acceptable dissertation proposal before February 1 of the student's third academic year.

Graduate Teaching Assistant Guidelines:

- GTA assignments are made by the Department Head in consultation with the Graduate Program Committee and faculty. Tasks generally include teaching lecture or lab sections, or providing assistance for faculty who are teaching large enrollment classes, such as proctoring exams, developing class resources, and other tasks. Most GTAs hold 9-month .5 FTE appointments; this requires 20 hours/week of GTA work during the fall and spring semesters.

Graduate Research Assistant Guidelines:

- Responsibilities are determined by the principal investigator but generally include data analysis, report and manuscript writing, preparation of graphics for professional presentations, attending meetings on the research project, and completing hardware and software maintenance.

Career opportunities

Career opportunities in geography are diverse and employment prospects after receipt of the master's or Ph.D. degree are excellent. Employment opportunities include positions in business, government, and education.

Federal agencies, such as the Environmental Protection Agency, National Imagery and Mapping Agency, Defense Intelligence Agency, Bureau of the Census, and Bureau of Land Management employ numerous geographers each year. State and local agencies employ geographers with specialties in many areas, including environmental geography, physical geography, health, cultural geography, planning, and spatial techniques.

The geographer's training in location analysis, social and environmental problems, and a variety of spatial techniques including remote sensing, geographic information systems, and computer cartography, make the geographer particularly valuable in the private sector. Job titles such as geographic information systems manager, environmental planner, market researcher, and risk analyst are just a few of the varied positions held by geographers in business.

Graduates of the department have also achieved success in teaching and/or research positions at public and private educational institutions. PhD graduates of the department, for example, are employed as professors at a variety of universities, including Auburn University, Fort Hays State University, Kansas State University, Macalester College, Morehead State University, Auburn University, University of North Dakota, Saginaw Valley State University, Frostburg State University, and Jacksonville State University.

Faculty-Graduate Student Liaison

The Faculty-Graduate Student Liaison will serve a one-year term, potentially renewable, from July 1 to June 30. The Liaison will be selected by the graduate students, subject to faculty approval. The student officers of the local chapter of Gamma Theta Upsilon, the international geographical honor society, also handle some of the responsibilities listed below, thus the Liaison must coordinate the implementation of these responsibilities with GTU officers.

Responsibilities include:

- Fostering an atmosphere of collegiality and respect among all departmental citizens.
- Enhancing the communication of graduate program issues and events among the faculty, department head, graduate program director, and graduate students.
- Coordinating graduate student involvement in departmental events, such as lunches and receptions for visiting speakers, graduate school fairs, open house, and the alumni board meeting.
- Attending faculty meetings, except for closed sessions; raising issues of interest to graduate students; and communicating with graduate students about the content of these meetings.

General Requirements

Program Advising

Each new graduate student will be assigned an initial graduate advisor to assist in planning the student's graduate program. A student may select another faculty member to become the student's primary advisor at any time, contingent upon the willingness of the faculty member to serve as the advisor. In accordance with Graduate School regulations, a copy of the student's Program of Study together with the names of the major professor and committee members should be filed with the Graduate School after completion of at least nine graduate hours. The program of study is typically filed in the second semester, for an MA student, and no later than the fourth semester for a doctoral student. (The terms major professor, thesis/report/dissertation supervisor, committee chair, and advisor are used interchangeably.)

The M.A. degree supervisory committee must include a minimum of three faculty members, all of whom may be geographers. The thesis supervisor is typically the graduate advisor for the duration of the program of study. The doctoral supervisory committee must include a minimum of four faculty members, one of whom must be from a department other than geography, i.e., a non-geographer. The Graduate School, based upon a request from the student's

committee chair, must approve any committee members from other universities. All members of a supervisory committee must have Graduate Faculty status at Kansas State University; for a list see: https://www.k-state.edu/geography/people/index.html.

Graduate Program Meetings

The program meeting is an evaluation of the student's past academic experiences and discussion about the student's program objectives. The planning meetings serve as a foundation from which to plan the program of study, obtain recommendations for course work beyond that required in the program of study, and discuss progress toward the degree and completion of the report, thesis, or dissertation. Their first semester meeting will be with the student, advisor, and any other faculty invited by the advisor. During each semester thereafter the program meeting will include the faculty on the supervisory committee. Graduate students are also required to submit an annual progress report.

Transfer Credits

The Geography Department may accept up to a maximum of ten credit hours of graduate credit from another university. Only courses that logically fit the student's program of study will be accepted, based on a majority vote of the supervisory committee.

Seminars in Geography

For purposes of program requirements the following courses in geography are considered graduate level seminars. This list is subject to change. Please see your advisor for information about seminars that are likely to be offered during your semesters of residence. Seminar in Regional Geography (680), Topics in Remote Sensing (711), World Population Patterns (715), Geography of Land Use (720), Geography of Water Resources (725), World Agricultural Systems (730), Topics in Climatology (735), Urban Geography (750), Human Impact on the Environment (760), Geography of Natural Hazards (765), Perception of the Environment (770), Cultural Geography (780), Seminar in Cultural-Economic Geography (790), Rural Population Geography (815), Rural Geography (830), Rural Economic Development (835), Advanced Environmental Geography (840), Rural Cultural Geography of the U.S. (855), Rural Medical Geography (865), Western Landscapes (870), Spatial Data Analysis and Modeling (880), Advanced Spatial Analysis Techniques (890), Methods, Theory, and Models in Geography (900).

Grade Requirements

Graduate School regulations require students to 1) have a cumulative GPA of 3.0 or higher on graduate course work and on course work in the Program of Study, 2) meet all the requirements of the Graduate School, the student's academic program area, and the student's supervisory committee, and 3) be enrolled during the semester in which the degree requirements are completed. The Department of Geography and Geospatial Sciences requires all graduate students receiving funding as a GTA or GRA to maintain a minimum cumulative GPA of 3.33 in coursework at Kansas State University.

Credit/No Credit Grading
Graduate School regulations pertaining to the taking of courses by graduate students on a credit/no credit basis are highly restrictive. In the Geography and Geospatial Sciences Department, only the Master's Report (GEOG 898), the Master's Thesis (GEOG 899), and the Ph.D. Research in Geography (GEOG 999), may be taken on a credit/no credit basis. Very few courses in other departments have been similarly designated for credit/no status for graduate credit; most of the 600 and 700 level courses shown in the course schedule that are available for credit/no credit grading are so indicated only in reference to undergraduate credit. In any case, no more than three hours of such credit (excluding the Report, Thesis, or Dissertation) may appear on the program of study. Independently of the program of study, additional courses may be taken on a credit/no credit basis with the approval of the professor offering the course. These courses may not be applied toward a degree.

A/Pass/Fail
Only courses beyond those listed on the program of study may be taken on A/PASS/F basis with the approval of the major professor and the professor offering the course. These courses may not be applied toward the requirements for an MA or Ph.D. degree.

Course Load

Students should choose their course load for any given semester in consultation with their advisor. All geography graduate students in residence are required to enroll in GEOG 800 (Graduate Seminar in Geography) each semester. Graduate Teaching and Research Assistants are required by the Graduate School to carry a minimum program of 6 credit hours per semester, and those holding a 5/10 time assistantship may not take more than 10 credit hours of course work during each semester. The Geography and Geospatial Sciences Department requires that GTAs take at least six credit hours each semester in courses that are either a part of, or relevant to, the student's program of study.

Independent Study

Graduate School regulations place a limit of 3 credit hours of independent study which may be counted as part of the hours required for the MA and 6 credit hours for the Ph.D. degree excluding, however, the thesis, dissertation, or report hours. A student's advisor may petition the Graduate School for an exception to these limits.

Visiting Scholars

In order to broaden the graduate students' experience with various specialties in geography, and various methodological outlooks, the Department invites four or more geographers a year to visit our community. Ordinarily, such a visit will include a public lecture, a departmental seminar, a student luncheon, and an informal evening gathering often at a faculty member's home. Graduate students in residence are expected to attend all departmental speaker events as part of their enrollment in GEOG 800 (Graduate Seminar in Geography). In the event an unavoidable conflict arises regarding attendance at any of the scheduled events, the student should give prior notice to the advisor.

Thesis and Dissertation Proposals

Students will prepare a thesis or dissertation under the direction of a supervising faculty member. The supervisor will certify that a written proposal is acceptable for presentation to the assembled departmental faculty and graduate students. Students in the M.A. thesis option must present a thesis proposal as part of Geographic Research Methods (GEOG 821). In addition, students pursuing the non-thesis option must present a research proposal in Geographic Research Methods. The student's desire to pursue the thesis or non-thesis option must be made known to the faculty before the presentation. Following the presentation, thesis supervisory committee will discuss with the student the necessary proposal revisions, if any, and appropriate next steps in the research. Prior to the preliminary examination, Ph.D. students will complete a written dissertation proposal and publicly present it to the supervisory committee, other faculty, and other students. An oral presentation of the proposal will be conducted before the supervisory committee, other faculty, and students.

As regular faculty carry nine-month appointments (mid-August through mid-May), there should be no expectations on the part of the student that members of the faculty will be available during the summer term for presentation of proposals, preliminary exams (either oral or written), final oral exams, or thesis or dissertation defenses. Participation in such activities is voluntary and at the discretion of individual professors.

As a thesis or dissertation topic is developed, the student should consult closely with and seek approval from the major professor. The members of the graduate supervisory committee should be selected based on consultation with the major professor and the department head. The thesis or dissertation supervisor will assume the duties of major professor (advisor) for the remainder of the student's program. Students should work with their advisor to establish a complete

committee. It is the student's responsibility to inquire as to whether or not a faculty member is interested in serving on the committee.

Enrollment During Final Term

Graduate School regulations specify that students must be enrolled for the term in which their degree requirements are completed. This requirement may be met by enrolling in one additional hour of either Geography 898, 899 or 999 during the term the student expects to receive his or her degree. This applies even for students who leave campus before the end of the term. Note, however, that the Ph.D. Candidate must maintain continuous enrollment (at least 1 hour each spring and fall semester) from the completion of the preliminary exam until the Graduate School accepts the dissertation. A student who misses the normal deadlines for graduation within a term but who completes all the requirements before the end of that term is not required to enroll for a subsequent term.

Inactive Status

A student not yet admitted to candidacy will be considered inactive if he or she has not enrolled for two consecutive years. Once in inactive status a student must reapply to (and be accepted into) a graduate program before being considered for re-entry by the Graduate School. In order to be allowed to resume graduate studies, the student must meet all requirements for entry in force at the time of the new application. Inactive students who seek to regain active status will not, however, be required to recreate materials submitted with their original applications and held in their files by the Graduate School. If allowed to regain active status, the formerly inactive student will be subject to all requirements in force in the graduate program and in the Graduate School at the time the student returns to active status.

Doctor of Philosophy

Geography (Ph.D.)

Program objectives

The Geography Ph.D. at Kansas State University is designed to develop and enhance a student's knowledge and ability to conduct original independent research that makes a scholarly contribution to the student's areas of specialization. The Ph.D. program fosters:

- an understanding of scientific inquiry
- knowledge of the structure of the geographic discipline, its history, issues, methods, and trends;
- proficiency in appropriate analytical and technical skills; and
- competency in communicating the results of research

Doctoral degree requirements

Applicants to the Ph.D. program are expected to have earned a master's degree with a thesis or equivalent. Students who have not completed a master's degree by the end of their first semester in the Ph.D. program will be subject to dismissal. Students without a previous degree in geography are encouraged to apply. Students without previous course work in human geography, physical geography, and spatial techniques, may, however, be required to add hours to their program of study. If a student has not previously taken a course in the history and philosophy of geography, the student

will be required to take GEOG 820 as part of the program of study. The addition of hours to a program of study is determined on a case-by-case basis during the program planning interview in the student's first semester and will reflect the faculty's appraisal of the student's experience and needs. Courses taken to strengthen the student's background in geography may count toward the 30 credit hours of course work required for the Ph.D., but only if approved by the student's graduate committee.

Students will complete a minimum of 60 credit hours beyond the master's degree: at least 30 credit hours of course work and 30 credit hours of dissertation research.

All students seeking the Ph.D. in geography will complete the following requirements:

1. Required courses

These courses must be taken while in residence.

- Two 3-credit hour research seminars in geography at the 800-level or above. **Credits:** (6)
- GEOG 900 - Methods, Theory, and Models in Geography **Credits:** 3

2. 800-level course requirement

No more than 6 credit hours of 500-level courses are permitted in a Ph.D. program, but no 500-level geography course may appear in the program of study.

Not more than 6 hours of independent study or other individualized courses should ordinarily appear on the program of study for the doctoral program. For exceptions to this, the chair of a student's supervisory committee should write a memo to the Graduate School that accompanies the program of study and explains the reasoning for the exception request.

3. Non-Geography course requirement

At least three hours must be taken in a department other than geography. Preferably, a course will be taken from a faculty member who will serve as the outside member of the supervisory committee.

4. Residence requirement

Students must spend at least one full academic year in residence.

5. Dissertation proposal

Students must complete a written dissertation proposal and present it orally before the supervisory committee, other faculty, and students. Following the public presentation, the supervisory committee and the student will discuss the appropriate revisions to the proposal, if any, and the next steps in the research.

6. Preliminary examination

To be eligible to schedule the preliminary examination, the student must:
a) have an approved program of study on file with the Graduate School,
b) have completed a satisfactory written dissertation proposal and presented it orally, and
c) have completed 21 hours of graduate course work on the program of study, with a grade point average of 3.33 or better.

To schedule the preliminary exam, the student and major professor must complete the "Request for Preliminary Examination Ballot." The student and major professor should submit this form to the Graduate School one month prior to the date of the oral portion of the exam. The preliminary exam must be completed at least 7 months prior to the final defense of the dissertation. The examination covers the student's fields of specialization as defined by the student's doctoral committee. It will include both a written and an oral portion. Performance on the examination must provide evidence of the student's mastery of the subject in four sub-fields as defined by the supervisory committee, knowledge of related geographic literature, and an understanding of research theory and methods. Copies of the examination are filed with the department and made available on request to any graduate faculty member for a period of two years from the date of examination.

7. Ph.D. candidacy

Passing the preliminary examination is required for the student to become a doctoral candidate.

The period of candidacy may last up to five years from the end of the semester in which the preliminary exam was passed. If a student fails to complete both the dissertation and final oral examination within this period, the student will be dropped from candidacy. The Ph.D. Candidate must maintain continuous enrollment (at least 1 hour each spring and fall semester) from the completion of the preliminary exam until the Graduate School accepts the dissertation.

8. Ph.D research hours requirement

Students must complete 30 credit hours of GEOG 999.

- GEOG 999 - PhD Dissertation Research **Credits:** 1-18

9. Dissertation defense/final examination

The dissertation will be a cohesive, original, and independent contribution to scholarship. The research is to be performed under the guidance of the major professor and the supervisory committee and must be acceptable to them and to the Graduate School representative, who chairs the final examination. The dissertation must follow guidelines outlined by the Graduate School.

A final oral examination in defense of the dissertation will be conducted and evaluated by the supervisory committee. Two weeks prior to the dissertation defense, copies of the defense draft will be distributed to the supervisory committee and one will be placed in the department office for review by other faculty and graduate students. Other faculty and students are encouraged to attend the public presentation at the defense.

Sample Doctoral Program:

First semester

- 800-level research seminar in Geography - Credits: (3)
- GEOG 999 - Credits: (1)
- Program Meeting with potential committee members
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0
- GEOG 820 - Geographic Thought **Credits:** 3
- GEOG 830 - Seminar in Rural Geography **Credits:** 3

Second semester

- 800-level research seminar in Geography - Credits: (3)
- GEOG 999 - Credits: (1)
- Elective course - Credits: (3)
- Form Supervisory Committee
- Submit doctoral program of study to the Graduate School
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0
- GEOG 900 - Methods, Theory, and Models in Geography **Credits:** 3

Third semester

- Write dissertation proposal
- 800-level non-Geography seminar - Credits: (3)
- GEOG 999 - Credits: (4)
- Program Meeting with Committee
- Elective course - Credits: (3)
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0

Fourth semester

- Present dissertation proposal (early in the semester)
- Elective course - Credits: (3)
- Elective course - Credits: (3)
- GEOG 999 - Credits: (4)
- Preliminary Exam (late in the semester)
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0

Fifth semester

- GEOG 999 - Credits: (10)
- Program Meeting with Committee
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0

Sixth semester

- GEOG 999 - Credits: (10)
- Defend Dissertation (Final Examination)
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0

Master of Science

Geography (M.S.)

Program objectives

The Master of Science degree in Geography at Kansas State University is designed to further develop the student's understanding of geographic perspectives and to assist the student in identifying and addressing specific and significant geographic research questions.

Students without a previous degree in geography are encouraged to apply. Students without previous course work in human geography, physical geography, and spatial techniques, may, however, be required to add hours to their program of study. The addition of hours to a program of study is determined on a case-by-case basis during the program planning interview in the student's first semester and will reflect the faculty's appraisal of the student's experience and needs. Courses taken to strengthen the student's background in geography may count toward the course work required for the M.A., but only if approved by the student's graduate committee.

Required courses

The two required courses for the MS degree are: GEOG 700 - Quantitative Analysis in Geography (Though this is not required for students in the Report Option for Teachers), and GEOG 821 - Research and Professional Development in Geography. Additionally, the Graduate School stipulates that students may include no more than three credits of independent study coursework on the program of study, and at least 18 hours of the coursework on the program of study should be at the 700 level and above. All geography students in the Master of Science degree program are required each semester to enroll in GEOG 800 - Graduate Seminar in Geography.

Final Examination

All master's students will take a final oral examination administered by the supervisory committee. Other faculty and students are encouraged to attend the public presentation portion of the examination.

For students completing the thesis option, the examination consists of a defense of the thesis, including its relationship to geography. Two weeks prior to the final examination the written thesis will be available for review by the supervisory committee, other faculty, and graduate students.

For students completing one of the report options, the examination consists of a defense of the report and a comprehensive examination on the student's areas of study and geography.

Master's degree options

Students may choose, in consultation with their advisors, one of the three programs leading to the M.S. degree. For most students, the Department of Geography encourages completion of the thesis option.

Thesis option

This option requires 30 hours of graduate credit including 6 hours of credit for a thesis. Of the 24 hours of credit required in course work, at least 15 hours must be in geography. Three research seminars in geography (3 credit hours each) are required, with at least one at the 800 level.

Sample master's thesis program

1st Semester

- Geography research seminars (one of the three geography seminars must be at the 800 level) - Credits: (6)
- Elective course - Credits: (3)
- Program Meeting with possible committee
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0

2nd Semester

- Elective course - Credits: (3)
- Form supervisory committee (early in the semester)
- Program Meeting with committee to discuss approval of thesis proposal (end of semester)
- Submit program of study to the Graduate School
- Develop and present thesis proposal in GEOG 821
- GEOG 700 - Quantitative Analysis in Geography **Credits:** 3
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0
- GEOG 821 - Research and Professional Development in Geography **Credits:** 3

3rd Semester

- Geography research seminar - Credits: (3)
- Elective courses - Credits: (6)
- Program Meeting with committee
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0

4th Semester

- Defend thesis (final examination)
- GEOG 899 - Credits: (6)
- GEOG 800 - Graduate Seminar in Geography **Credits:** 0

Report option

This option is a nonthesis program designed for students who have a specific professional goal in mind and who do not intend to continue for a doctorate. A student must consult with their advisor to arrange a program of study that is acceptable to the supervisory committee. Thirty-two hours of graduate-level work are required, including a two-credit hour Master's Report (GEOG 898). Up to twelve hours may be outside the geography department. The student must complete at least one course, which may include independent study, with each member of the supervisory committee.

Procedures relating to the preparation of a master's report are almost identical to those relating to the thesis, including the formal proposal of the topic, except that approval of the topic may be given by the individual faculty member supervising the report.

Report option for teachers

This option is for students who intend to pursue or continue careers in public school or junior college teaching. It is open to persons who are already certified to teach at the public school or junior college level in any state and to those who will make courses required for such certification an integral part of their program. Thirty-two hours of graduate-level work are required, including a two-credit hour Master’s Report (GEOG 898). The master’s report shall consist of

the design of a teaching syllabus in a sub-field of geography in conjunction with a faculty member in the College of Education, or a research project concerning geographic education. During their residence, students are required to present three lectures in Department of Geography courses, with no more than two of the lectures in the same course. One academic credit (under GEOG 850, 860, or 870) will be awarded for this activity. The student must complete at least one course, which may include independent study, with each member of the supervisory committee. This option is not suitable for any student who may continue for a doctorate degree.

Graduate Certificate

Geographic Information Science Graduate Certificate

Contact: J.M. Shawn Hutchinson
E-mail: shutch@ksu.edu

Geographic information systems (GIS) are an organized collection of computer hardware, software, geographic data, and people designed and organized to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information. Effective use of geographic information systems (GIS) has evolved into a requisite skill in most academic research, as well as for agencies in both the public and private sectors. Graduate students from such varied disciplines as agronomy, biological sciences, economics, engineering, geography, landscape architecture, and sociology benefit from applying GIS and related technologies such as global positioning systems (GPS), remote sensing, geostatistics, and computer programming to input, analyze, model, and display (map) location-based data.

Offered through the Geography graduate program, the Graduate Certificate in Geographic Information Science (GIScience) is designed to provide graduate students with the knowledge and skills necessary to succeed in the rapidly expanding field of GIScience or apply GIScience concepts in their own field of study. Three components comprise the program curriculum: A set of prerequisites to gain entry into the program, core geospatial courses focusing on geographic information systems (GIS) and satellite remote sensing, and a set of elective courses that allow for the exploration of advanced themes in GIScience and/or the application of GIScience in geography or related disciplines. The Graduate Certificate in GIScience may be awarded as a "stand-alone" certificate or in conjunction with the completion of graduate degree requirements in one of the academic units at Kansas State University. The certificate program is administered by the Department of Geography and is supervised by a multidisciplinary group of instructors and researchers from across the K-State campus.

Certification requirements:

The course requirements for the Graduate Certificate in GIScience are shown below. A minimum of 15 graduate credit hours is required to earn the certificate. A maximum of two geospatial core courses may be waived and replaced with approved electives in cases where students have completed prior coursework for undergraduate credit. A minimum of 12 hours at the 600-level or higher is required. Students must earn a minimum GPA of 3.33 in the geospatial core to earn the certificate.

Prerequisites:

- Competence in cartography, thematic mapping, or geodesy, or geomatics (e.g., GEOG 302)
- Competence in basic statistics (e.g., STAT 320, STAT 330, STAT 350)
- Competence in object-oriented computer programming (e.g., Python)

Geospatial Core (10 credit hours):

- GEOG 508 - Geographic Information Systems I **Credits:** 4
- GEOG 605 - Remote Sensing of the Environment **Credits:** 3
- GEOG 608 - Geographic Information Systems II **Credits:** 3

Elective Courses - Select Two (minimum of 6 credit hours):

In addition to the Geospatial Core courses, students enrolled in the Graduate Certificate on GIScience program must tale a minimum of 6 additional credit hours of electives consisting of courses in intermediate/advanced GIScience or application courses with a major emphasis on the use of geospatial technologies. Elective requirements may be satisfied from the following course list or, in some instances, be met through special topics or independent study courses with significant geospatial content (must be approved by the certificate coordinator).

- AGRON 655 - Site Specific Agriculture **Credits:** 3
- BAE 669 - Watershed Modeling **Credits:** 3
- BAE 869 - Advanced Watershed Modeling **Credits:** 3
- BIOL 822 - Landscape Ecology **Credits:** 4
- CE 585 - Civil Engineering Project **Credits:** 3
- CE 752 - Advanced Hydrology **Credits:** 3
- CE 786 - Land Development for Civil Engineers and Planners **Credits:** 3
- CE 857 - Advanced Civil Engineering Design Using GIS **Credits:** 3
- CIS 501 - Software Architecture and Design **Credits:** 3
- CIS 560 - Database System Concepts **Credits:** 3
- CIS 635 - Introduction to Computer-Based Knowledge Systems **Credits:** 3
- CIS 636 - Introduction to Computer Graphics **Credits:** 3
- CIS 736 - Computer Graphics **Credits:** 3
- CIS 761 - Data Base Management Systems **Credits:** 3
- COT 674 - Processing Techniques for Low-Altitude Remotely Sensed Data **Credits:** 3
- COT 676 - Low-Altitude Remote-Sensing Product/Project Development **Credits:** 3
- DMP 725 - GIS (Geographic Information System) Applications in Animal and Public Health **Credits:** 2
- DMP 726 - GIS (Geographic Information System) Applications in Animal and Public Health Lab **Credits:** 1
- GEOG 602 - Computer Mapping and Geographic Visualization **Credits:** 3
- GEOG 610 - Geography Internship **Credits:** 1-6
- GEOG 700 - Quantitative Analysis in Geography **Credits:** 3
- GEOG 705 - Thematic Remote Sensing. **Credits:** 3
- GEOG 706 - Biophysical Remote Sensing **Credits:** 3
- GEOG 707 - Remote Sensing of Water **Credits:** 3
- GEOG 709 - Geography Field Research Techniques **Credits:** 2-3
- GEOG 711 - Topics in Remote Sensing **Credits:** 3
- GEOG 712 - Internet GIS and Distributed Geographic Information Services **Credits:** 3
- GEOG 728 - Programming for Geographic Analysis **Credits:** 3
- GEOG 790 - Seminar in Geography **Credits:** 1-3
- GEOG 795 - Topics in Geographic Information Science **Credits:** 1-3
- GEOG 808 - Geocomputation **Credits:** 3
- GEOG 880 - Spatial Data Analysis and Modeling **Credits:** 3
- GEOG 890 - Advanced Spatial Analysis Techniques **Credits:** 3

- GEOG 895 - Topics in Spatial Analysis **Credits:** 1-3
- HORT 820 - Quantitative Agricultural Remote Sensing **Credits:** 3
- LAR 580 - Planning and Design Intro to GIS **Credits:** 2
- LAR 704 - Environmental Landscape Planning and Design **Credits:** 3
- PLAN 801 - Knowledge Methods **Credits:** 3
- PLAN 836 - Plan Making **Credits:** 5
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 726 - Introduction to R Computing **Credits:** 1
- STAT 903 - Statistical Methods for Spatial Data **Credits:** 3

Additional certification criteria

The Graduate Certificate in GIScience **may be awarded as a "stand-alone" certificate or in conjunction with the completion of advanced graduate degree requirements** in one of the academic units at Kansas State University. To be awarded a graduate certificate in GIScience, the student:

1. Must not be on probation,
2. Must have a cumulative grade point average (GPA) of 3.0 or higher on graduate coursework (if applicable), and
3. Must be enrolled during the semester in which the certificate requirements are completed.

In order to ensure that certificate recipients display a strong command of GIScience, the certificate is granted only to those graduate students who earn **a minimum cumulative GPA of 3.33 in the Geospatial Core courses** that comprise the Graduate Certificate in GIScience program. The GPA for certificate purposes will be computed in accordance with Kansas State University policy.

Courses may be waived in consultation with the certificate coordinator and academic advisor if the student can demonstrate satisfactory completion of similar coursework or significant professional experience in the area. If transfer courses are to be used to meet program requirements, the student *must* furnish the program director with a certified university transcript and, in some instances, a copy of the class syllabus. A maximum of **6 transfer credit hours** may be used to meet program requirements

Upon approval by the certificate coordinator, course credits earned before the student entered the certificate program may be applied to the Graduate Certificate in GIScience. Graduate students, and post-baccalaureate students returning to acquire the certificate, **may be asked to repeat** any of the prerequisite, geospatial core, and/or elective courses completed **more than five years** prior to the semester in which the certificate requirements are finished**.**

Coordination

The Graduate Certificate in GIScience is coordinated by J.M. Shawn Hutchinson (Department of Geography) with administrative support provided by the Department of Geography. Post-baccalaureate students and graduate students working towards advanced degrees are required to submit a list of courses to be used in meeting certification requirements to the certificate coordinator. Where these courses are included in a program of study for an advanced degree, they should be approved by the student's supervisory committee. Should courses for the certification program not be included in the advanced degree program of study, a supplementary course list should be approved by the student's major professor and the certificate coordinator.

GIScience faculty

The supervisory graduate faculty for the Graduate Certificate of GIScience represent a multidisciplinary group of instructors and researchers from across the K-State campus. Other interested faculty are encouraged to participate in the certificate and can contact the certificate coordinator if they are interested in having their name included.

Financial support

A limited number of graduate research and/or teaching assistantships may be available to qualified students through participating departments. In addition, corporate- and industry-sponsored scholarhips may be available to exceptional applicants. Contact the certifiate coordinator for further details.

Geology

108A Thompson Hall
785-532-6724
Fax: 785-532-5159
http://www.ksu.edu/geology/

Department Head:

Pamela Kempton

Director of graduate studies:

Matthew Brueseke (Domestic)
Saugata Datta (International)

Graduate faculty:

Claudia Adam, Ph.D., Institut de Physique du Globe de Paris(IPGP), Paris, France
Matthew Brueseke, Ph.D., Miami University
Sambhudas Chaudhuri, Ph.D., Ohio State University
Saugata Datta, Ph.D., University of Western Ontario
Aida Farough, Ph.D., Virginia Polytechnic Institute and State University
Behzad Ghanbarian, Ph.D., Wright State University
Karin Goldberg, Ph.D., University of Chicago
Pamela D. Kempton, Ph.D., Southern Methodist University
Matthew Kirk, Ph.D., University of New Mexico
Brice Lacroix, Ph.D., University of Franche-Comté/Barcelona, Spain
Abdelmoneam E. Raef, Ph.D., The University of Science and Technology, Poland
Joel Q. G. Spencer, Ph.D., University of Glasgow
Matthew Totten, Ph.D., University of Oklahoma

Program description

The Master of Science degree in geology is the level of professional education needed by today's career geologists in corporate or government employment. It is also a routine stepping stone for geologists continuing their studies for the doctoral degree. At K-State the Department of Geology encourages the student to select an area of interest, guides him or her through 24 (or more) credit hours of course work to develop essential skills in that area (including study in

supporting sciences where appropriate), and supervises the completion of 6 credit hours of research that will culminate in a written thesis. We maintain active research programs in a wide range of geoscience subdisciplines including chemical hydrogeology, petroleum geology, exploration seismic and near surface geophysics, structural geology, economic geology, igneous petrology, volcanology, isotope geochemistry, climate change, tidal sedimentation processes, luminescence dating, biomineralization, and biogeochemistry.

The department presently (2016-2017) has eleven full-time graduate faculty members and approximately 30 graduate students. The alumni of the geology department have shown their support and their generosity by endowing more than 20 scholarships. In recent years, the total scholarship funding for geology majors and graduate students has averaged ca. $90,000, with individual awards ranging from $500 to $5,000. The department also has 11 graduate teaching assistantships, which include a waiver of tuition. Some department funds are available to support field research and the presentation of student papers at meetings. Scholarship support is also available from several regional societies and organizations.

K-State's Department of Geology has active collaborations through a number of organizations, especially the Kansas Geological Survey and the U.S. Geological Survey. Other collaborations are sometimes available through neighboring universities and the geological surveys of other states. We also encourage our students to take advantage of corporate internships to further their research projects.

The department has a range of research instrumentation and Thompson Hall has recently been upgraded to include a suite of new geochemistry research labs (see below).

Computer laboratory

The Thompson Hall computer laboratory is available to all geology majors and contains computers, scanners, printers, and plotters. Computers with industry software in the laboratory are used for exercises in geophysics, petrology, petroleum geology, and geochemical modeling courses. A 44" plotter is also available in Thompson Hall and used to print posters for presentation.

Research laboratories

Thompson Hall laboratories contain equipment used for cutting and crushing rock, sectioning and polishing, and other rock sample preparation tasks. Binocular and petrographic microscopes, which include fixed digital cameras, are available for collecting sample images. Recently refurbished geochemistry and microbiology laboratories include access to fume hoods, analytical balances, drying ovens, centrifuges, an anaerobic chamber, and two ultra-pure water systems.

Analytical instruments

Analytical instruments available in Thompson Hall currently include:

- X-Ray Diffractometer (PANalytical Empyrean) that can analyze both amorphous and crystalline solid-phase samples using numerous techniques
- Bruker Tracer III hand-held X-Ray Fluoresence
- Fully-automated luminescence dating system (model no. Risø TL-DA-20C/D)
- Gas chromatograph (Gow Mac 580 series) used for gas compositional analysis
- Ion chromatorgraphy system (Dionex ICS-1100) capable of analyzing a wide range of solutes in water samples
- UV-Vis spectrophotometers also used for water chemistry analyses
- Digital inverted fluorescence microscope (EVOS) for capturing multi-channel fluorescence images at high resolution

Field equipment

Other research facilities available on campus

Numerous other research facilities are also available on campus. An extensive list is found **here**. On-campus facilities used regularly by Geology students and faculty include:

Field equipment

Field equipment available in the department for undergraduate and graduate research include:

- Hand-held transits
- GPS devices
- Water level meter
- Water quality monitoring devices
- Topcon GTS-229 laser total station
- Proton precession magnetometer
- Ground-penetrating radar system with antennae for two different depth ranges
- Worden gravimeter
- Electromagnetic sensor
- Seismic reflection/refraction system

Other research facilities available on campus

Numerous other research facilities are also available on campus. On-campus facilities used regularly by Geology students and faculty include the TRIGA Mark II pulsing reactor (Neutron Activation Analysis), the Stable Isotope Mass Spectrometer Lab and Microscopy Lab in the Division of Biology, the Integrated Genomics Facility and Soil Testing Lab in the Department of Agronomy, and the Electron Microscopy Lab in the College of Veterinary Medicine.

Applications

Applications (forms downloadable from the graduate school website) to the M.S. program should be accompanied by (1) official transcripts from all colleges attended; (2) three letters of recommendation; (3) GRE scores; and (4) a statement of career goals and interests. International applicants should refer to the graduate school website for additional requirements. Applications for financial assistance should be received by March 1.

Master of Science

Geology (M.S.)

Research leading to the M.S. thesis is the most important part of graduate study in geology at Kansas State University. Students usually select a faculty advisor and develop research and course plans during their first term and begin the research project during their second term. The minimum requirements for the M.S. degree in geology are 30 semester hours of graduate courses under one of the following options:

Option A: thesis option

This option, required of all students entering the graduate program as teaching or research assistants, requires the satisfactory completion of a master's thesis. Six credit hours of GEOL 899 Master's Thesis Research may be included in the 30-hour requirement.

Option B: report option

This option is available to those students who have limited time for completion of a degree and are not contributing to the department's teaching or research efforts. Students choosing this option might include foreign students fully supported by their governments, or military personnel supported by the U. S. government, planning intense courses of study to complete the M.S. degree in the shortest possible time. Other students might include professional educators at the public school or community college level, or professional geologists with full-time employment, planning part-time studies to complete the M.S. degree over a period of years.

Under the report option, students will not complete a thesis but will be required to satisfactorily complete a substantive report, representing a scholarly effort in the research or practice of geology. Two credit hours of GEOL 898 Master's Report Research may be included in the 30-hour requirement.

History

117D Calvin Hall
785-532-6730
hoffice@ksu.edu
http://www.ksu.edu/history

Department Chair:

David Graff

Directors of Graduate Studies:

Louise Breen

Heather McCrea - Admissions

Graduate Faculty:

*Louise Breen, Ph.D., University of Connecticut
*Gates Brown, Ph.D., University of Kansas
*David Defries, Ph.D., Ohio State University
*Kristen Epps, Ph.D., University of Kansas
*David A. Graff, Ph.D., Princeton University
*Michael Krysko, Ph.D., Stony Brook University
*Bonnie Lynn-Sherow, Ph.D., Northwestern
*Brent E. Maner, Ph.D., University of Illinois at Urbana-Champaign
*Heather L. McCrea, Ph.D., SUNY-Stony Brook
*Donald J. Mrozek, Ph.D., Rutgers University
*Andrew Orr, Ph.D., University of Notre Dame
Suzanne Orr, Ph.D., University of Notre Dame
Nadia Oweidat, Ph.D., Oxford University

*Phil Tiemeyer, Ph.D., The University of Texas at Austin

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Emeritus Faculty:

Marsha L. Frey, Ph.D., Ohio State University
Robert D. Linder, Emeritus. Ph.D., University of Iowa
Morgan J. Morgan, Emeritus. Ph.D., University of Cincinnati
Mark P. Parillo, Ph.D., Ohio State University
Charles Sanders, Ph.D., Kansas State University
James E. Sherow, Ph.D., University of Colorado
Sue Zschoche, Emeritus, Ph.D., University of Kansas

Overview

The Department of History offers well-prepared students an exceptional opportunity to work closely with an unusually productive and well-regarded faculty. The department aims to help students find and develop their talents fully and to establish themselves as independent scholars, teachers, and other historical professionals.

The department offers programs of study leading to the master of arts and doctor of philosophy degrees in selected traditional and innovative fields. In addition to various American and European fields, the department's strengths include areas such as gender history and the history of science and technology. An area of particular strength at Kansas State University is military history.

The university's Hale Library has a number of large, specialized collections. In addition, nearby are several excellent research facilities: the Eisenhower Presidential Library in Abilene, with outstanding holdings relating to the Eisenhower administration and recent military history; the Kansas State Historical Archives in Topeka; the Truman Presidential Library in Independence, Missouri, with valuable collections on the Truman administration, the history of the American presidency, and foreign policy; the Linda Hall Library in Kansas City, Missouri, emphasizing materials pertaining to science and the history of science; and the regional Federal Records Center in Kansas City, currently rich in military and civilian records and eventually to have a microfilm duplication of the main holdings of the National Archives in Washington.

The history department encourages its students to engage in broad professional activities. Many students publish in historical journals, present papers at conferences, and speak to off-campus groups while completing their degrees. The history department also has an active internship program. Graduate students can gain valuable "hands-on" experience in institutions such as the Riley County Historical Museum, the Fort Riley Cavalry Museum, the Kansas State Historical Society, and the Dwight D. Eisenhower Library.

Graduate degrees in history have traditionally led to positions in higher education, and students earning the Ph.D. at Kansas State University have effective preparation for careers as teachers and scholars. But a high percentage of history graduate degree holders also enter archival or museum work, historical publishing, governmental official history programs, historical research for private businesses, and professional service as military officers. The history faculty regards such nontraditional careers as legitimate first choices for its students and works with the students to define programs that accommodate these varied objectives.

Degrees

The master of arts requires a minimum of 30 hours beyond the baccalaureate degree, and the program offers two options: 24 hours of course work plus a thesis (6 research hours); or 30 hours of course work. All candidates for the M.A. must take a course in historiography. Those who write a thesis must take two seminars or topics courses and pass an oral or written final examination that centers on the student's research. Those who take the non-thesis degree must

take three seminars or topics courses and pass a written final examination over their coursework.

The doctor of philosophy requires completing 30 hours of course work beyond the master's, satisfying the language requirement, passing the qualifying examination, and writing a sound dissertation based on original historical research that is approved by the student's committee. The qualifying examination includes separate examinations in a geographically and chronologically defined comprehensive field and three special fields. One of the special fields must focus on the student's principal research interests, and another must cover a substantially different geographical area or chronological period than the student's comprehensive field or be from outside history.

To satisfy the language requirement for the Ph.D., students must establish an intermediate-mid level of reading proficiency in a foreign language. Students may do so by providing evidence that he or she passed a four-semester sequence, or the equivalent, in one foreign language at the undergraduate level with an overall grade point average of 3.0 or better and with a 3.0 or better in the fourth or final course in the sequence; by providing evidence that he or she passed an equivalent graduate-level reading/translation examination at another accredited university; or by passing a foreign language examination certifying reading/translation proficiency at the "intermediate-high" level. Supervisory committees may specify which of the three methods the student must use to demonstrate proficiency. Further, the supervisory committee may require that the student demonstrate a higher standard of proficiency in a foreign language, and/or additional specialized research skills, including an additional foreign language.

Admission

Applicants to graduate programs at Kansas State University must submit an application for admission and provide official copies of transcripts of record from each college or university attended. In addition, all applicants to the programs in history must complete a statement of purpose and provide three letters of academic reference. Applicants must also submit scores from the Graduate Record Examination general test (the advanced test in history is not required).

International students must provide evidence of financial support as required by the Graduate School, and those whose native language is not English must present a score of 600 or better on the Test of English as Foreign Language for admission.

Financial support

Outstanding graduate students in history qualify for fellowships granted by the Graduate School, and some students may be appointed to graduate research assistantships funded by the University or by money from external grants.

The Department of History also offers graduate teaching assistantships to qualified students on a competitive basis. For 2021-2022, the stipend for graduate students holding GTA positions was $17,000 for nine months. GTAs also receive a full tuition fee waiver. Beginning GTAs work as graders or discussion leaders, and experienced assistants are frequently assigned independent sections of survey courses. Prospective students wishing to be considered for graduate teaching assistantships must complete their applications for admission by December 1.

Prospective students may apply simultaneously for admission to the graduate program and for a GTA. Assistantships are only awarded once a year to begin in the fall semester. Anyone wishing to be considered for an assistantship should indicate that in the space provided at the bottom of the Statement of Objectives form. Only those applying for fall semester admission whose application is received by December 1st of the preceding year will be considered.

Continuing students who do not already hold a GTA may apply by letter to the Graduate Admissions and Awards Committee. They must also provide a letter of recommendation from a member of the faculty, normally the student's major professor. These applicants are reviewed on the basis of their entire record, which includes all of the materials supplied for admission plus their grades and other evidence of their performance in our program, including the required letter of recommendation.

Students who hold an assistantship and seek to have it renewed for another year are likewise expected to apply for consideration, providing a letter of recommendation from the major professor and, for those who have assisted a faculty member, a letter from the supervising instructor. Doctoral students who are seeking renewal of their GTA appointment must also provide a copy of an application for a fellowship or grant, which they have filed with some external funding agency.

All applications are reviewed by the graduate admissions and awards committee. The committee considers first the requests for renewal. Master's students may hold an assistantship for a maximum of two years and doctoral students for a maximum of three years, and students who finish an M.A. here and proceed to the Ph.D. program may qualify for a maximum total of four years. To merit renewal, the holders of assistantships are expected to demonstrate satisfactory performance of their duties as GTA and satisfactory progress toward their degrees.

The history department has four basic types of graduate courses:

HISTORY AND SECURITY COURSES

HIST 850-860: These courses are designed for the Security Studies MA program (though they are open to history students). They focus on the historical roots of contemporary security issues.

SURVEYS

HIST 903-909: Survey courses are intended to introduce students to the most important themes and issues in their respective fields. They aim to put the historical literature in broad context to help students prepare for teaching and for their general field exams.

SEMINARS

HIST 919-979, 990-992: Seminars are courses in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings.

TOPICS COURSES

HIST 980-984: Topics courses are designed through reading and discussion to acquaint students with the literature in particular fields of history. They are also intended to familiarize students with major substantive areas of dispute and historical debate within a field of study. Precise topics courses vary from semester to semester, and specific topics will be listed in the class schedule.

Doctor of Philosophy

History (Ph.D.)

Doctoral degree requirements

The doctor of philosophy in history requires completing 30 hours of course work beyond the master's, satisfying the language requirement, passing the qualifying examination, and writing a sound dissertation based on original historical research that is approved by the student's committee. The qualifying examination includes separate examinations in a geographically and chronologically defined comprehensive field and three special fields. One of the special fields must

focus on the student's principal research interests, and another must cover a substantially different geographical area or chronological period than the student's comprehensive field or be from outside history.

To satisfy the language requirement for the Ph.D., the student must demonstrate either a reading, writing, and speaking knowledge of one foreign language at the "intermediate-mid" level or a reading knowledge of one foreign language at the "advanced-plus" level as these terms are defined in the American Council of Teachers of Foreign Language guidelines. All Ph.D. students must complete the foreign language requirement prior to the taking of the qualifying examination. Students whose specializations in history require skills in more than one foreign language may be required by their supervisory committees to demonstrate such proficiency.

Journalism and Mass Communications

105 Kedzie Hall
785-532-6890
Fax: 785-532-5484
journalism@k-state.edu
http://jmc.ksu.edu/

Department Head and Director:

J. Steven Smethers

Director of Graduate Studies:

Raluca Cozma

Graduate Faculty:

Louise Benjamin, Ph.D., University of Iowa
Bonnie Bressers, B.A., University of Wisconsin
*Raluca Cozma, Ph.D., Louisiana State University
Barbara DeSanto, Ed.D., Oklahoma State University
Jean Folkerts, Ph.D., University of Kansas
*Jacob Groshek, Ph.D., Indiana University
Tom Hallaq, Ed.D., Idaho State University
Nikhil Moro, Ph.D., Ohio State University
*Nancy Muturi, Ph.D., University of Iowa
*Sam Mwangi, Ph.D., University of South Carolina
Katie Olsen, Ph.D., Kansas State University
Ian Punnett, Ph.D., Arizona State University
*J. Steven Smethers, Ph.D., University of Missouri
Anan Wan, Ph.D., University of South Carolina
*Xiaochen Zhang, Ph.D., University of Florida

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

The program

The A.Q. Miller School of Journalism and Mass Communications offers a master of science in mass communications. The degree program requires a core of mass communication research and theory classes. Students work with a faculty advisor to develop an emphasis beyond the core. The school offers a full range of academic and professional classes. The courses in each emphasis encourage students to apply the core concepts and to prepare for careers in the mass media or teaching and research professions. Opportunities for developing skills and for research include the student-run Collegian newspaper and Wildcat 91.9-FM as well as the university's television production center and the Huck Boyd National Center for Community Media.

Financial support

The school has a limited number of paid teaching assistantships, renewable nine-month appointments, 20 hours per week during the regular semester. Stipends vary but are usually $7,500 for nine months. Tuition is waived during the academic year for a student holding a .5 GTA appointment. GTAs work as assistants to professors in classes and on projects. Some teach course sections on their own. Preference is given to applicants with academic and/or professional media experience. Application for assistantships is by letter, with resume and samples of professional work, addressed to Nancy Muturi, Director of Graduate Studies, A.Q. Miller School of Journalism and Mass Communications, Kansas State University, 105 Kedzie Hall, Manhattan, Kansas 66506-1501.

Career opportunities

Students seek a master's degree for various reasons. Some students are in mid-career and seek advancement or to change career direction. Other students, upon completing the undergraduate degrees, seek additional skills and insights into specializations so as to be better prepared for the start of their careers. Others enroll as a step toward the Ph.D. and an academic career.

Master of Science

Mass Communications (M.S.)

Master's degree requirements

30 graduate semester hours, distributed as follows:

- Two 700-level electives in MC
- Thesis or report
- Graduate electives in the area of specialization to complete 30 semester hours
    - courses in MC must be 600-level or above; courses outside MC can be 500-level or above to count for gradaute credit.
- MC 765 - Communication Theory **Credits:** 3
- MC 780 - Research Methods in Mass Communications **Credits:** 3
- MC 850 - Applied Research in Mass Media **Credits:** 3

Notes

All master's degree candidates for the Journalism and Mass Communications graduate program must pass a written comprehensive exam covering research and theory in their area of specialization. All candidates deliver a final oral defense of their theses or reports.

Admission to the master's degree program requires an undergraduate degree from a four-year college or university, with basic undergraduate course work in journalism and mass communications. Provisional admission may be granted to applicants entering the degree program with no previous course work in mass communications, with the requirement to take basic undergraduate courses along with the graduate course work. Also required are satisfactory scores on the GRE (an average in the 50th percentile) and an undergraduate GPA of 3.0 or above on the final 60 hours of course work. Official transcripts of undergraduate degree work and three letters of reference from instructors and/or professional colleagues must be sent directly to the School.

Consideration for admission is given to international applicants who have a TOEFL score of 600 or above (or 250 or above on the computer version), in addition to a satisfactory score on the GRE. Application forms will not be sent to international students until notice of GRE and TOEFL scores is received. Also required is certification that applicants have adequate financial resources to complete the degree.

Mathematics

138 Cardwell Hall
785-532-6750
Fax: 785-532-0546
math@math.ksu.edu
http://www.math.ksu.edu/graduate/

Department Head

Andrew Bennett

Director of graduate studies

Sarah Reznikoff

Graduate Faculty

*Bacim Alali, Ph.D., Louisiana State University
*Nathan Albin, Ph.D., University of Utah
*Lino Amorim, Ph.D., University of Wisconsin - Madison
*Rina Anno, Ph.D., Harvard University
*David R. Auckly, Ph.D., University of Michigan
*Andrew G. Bennett, Ph.D., Princeton University
*Ivan Blank, Ph.D., New York University
*Robert. B. Burckel, Ph.D., Yale University; Emeritus
*Vorrapan "Fai" Chandee, Ph.D., Stanford University
*Andrew Chermak, Ph.D., Rutgers University; Emeritus
*Todd E. Cochrane, Ph.D., University of Michigan
*Louis Crane, Ph.D., University of Chicago; Emeritus
*Tatiana Firsova, Ph.D., University of Toronto
*Hrant Hakobyan, Ph.D., SUNY at Stonybrook, New York
*Gerald Hoehn, Ph.D., University of Bonn, Germany
*Lizaveta Ihnatsyeva, Ph.D., Belarusian State University
*Majid Jaberi-Douraki, Ph.D., Université Laval
*Gabriel Kerr, Ph.D., University of Chicago
*Marianne Korten, Ph.D., University of Buenos Aires

*Xiannan Li, Ph.D., Stanford University
*Zongzhu Lin, Ph.D., University of Massachusetts
*John Maginnis, Ph.D., Stanford University
*Diego Maldonado, Ph.D., University of Kansas
*Mikhail Mazin, Ph.D., University of Toronto
*Thomas B. Muenzenberger, Ph.D., University of Wyoming, Emeritus
*Gabriel Nagy, Ph.D., University of California, Berkeley
*Virginia Naibo, Ph.D., Universidad Nacional del Litoral, Argentina
Rekha Natarajan, Ph.D., Kansas State University
*Dinh-Liem Nguyen, Ph.D., Ecole Polytechnique, Palaiseau France
*Louis Pigno, Ph.D., State University of New York, Stony Brook, Emeritus
*Christopher Pinner, Ph.D., University of Texas at Austin
*Pietro Poggi-Corradini, Ph.D., University of Washington
*Alexander G. Ramm, D. Sci., Mathematics Institute Academy of Science, Minsk, Emeritus
*Sarah Reznikoff, Ph.D., University of California, Berkeley
*Natalia Rojkovskaia, Ph.D., University of Pennsylvania
*Rustam Sadykov, Ph.D., University of Florida
*Yan Soibelman, Ph.D., Rostov University
*Craig Spencer, Ph.D., University of Michigan
*Victor Turchin, Ph.D., University of Paris VII
*Dan Volok, Ph.D., The Weizmann Institute of Science, Israel
*David Yetter, Ph.D., University of Pennsylvania
*Anna Zemlyanova, Ph.D., Louisiana State University
*Ilia Zharkov, Ph.D., University of Pennsylvania

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Overview

The Department of Mathematics offers programs of study leading to the master of science and doctor of philosophy degrees. There are over 30 graduate students in the master's and Ph.D. programs; in addition to American students, there is also a large number of Asian, European, Middle Eastern and African students, thus lending a truly international flavor to the academic environment in the Department. Financial assistance is available on a competitive basis to well-qualified applicants in the form of graduate teaching assistantships and graduate research assistantships; in addition, there are graduate student fellowships and GTA stipend supplements available through the Graduate School on a competitive basis.

Research areas and facilities

The Mathematics Department has internationally recognized programs in harmonic analysis, operator theory, quantum topology, representation theory, group theory, and applied mathematics. The applied mathematics group is active in wave propagation and scattering, reaction-diffusion equations, free boundary problems, and inverse and ill-posed problems. There are also robust research groups in geometric topology, non-commutative geometry, symplectic geometry, analytic number theory, and probabilistic harmonic analysis.

Kansas State University provides excellent facilities for mathematical research. The university libraries have extensive holdings in the mathematical sciences and a separate Math/Physics branch library is housed in the same building as the Mathematics Department. Even obscure publications are available at the Linda Hall Science Library in Kansas City through interlibrary loan. KSU provides a modern computer environment with access to major mathematical software packages (Mathematica, Matlab, etc.) and full internet access. The Mathematics Department also has its own state-of-the-art network of workstations and PC's used for both teaching and research.

Admission

Applicants to both the masters' and doctoral programs should have completed work in mathematics at least equivalent to that required for a bachelor's degree in mathematics at Kansas State University. While there are no formal application deadlines, international applicants residing outside the U.S. or Canada should have their application materials in by February 1 to be guaranteed consideration for the fall semester of the same year.

Concurrent

Concurrent B.S./M.S. in Mathematics

Offered through the Mathematics program, the combined B.S./M.S. program will provide exceptional undergraduates with the opportunity to obtain both a Bachelor of Science and a Master of Science in Mathematics in 5 years, a shorter time than typically required to earn a B.S. plus M.S. if both degrees are pursued separately. The program will allow students to pursue any of the three current capstone options for the M.S. in Mathematics: a Masters Examination, a Masters Report or a Masters Thesis. The goal of the program is to produce graduates with a broad, solid grounding in mathematics to support further study at the doctoral level or to outfit the graduate for a mathematical job in industry, government or finance.

Admission Requirements

- Students may apply for the concurrent B.S./M.S. program from the second semester of the sophomore year through the second semester of the junior year (when they have accumulated 45-90 credit hours toward the B.S. degree). Students may apply with higher credit-hour accumulation or during first semester of their senior year with special permission from the Department Head or the Director of Graduate Studies of the Mathematics department.
- Students must have completed the Mathematics Core Curriculum (MATH 220, MATH 221, MATH 222, MATH 340, MATH 511 or MATH 512, MATH 520 or MATH 633) either at K-State or by transfer credit.
- Minimum standards for admission to the concurrent program are a cumulative GPA of 3.00 and a GPA of 3.25 in the Mathematics Core courses. Retention in the program requires maintenance of a 3.00 GPA in both undergraduate and graduate coursework.

Application Process

The application process will be the same as for the traditional M.S. degree except completion of the B.S. degree is not required. The following steps are required:

- KSU graduate application form completed online before semester of enrollment. In general, applicants are only considered for fall enrollment. Application fee should be (personal check, money order, or cashier's check payable to Kansas State University Graduate School) submitted with application.
- Applicant's statement of academic objectives and preferred primary advisor(s) msut be submitted with the application.
- Three letters of reference must be submitted with the application.
- Transcript(s) of all undergraduate work must be sent directly to the Department of Mathematics.

The graduate program will process the application of the student and forward it to the Graduate School, as currently occurs for students holding a B.S. who apply to the M.S. program. Should the student meet the requirements,

provisional admission to the M.S. program will be granted, pending the award of the B.S. degree. The B.S. degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.S. and M.S. degrees may be awarded concurrently.

Program Formats and Guidelines

A maximum of 9 credit hours will count toward both the B.S. and M.S. degrees. The 9 credit hours counted toward both degrees will be courses among the following (MATH 615, MATH 810, MATH 811, MATH 821, MATH 822, MATH 875, MATH 876, or any Mathematics course numbered 700-799). These courses may be used either to fulfill the Mathematics B.S. requirement of 15 credit hours of Mathematics courses at the 400 level beyond the B.S. core curriculum or as general electives toward the B.S. Credits counting toward both degrees may be earned before the student takes the Graduate Basic Exam, which exam students in the concurrent program may take at any time once they are provisionally admitted to the M.S. program, but must attempt not later than the beginning of the second semester of their senior year. In the first semester after acceptance into the concurrent degree program, the student will select a major professor from the Graduate Faculty in Mathematics. The student will work closely with the major professor to form a supervisory committee and file a program of study by the end of the first full semester following the student's acceptance into the concurrent degree program, or the second semester of the student's junior year, whichever is later. The undergraduate advisor will advise the student in the academic progress toward the B.S. degree, and the major professor will supervise the student's academic progress and preparation for the M.S. degree capstone (examination, report or thesis). A typical M.S. program of study for students in the concurrent program would be identical to that for students in the traditional M.S. program:

Examination option

30 credit-hours of coursework at the 700-level or above, or MATH 615 and 27 credit-hours of coursework at the 700-level or above, plus successfully passing two QEI subject exams.

Report option

28 credit-hours of coursework at the 700-level or above, or MATH 615 and 25 credit-hours of coursework at the 700-level or above, plus successfully passing one QEI exam, 2 credit-hours of MATH 898 and successful defense of a Masters report.

Thesis option

24 credit-hours of coursework at the 700-level or above, or MATH 615 and 21 credit-hours of coursework at the 700-level or above, plus successfully passing one QEI exam, 6 credit-hours of MATH 899 and a successful defense of a Masters thesis.

Doctor of Philosophy

Mathematics (Ph.D.)

The goal of the doctoral program in Mathematics at Kansas State University is to provide each student with the tools needed to become a productive member of the mathematical community. To reach this goal, candidates must demonstrate to the faculty that they have met criteria for both breadth and depth in their studies. Specifically, each student will be required first to pass a written Qualifying Examination covering a broad range of mathematical subjects, and then, a Specialty Examination demonstrating the ability to pursue original and independent research in a chosen

field of study. These will be followed by original research culminating in the Ph.D. dissertation. In addition, each student in the doctoral program in mathematics must demonstrate reading proficiency in either French, German or Russian. Since the vast majority of mathematics published in languages other than English are in one of the above languages, the graduate faculty feels that having at least a reading knowledge in one of the above languages is an important research tool.

The breadth requirement consists of two components: required coursework and the Qualifying Exam (QE). The Qualifying Exam is intended to measure the student's ability to understand and to communicate with specialists from a broad range of mathematics. The depth criterion is met by the Specialty Examination (SE) and the dissertation. To pass the SE, a student must show a high level of mastery of the major ideas in the chosen area of specialization and thereby demonstrate the potential for making tangible contributions. The particular format of the Specialty Examination will be left to the discretion of the student's Ph.D. Supervisory Committee. The Qualifying and Specialty Examinations together make up the Graduate School's Preliminary Examination.

- Passing the Qualifying Exam.
- Passing the Preliminary Exam.
- Demonstrating reading proficiency of mathematical exposition in French, German, or Russian.
- Writing and defending the Ph.D. dissertation.

It is the Department's philosophy that the Qualifying Examination tests the student's mathematical breadth, whereas the Preliminary Examination tests the student's depth.

After passing the Qualifying Exam, the graduate student will, within one year, select a thesis advisor and form the Ph.D. supervisory committee. This committee is responsible for administering the Preliminary Examination, which tests the student's mathematical depth, and therefore his or her readiness to undertake serious mathematical research. The Ph.D. dissertation resulting from the student's independent and original research represents the successful conclusion of the time spent as a graduate student. The student's supervisory committee will schedule a public defense of the dissertation, during which the student will defend not only the mathematical correctness of the work, but also its originality and importance.

Course Requirements

At least 90 credit hours of mathematics, all at the 700 level and above, of which at least 24 credit hours are taken in residence at Kansas State University, and which includes at least 30 credit hours of MATH 999. Eligibility to enroll in MATH 999 is restricted to students having passed the Speciality Exam (see below). A master's degree from a reputable graduate program in mathematics can be used in lieu of 30 credit hours in mathematics.

800-LEVEL COURSE-REQUIREMENT: The above coursework must also include a one-year sequence from the list below. To be able to fullfill this 800-level course requirement a minimum grade of B must be obtained in both semesters. Such a one-year sequence may not count if it corresponds to one of the subdisciplinary topics that the students has passed in the Qualifying exam (see paragraph B. below), e.g. if a student passes the Qualifying Examination by taking Analysis and Algebra, then the sequences Math 821-822 and Math 810-811 cannot be counted as fullfilling the 800-level course requirement. On the other hand, a student may opt to take a third qualifying exam in lieu of the 800-level course requirement.

1.)

- MATH 810 - Higher Algebra I **Credits:** 3
- MATH 811 - Higher Algebra II **Credits:** 3

2.)

- MATH 821 - Real Analysis **Credits:** 3
- MATH 822 - Complex Analysis **Credits:** 3

3.)

- MATH 840 - Differential Equations I **Credits:** 3
- MATH 841 - Differential Equations II **Credits:** 3

4.)

- MATH 861 - Numerical Analysis I **Credits:** 3
- MATH 862 - Numerical Analysis II **Credits:** 3

5.)

- MATH 875 - Algebraic Topology I **Credits:** 3
- MATH 876 - Algebraic Topology II **Credits:** 3

MATH 999 Coursework

It is the intention of the Department that a Ph.D. student enrolled in MATH 999 is actively doing research directly relevant to the writing of the doctoral dissertation. Since a student not having passed the Specialty Exam has not yet demonstrated sufficient depth to embark on Ph.D. level research, enrolling in MATH 999 coursework is restricted to only those students having passed the Specialty Exam. Students enrolling in MATH 999 for the first time (only) will need to complete the Request for Permission to take Math 999, Ph.D. Research.

Qualifying Examination

Beginning Fall 2003, the QE will consist of two written *Subject Area Examinations* and will constitute part of the Graduate School's Preliminary Examination. The Subject Area Examinations are to be chosen by the student from the following list:

Algebra (based on MATH 810-811)
Analysis (based on MATH 821-822)
Geometry/Topology (based on MATH 701-875-876)

The individual subdisciplinary examinations are taken individually (possibly in different semesters); passing the Qualifying Examination is tantamount to passing each of the Subject Area Examinations.

Students who wish to obtain the Ph.D. at Kansas State University will be required to pass the QE by the end of the third year from the time that they originally enter the graduate program in mathematics. (Students who enter the graduate program in a Spring semester will be regarded, for the purpose of meeting the deadline for successful completion of the QE, as having entered the program at the beginning of the following Fall semester.) Furthermore, students entering with weak backgrounds but showing good progress may petition for an extra year within which to pass the Qualifying Exam. The QE Subject Area Examinations will be offered early in the Fall and Spring semesters of each year. Students who intend to take a QE Subject Area Examination in a given semester should declare their intention to the Director of Graduate Studies before the end of the preceding semester. Each Subject Area Examination is based on material covered in a one-year 800-level course in the subject area (as indicated above), and tests the student's general knowledge of that subject area. These examinations are roughly equivalent to final examinations in the corresponding 800-level courses. Each student will receive a grade of "pass" or "fail" on each Subject Area Examination; passing QE as a whole requires passing grades on each of the Subject Area Examinations.

Specialty Examination

The Specialty Exam is the second part of the Graduate School requirement for the Preliminary Examination and must be passed in order to become a doctoral candidate. Each student must take the SE, but can do so only after having passed the QE, formed the Supervisory Committee, and submitted a Program of Study to the Graduate School. The

structure and content of the SE may vary, depending on the characteristics of the student's chosen field of study, the Program of Study, and the discretion of the Supervisory Committee. For example, the SE may include one or more of the following components: a written and/or oral examination, a prepared colloquium talk, a computer program, or a publishable paper. The Supervisory Committee will determine the date for the SE, which should be no later than two years after successful completion of the QE and at least seven months before the final oral examination. The SE shall be scheduled through the Graduate School, using the Request for Preliminary Examination Ballot form. Shortly before the examination date, the Graduate School will issue a ballot for the Preliminary Examination to the Major Professor on which the results of both the Qualifying Examination and the Specialty Examination are to be recorded. Failure of the SE is tantamount to failing the Preliminary Exam, and will be grounds for termination of financial support by the Department of Mathematics (if applicable), and failure of the second attempt will be grounds for dismissal from the Ph.D. program by the Graduate School. Upon satisfactory completion of the Preliminary Exam, the doctoral student is automatically advanced to candidacy for the Ph.D. degree.

Foreign Language Examination

In addition to the QE and SE, each Ph.D. candidate will be required to pass a language examination in French, German or Russian. No substitute foreign languages will be allowed. The requirement must be completed at least seven months prior to the final examination and may be met in one of two ways:

1. Pass the Graduate Foreign Language Proficiency Exam for that language administered by the Modern Language Department or,

2. Within two years prior to entering the Graduate School here at KSU, (or during one's studies while a graduate student at Kansas State University) receive a grade of at least B for fourth-semester (or higher) study in the elected language at the college level.

Ph.D. Dissertation

After successful completion of the SE, students will continue their research under the supervision of their doctoral advisors. In order to receive the Ph. D. degree, the student will be required to write a Ph.D. thesis containing non-trivial, new results of publishable quality, and successfully defend this thesis in a final oral examination administered by the Supervisory Committee.

After the student's dissertation has been deemed acceptable by the doctoral advisor, a final oral examination will be scheduled through the Graduate School and held in accordance with Graduate School requirements.

Master of Science

Mathematics (M.S.)

There are three distinct master's degree options recognized by both the Mathematics Department and the Graduate School: master's thesis; master's report; and the nonthesis, nonreport option.

- In general terms, the master's thesis option is best suited for the student seeking the master's degree as the terminal degree.
- The master's report generally is shorter than the master's thesis, but in principle is closer in format and spirit of creativity to published works in mathematics than is the master's thesis, which tends to be more expository in nature.

- The nonthesis, nonreport option is generally best suited for students wishing to continue into the Ph.D. program in mathematics. Here, instead of defending a thesis or a report, the student will pass a written exam, administered by the student's master's committee.

In all cases, the graduate student must include at least 30 credit hours of mathematics at the 700 level or above on the program of study, which is composed in consultation with the student's supervisory committee.

There is no language requirement for the master's degree.

Graduate Certificate

Applied Mathematics Graduate Certificate

Contact: Anna Zemlyanova
E-mail: azem@ksu.edu

Offered through the Mathematics graduate program, the Graduate Certificate in Applied Mathematics is intended to introduce students from mathematics, science, and engineering to a common foundational set of tools from modern mathematical analysis, and prepare students to use these tools for the analysis and solution of mathematical model equations arising in interdisciplinary research.

Core courses (6 credit hours)

- MATH 715 - Applied Mathematics I **Credits:** 3
- MATH 716 - Applied Mathematics II **Credits:** 3

Elective courses (minimum of 6 credit hours)

- MATH 615 - Introduction to Digital Image Processing **Credits:** 3
- MATH 635 - Dynamics, Chaos, and Fractals **Credits:** 3
- MATH 725 - The Mathematics of Data and Networks I **Credits:** 3
- MATH 726 - The Mathematics of Data and Networks II **Credits:** 3
- MATH 789 - Combinatorial Analysis **Credits:** 3
- MATH 801 - Numerical Solution of Differential Equations I **Credits:** 3
- MATH 802 - Numerical Solution of Differential Equations II **Credits:** 3
- IMSE 881 - Linear Programming **Credits:** 3
- IMSE 882 - Network Flows and Graph Theory **Credits:** 3
- IMSE 884 - Integer Programming and Combinatorial Optimization **Credits:** 3
- IMSE 982 - Nonlinear Programming **Credits:** 3
- ECE 840 - Computer Engineering Methods for Analysis, Simulation, and Design **Credits:** 3
- ECE 861 - Applied Probability Theory & Random Processes **Credits:** 3
- ECE 963 - Detection & Estimation Theory **Credits:** 3
- ECE 965 - Information Theory **Credits:** 3
- CE 803 - Numerical and Analytic Techniques for Engineers **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 710 - Sample Survey Methods **Credits:** 3
- STAT 713 - Applied Linear Statistical Models **Credits:** 3
- STAT 716 - Nonparametric Statistics **Credits:** 3

- STAT 717 - Categorical Data Analysis **Credits:** 3
- STAT 720 - Design of Experiments **Credits:** 3
- STAT 722 - Experimental Design for Product Development and Quality Improvement **Credits:** 3
- STAT 730 - Multivariate Statistical Methods **Credits:** 3
- STAT 736 - Bioassay **Credits:** 2
- STAT 745 - Statistical Graphics **Credits:** 3
- ME 820 - Interm Topics in Thermal and Fluid Mechanics - Heat Pipes **Credits:** 3
- CIS 625 - Concurrent Software Systems **Credits:** 3
- CIS 770 - Formal Language Theory **Credits:** 3
- CIS 775 - Analysis of Algorithms **Credits:** 3

Certificate in Quantitative Techniques of Data Science

Completion of this certificate will provide training in the theory and practice of data analytics, including both technical skills and social and ethical considerations.

Admission Requirements

Math 222, Math 551, Stat 350, or equivalents.

Mathematical Background

- MATH 620 - Convex Optimization for Data Science **Credits:** 3

Statistics Background

- STAT 705 - Regression and Analysis of Variance **Credits:** 3
  or
- STAT 713 - Applied Linear Statistical Models **Credits:** 3

Data Science in Context (Choose one of the following)

- GWSS 435 - Race/Sex/Science **Credits:** 3
- HIST 320 - History of Technology **Credits:** 3
- HIST 519 - Science and Technology in the United States **Credits:** 3
- PHILO 386 - Philosophy of Computer Science and Software Engineering **Credits:** 3
- SOCIO 550 - Technocrime, Security, and Society **Credits:** 3

Advanced Techniques for Data Science (Select two classes from the following)

- IMSE 785 - Big Data Analytics **Credits:** 3
- MATH 725 - The Mathematics of Data and Networks I **Credits:** 3
- MATH 726 - The Mathematics of Data and Networks II **Credits:** 3

- STAT 745 - Statistical Graphics **Credits:** 3
- STAT 760 - Optimization for Data Science **Credits:** 3
- STAT 761 - Discrete Optimization and Scalability for Data Science **Credits:** 3
- STAT 764 - Applied Spatio-Temporal Statistics **Credits:** 3
- STAT 766 - Applied Data Mining/Machine Learning and Predictive Analytics **Credits:** 3
- STAT 768 - Applied Bayesian Modeling and Prediction **Credits:** 3
- CC 535 - Applied Data Science **Credits:** 3
- CIS 531 - Introduction to Programming Techniques for Data Science and Analytics **Credits:** 3
- Topics courses that address Data Science, with the approval of the Certificate Coordinator.
  Students are strongly encouraged to have a class that addresses programming if they don't already have a strong background in that area.
  Total credit hours: 15

Modern Languages

104 Eisenhower Hall
785-532-6760
Fax: 785-532-7004
modlang@k-state.edu
http://www.ksu.edu/mlangs

Department Head:

Melinda A. Cro

Director of Graduate Studies:

Li Yang

Graduate Faculty:

Kathleen Antonioli, Ph.D., Duke University
Rebecca Bender, Ph.D., Pennsylvania State University
Douglas K. Benson, Emeritus, Ph.D., University of New Mexico
Necia Chronister, Ph.D., Washington University - St. Louis
Robert L. A. Clark, Ph.D., Indiana University
Robert T. Corum, Emeritus, Ph.D., University of Virginia
Melinda Cro, Ph.D., The University of Georgia
Claire L. Dehon, Emeritus, Ph.D., University of Kansas
María Teresa DePaoli, Ph.D., Purdue University
Andrea Faber, Ph.D., University of Massachusetts - Amherst
Lucia Garavito, Ph.D., University of Kansas
Derek Hillard, Ph.D., Indiana University
Lavinia Horner, Ph.D., University of Tennessee
Laura Kanost, Ph.D., University of Kansas
Sara Luly, Ph.D., Ohio State University
Benjamin McCloskey, Ph.D., Ohio State University
Silvia Sauter, Emeritus, Ph.D., University of Texas - Austin
Brad Shaw, Emeritus, Ph.D., University of New Mexico

Laura Valentin-Rivera, Ph.D., Texas Tech University
Li Yang, Ph.D., University of Iowa

Graduate Faculty Associates:

Leena Chakrabarti, Ph.D., Kansas State University
Beverly M. Earles, Ph.D., Victoria University of Wellington - New Zealand
Glenda Leung, Ph.D., University of Freiburg
Jenell Williams, M.A., University of Kansas
Mary Wood, M.A., University of Kansas

Admission

Most incoming students have undergraduate degrees in the particular language of study or in teaching, although we also may accept on a provisional basis those students who have considerable expertise in the language and culture in other ways, e.g., native speakers or U. S. citizens with extensive travel, living, and educational experience abroad.

All applications are reviewed by the director of graduate studies and the graduate faculty within the department. Depending on the language you wish to study, assistantships may or may not be available after this date.

Applications need to include the following:

1. Completed application to the Graduate School.
2. Copies of the official transcripts from each college or university the applicant has attended. Only official copies are accepted by the Graduate School.
3. Three letters of recommendation from persons qualified to speak informatively of the applicant's academic performance and his or her potential for advanced studies in the field.
4. A statement of objectives (a succinct account of aims and interests).
5. A recorded speaking sample in both English and the target language of study.
6. Application fee.
7. For international students, an official TOEFL, or IELTS score report and Kansas State University's financial affidavit.

Financial support

A limited number of graduate teaching assistantships (GTA) is available that offer the opportunity of teaching university-level courses under close pedagogical supervision. Full-time teaching assistants will teach three courses per year). All full-time GTAs receive a 100% tuition waiver. GTAs must be enrolled in a minimum of 6 hours of classwork in the Department of Modern Languages per semester to qualify. Except in unusual circumstances, GTAs are expected to enroll in 9 hours. Assistantships are normally renewable for a period of two years, assuming satisfactory teaching performance and progress toward the degree. The department also offers scholarships; awarded on a competitive basis, these may be held in addition to an assistantship.

Master of Arts

Modern Languages (M.A.)

The Department of Modern Languages offers a 30-hour M.A. program with subspecialties in French, German, Spanish, or Teaching English as a Foreign Language. Courses are offered in language, second language acquisition, pedagogy, (applied) linguistics; literature, culture, film, literary theory; translation and interpretation. Graduates are prepared to pursue study at the doctoral level or to seek a career where advanced proficiency in a second language is necessary (e.g. teaching, governmental agency work, international business, translation and interpretation, etc.).

Degree Requirements:

In consultation with the student's advisory committee, each student will complete the following program of study.

I. Core Courses

A minimum of 3 hours selected from courses below. Additional courses from this list may be taken as subspecialty electives.

- MLANG 600 - Principles of Linguistics: Language Structure and Language Use **Credits:** 3
- MLANG 710 - Foreign Language Pedagogy **Credits:** 3
- MLANG 720 - Introduction to Literary Theory and Research Methodology **Credits:** 3
- MLANG 770 - Theories of 2nd Language Acquisition **Credits:** 3

II. Subspecialty Electives

Students will complete 21 hours of courses at the 600-level or above in their subspecialty (French, German, Spanish, or Teaching English as a Foreign Language), in consultation with committee. Students may petition to substitute some hours with courses outside of the department of Modern Languages, with the approval of the committee.

III. Advanced Study

In addition to the courses above and with approval of the M.A. committee, each student chooses one of the following three options:

1. MA Coursework Option: 6 hours of additional electives.
2. MA with Report: 2 hours related to the report, 4 hours of additional electives.
3. MA with Thesis: 6 hours related to the thesis.

Teaching English as a Foreign Language (M.A.)

The Modern Languages department offers a Master of Arts degree in Modern Languages with a specialization in Teaching English as a Foreign Language. This track provides a range of interdisciplinary courses. Concentrations in this track are in the study of second language acquisition, the teaching of English as a foreign language (TEFL), and in English-language culture and literature.

The MA TEFL will equip graduates to become leaders in classroom innovation in the field of English language teaching. As skilled English teachers they will be highly employable in the increasingly wide range of contexts emerging globally, as demand for competence in English continues to grow. The MA in TEFL is intended for aspiring teachers of English or for practicing teachers who wish to upgrade their professional standing. It is most suitable for teachers whose interests lie mainly in classroom practice.

Entrance requirements are those of the Graduate School. With approval of the graduate committee, the student would choose:

- 30 hours of course work
- 28 hours of course work plus a master's report
- 24 hours of course work plus a master's thesis

In addition, the M.A. candidate would take a written comprehensive exam, followed several days later by a one-hour oral exam.

Degree Requirements:

I. Pedagogy and Methodology (9 hours)

- MLANG 710 - Foreign Language Pedagogy **Credits:** 3
- MLANG 770 - Theories of 2nd Language Acquisition **Credits:** 3
- MLANG 600 - Principles of Linguistics: Language Structure and Language Use **Credits:** 3

II. Teaching English as a Foreign Language (6 hours)

- MLANG 803 - Practicum in Adult TESL/TEFL: Oral Communication **Credits:** 3
- MLANG 804 - Practicum in Adult TESL/TEFL: Written Communication **Credits:** 3

III. Language and Culture (6-12 hours)

May be selected from existing courses in English or Modern Languages, depending on the needs of the individual participant, or courses in related areas such as anthropology, education, or speech.

IV. Electives (3-6 hours, with the approval of the program committee)

- ENGL 759 - Studies in Technical Communication **Credits:** 3
- ENGL 799 - Problems in English **Credits:** 1-18
- EDCEP 715 - Principles of Assessment **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3
- EDCEP 829 - Learning Principles **Credits:** 3
- EDCEP 775 - Readings in Counseling and Educational Psychology **Credits:** 1-3
- EDCEP 795 - Problems in Counseling and Educational Psychology **Credits:** 1-18
- EDCI 720 - ESL/Dual Language Methods **Credits:** 3
- EDCI 731 - ESL/Dual Language Linguistics **Credits:** 3
- EDCI 742 - ESL/Dual Language Assessment **Credits:** 3
- COMM 840 - Intercultural Communication **Credits:** 3
- ANTH 528 - Topics in Linguistic Anthropology **Credits:** 1-4
- EDACE 786 - Topics in Adult Learning and Leadership **Credits:** 1-3 *
  *Grant Writing

V. Master's Thesis (6 hours), or Master's Report (2 hours)

Graduate Certificate

Teaching English as a Foreign Language Graduate Certificate

The Graduate Certificate Program in Teaching English as a Foreign Language is intended for aspiring teachers of English for non-native speakers, as well as for practicing teachers who would like to enhance their skills and credentials. Students will be better prepared to teach English in a wide range of contexts, both abroad and domestically, or to pursue a graduate degree in TEFL or another field within applied linguistics. A total of 18 credit hours are required to complete the certificate program, 15 hours (5 courses) of required, core courses, and 3 hours (1 course) of an approved elective course.

Admission criteria:

Applicants must hold a BA in a related field (e.g., language, education, etc.) or must be pursuing an MA in a related field. Applicants with a different academic background may, at most, be permitted probationary admission, with stipulations for coursework and/or expectations for performance during the first semester in the program.

Required Courses:

- MLANG 600 - Principles of Linguistics: Language Structure and Language Use **Credits:** 3
- MLANG 710 - Foreign Language Pedagogy **Credits:** 3
- MLANG 770 - Theories of 2nd Language Acquisition **Credits:** 3
- MLANG 803 - Practicum in Adult TESL/TEFL: Oral Communication **Credits:** 3
- MLANG 804 - Practicum in Adult TESL/TEFL: Written Communication **Credits:** 3

Approved elective from, but not limited to, the following:

- a linguistics-oriented graduate seminar numbered MLANG 779 - Seminar in Modern Languages **Credits:** 3
- ENGL 700 - Old English **Credits:** 3
- ENGL 757 - Studies in Language and Linguistics **Credits:** 3
- ENGL 790 - History of the English Language **Credits:** 3
- ENGL 820 - Seminar in Language **Credits:** 3
- ANTH 525 - Language and Culture **Credits:** 3
- ANTH 528 - Topics in Linguistic Anthropology **Credits:** 1-4
- ANTH 720 - Field Methods in Linguistics **Credits:** 3
- PHILO 625 - The Philosophy of Language **Credits:** 3
- EDCI 720 - ESL/Dual Language Methods **Credits:** 3
- EDCI 731 - ESL/Dual Language Linguistics **Credits:** 3
- EDCI 742 - ESL/Dual Language Assessment **Credits:** 3
- COMM 840 - Intercultural Communication **Credits:** 3

Music, Theatre, and Dance

109 McCain Auditorium
785-532-3429
Fax: 785-532-6899
www.k-state.edu/music/graduate/
or
www.k-state.edu/theatre/academics/graduate.html

Director of School:

Jeffrey Ward

Directors of Graduate Studies:

Frederick Burrack (Music)
Sally Bailey (Theatre)

Graduate Faculty:

Sally D. Bailey, M.F.A., Trinity University, San Antonio, M.S.W. University of Maryland at Baltimore
Thomas Bell, M.L.I.S., University of Texas - Austin
Melissa Briggs, Ph.D., Kansas State University
*Frederick Burrack, Ph.D., University of Illinois
Alfred W. Cochran, Ph.D., Catholic University of America
Cora Cooper, D.M., Florida State University
Paige Dickinson, Ph.D., California School of Professional Psychology
Kate Digby, M.F.A., University of Wisconsin - Milwaukee
Rachel Dirks, Ph.D., University of Kansas
Slawomir Dobrzanski, D.M.A., University of Connecticut
Jacqueline Fassler-Kerstetter, D.M.A., University of Georgia
Kurt Gartner, D.A., University of Northern Colorado
Wayne Goins, Ph.D., The Florida State University
Ruth Gurgel, Ph.D., University of Wisconsin
Paul Hunt, D.M.A., Eastman School of Music
Israel, Sylvia, M.A., California Institute of Integral Studies; M.A., San Francisco State University
K. Tod Kerstetter, D.M.A., University of Georgia
John Kilgore, D.M.A., Florida State University
Steven Maxwell, Ph.D., University of Missouri - Kansas City
Alyssa Morris, D.M.A., University of Cincinnati College - Conservatory of Music
Randy Mulder, M.A., New York University
Melissa Neville, M.F.A., University of Cincinnati College - Conservatory of Music
Joshua Oppenheim, D.M.A., University of North Texas
Craig B. Parker, Ph.D., University of California - Los Angeles
*Phil Payne, Ph.D., University of Oklahoma
Julie Pentz, M.F.A., University of Arizona
David Pickering, D.M.A., University of Kansas
Bryan Pinkall, D.M.A., University of Missouri Kansas City
Dana Pinkston, M.F.A., Penn State University
Reginald Pittman, D.M., Indiana University
Patricia Thompson, D.M., Indiana University
Frank Tracz, Ph.D., Ohio State University
Amy Rosine Underwood, D.M.A., University of Kansas
Melissa Salvatore, MFA, University of Cincinnati College - Conservatory of Music
Shannon Skelton, Ph.D., The University of Wisconsin - Madison
Nancy Sondag, M.A., Hunter College of The City University of New York
Ben Stark, M.F.A., Yale University
Jennifer G. Vellenga, M.F.A., Ohio University
*Kathleen Voecks, M.F.A., University of Missouri
*Jeffrey Ward, D.M.A., Shenandoah University
Craig A. Weston, D.M.A., University of Washington

Colleen White, D.M.A., University of Colorado - Boulder
Alex Wimmer, Ph.D., Kansas State University
Anna Wytko, D.M.A., University of Minnesota
Julie Yu, D.M.A., University of North Texas

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Graduate Faculty Associate:

Lanell Finneran, MS, Kansas State University

Music Program

Kansas State University's graduate program in music is designed to furnish specialized professional training supported by competence in those fundamental areas needed by all musicians. Emphasis is placed on the personal growth and development of the student toward individual goals. The program is large enough to provide ample variety, yet small enough to allow personal attention to each student. While students are given considerable responsibility in all phases of the educational program, faculty guidance is available constantly.

The Music program offers the master of music with a specialization in the following areas: music education, music history/literature, performance with pedagogy emphasis, and composition.

Areas of Emphasis

Bands: Goins, Tracz, Wimmer, Payne
Brass instruments: Fassler-Kerstetter, Hunt, Parker, Maxwell, Kilgore
Chamber music: All faculty as approved by the Graduate College
Choral groups: Oppenheim, Yu-Oppenheim
Conducting: Dirks, Oppenheim, Tracz, Winmer, Yu-Oppenheim
Jazz studies: Cochran, Gartner, Goins, Hunt, Payne
Keyboard instruments: Dobrzanski, Pickering
Music education: Burrack, Gurgel, Oppenheim, Payne, Tracz, Ward, Winmer, Yu-Oppenheim
Music history and musicology: Cochran, Hunt, Parker, Goins
Opera and musical theatre: Rosine, Pittman
Orchestras: Dirks
Percussion instruments: Gartner
String instruments: Cooper, Dirks
Theory: Fassler-Kerstetter, Morris, Pickering, Weston
Voice: Pinkall, Pittman, Rosine, Thompson
Woodwind instruments: Kerstetter, Morris, White, Wytko
Composition: Morris, Weston

Theatre Program

The graduate program in theater offers a master of arts degree in theater with concentration in drama therapy. Students take courses in drama therapy, playwriting, and psychology/family studies/human development/counseling to fulfill the requirements for registry with the North American Drama Therapy Association.

Music, Theatre and Dance Facilities

The School of Music, Theatre and Dance is housed in McCain Auditorium, Nichols Hall, and the Purple Masque Theatre (West Stadium). Ample classrooms, rehearsal halls, practice studios, and offices are supplemented by a small hall for chamber music, a 1,800-seat auditorium, a 240-seat thrust theatre, and a 100 seat thrust theatre. The Piano Lab provides 15 midi work-stations with a state-of-the-art teaching/presentation station. Midi Workstations also exist in Nichols Hall. The department is an official Steinway School and owns four concert grand pianos, several studio grands, and a number of well-maintained practice uprights. Organs include a concert Austin (40 rks), a Bosch tracker (9 rks), and a J.W. Walker Continuo organ. An electronic studio centers around digital and analog synthesizers with ample supporting equipment. For the performance of early music, the department owns one harpsichord, a chest of matched viols, and assorted wind instruments.

The music division of Hale Library contains a growing reference and research collection fully adequate to master's level work, as well as an extensive collection of recordings. The Special Collections Division holds a number of rare items, from 16th century prints to one of the two largest collections of the manuscripts of Gail Kubik, world-renowned 20th-century composer. The Graduate Music Seminar-Study Room offers a place in the Music Program in which materials may be placed on reserve for easy, convenient availability to graduate students.

Music Careers

In addition to enriching the quality of one's life, enhancing the understanding of other epochs and cultures, and providing outlets for self-expression, graduate study in music prepares students for a variety of professions. K-State's music alumni perform professionally with symphony orchestras, military bands, chamber music ensembles, opera and musical theatre companies, choral ensembles, jazz, rock, country, and bluegrass groups, in recording studios, and as soloists and accompanists. Others are active as composers of concert, commercial, liturgical, and/or educational music. K-State graduates also hold prominent positions in the fields of music education (pre-school through collegiate levels), private teaching, church music, music therapy, librarianship, and in the music industry. In addition, several K-State music graduates have used their arts degrees as preparation for professional schools such as law and medicine.

Music Performance Opportunities

A full range of performing organizations and small ensembles provides the graduate student with a variety of performance opportunities. These include Concert Choir, Collegiate Chorale, University Treble Chorus, University Choir, Grand Chorus, In-A-Chord, Collegium Musicum, Madrigal & Motet Ensemble, Opera Workshop, Wind Ensemble, Wind Symphony, Concert Band, University Band, Concert Jazz Ensemble, Jazz Lab A, Jazz Combos, Brass Ensemble, Woodwind Ensemble, Percussion Ensembles, Marching Band, Additional Athletic Bands, Symphony Orchestra, Theatre Orchestra, Opera Theatre, and multiple small ensembles. Moreover, the Collegium Musicum performs early music on authentic instruments, and chamber music flourishes in a number of small groups of various instrumentation.

Although not directly associated with the School of Music Theatre, and Dance, the McCain Auditorium Performance Series brings to the campus large musical attractions, world-famous soloists, and chamber music, as well as dance troupes and theatre companies. Faculty recitals expand the opportunities to hear performances of professional caliber.

Theatre Season and Outreach Programs

The Theatre program offers 4 main stage shows each year: one musical, produced in conjunction with the music and dance programs, and three straight plays, usually directed by faculty. The Purple Masque season presents four non-musical plays per year. These productions are often directed by graduate students in theatre as part of their creative projects for their degree. Drama therapy graduate students are involved in the Growing Tree Theatre Company, which tours plays for young audiences to elementary and middle schools in the area, and the Barrier-Free Theatre, a company for actors with and without disabilities, among other outreach opportunities in the community.

Admission to the Graduate Program in Music

Admission to the Graduate School of Kansas State University is handled through individual departments. Applicants interested in the Graduate Program in Music should send inquiries to Frederick Burrack, Director of Graduate Studies, School of Music, Theatre and Dance, Graduate Music Studies, 109 McCain Auditorium, Kansas State University, Manhattan, KS 66506-4702. Graduate Teaching Assistantships are selected in January. (International Student should note the deadlines for admission as seen on the Graduate website).

Application is made through http://www.k-state.edu/grad/admissions/application-process/ requiring the following:

1. The application fee.
2. One copy of an official transcript from each undergraduate and/or graduate institution previously attended.
3. Three letters of recommendations.
4. A statement of applicant's personal and professional goals.
5. Requested but not required: YouTube link demonstrating performance skills (if specialization performance, pedagogy; conducting/teaching skills if specialization is music education), sample original scores (if specialization is composition), or an example of scholarly work (if specialization is history/literature). On-campus auditions are usually required.
6. International students are also required to send TOEFL scores and Affidavit of Financial Support.

Admission to the Graduate Program in Theatre with concentration in Drama Therapy

Application is made through http://www.k-state.edu/grad/admissions/application-process/ requiring the following:

1. A completed application form (completed online - http://www.k-state.edu/grad/application
2. The application fee.
3. One copy of an official transcript each undergraduate and/or graduate institution previously attended.
4. Three letters of recommendations of professors or professional employers who can speak to your potential to succeed at the graduate academic level.
5. A statement of the applicant's personal and professional goals.
6. International students are also required to send TOEFL scores and Affidavit of Financial Support.

Students interested in drama therapy need to arrange an interview with Sally Bailey, Director of the Drama Therapy Program at sdbailey@k-state.edu.

Entrance requirements

Admission with full standing

To be considered for admission with full standing, the applicant must have:

1. A bachelor's degree from an approved institution.
2. Adequate preparation in the field of music: normally a B.M., B.M.E., B.S. in music education, B.A. in music, or the equivalent.
   OR
   Adequate preparation in the field of drama therapy: normally a B.A., B.S. or B.F.A. in theatre or the equivalent. Undergraduate electives in psychology are not required, but are helpful.
3. An undergraduate average of B or better.

If all of the foregoing requirements are not met, probationary admission may be considered, provided there is other evidence that the applicant has the ability to do satisfactory graduate work. Such evidence might include a post-graduate record at another institution or successful professional work.

Probationary admission

Students may be admitted provisionally if there is uncertainty in evaluating transcripts.

Full standing for probationary or provisional students is attained automatically upon completion of at least 9 hours of work for graduate credit with a grade of B or better. Students admitted on probation may be denied continued enrollment if they receive a grade less than B.

Special students

An application for admission to the Graduate School in the School of Music, Theatre and Dance ordinarily implies the student's intention to work toward an advanced degree. Students who do not plan to work toward an advanced degree, however, may be admitted as special students. Those who later wish to enter the degree program must undergo a full review. No more than 9 semester hours earned as a special student may be transferred into a regular degree program.

Admission to the Graduate School in the Department of Music does not necessarily imply admission to a particular program within the department. For special requirements, see the individual areas of emphasis.

Residence requirements

Candidates in music will require 4 semesters to complete the degree. The summer program can be completed in 3 summers. Summer study in music education requires on-campus attendance during residency week. Candidates who serve as graduate assistants or hold positions outside of their academic responsibilities must be completed in four semesters.

Candidates in drama therapy will need at least 4 semesters and one summer to complete all of the academic requirements of the degree and of the North American Drama Therapy Association.

Courses taken more than six years before the completion of the degree generally cannot be credited toward the degree.

Transfer credit

Graduate credit with a grade of B, or better, may be transferred from other accredited institutions. Transfer of more than 6 hours requires special action; in no case may more than 10 hours be transferred.

Assistantships and financial aid

A limited number of graduate assistantships in the Music program are available during the regular academic session, but they are not available in the summer. Assistantships are given in specific areas, according to departmental needs. Teaching assistants are usually needed in aural skills, music theory, music education, accompanying, band, choir, orchestra, collegium musicum, music appreciation, piano class, and voice (class and/or studio teaching). Other assistantships involve work in the Music Library, the instrument room, and various aspects of administration. All assistantships include monitoring the technology lab and taking attendance at recitals.

The Theatre program offers a limited number of Graduate Teaching Assistantships (GTA). Most GTAs teach the basic speech course for the Communication Studies Department, but there are also a few assistantships in the theatre department. Students may apply to other departments and offices on campus for GRAs, GAs, and GTAs.

Graduate assistantships require up to 16-20 hours a week, which is regarded as five-tenths of full time. Such an appointment entitles the student to a full waiver of tuition and out-of-state fees, as well as eligibility to apply for university health insurance. Graduate assistants who are appointed to a .25 tenths position work 8-10 hours per week. All applicants for full-time study in the Master of Music program are automatically considered for assistantships; no additional application form is needed. Theatre students interested in an assistantship should submit their application and GTA application form by February 15 for the coming academic year. GTA application forms are available from the Director of Graduate Studies in Theatre.

Assistantships are awarded with the expectation that the student will spend two years in residence and that satisfactory performance of duties and satisfactory academic work will bring renewal of the assistantship. Assistantships are not available for more than two years. Graduate assistants in the Music Program are expected to participate in a large ensemble each semester.

For eligible students, work-study funds are available for a variety of jobs on campus. Inquiries regarding eligibility for work-study should be addressed to the Office of Aids and Awards, Fairchild Hall, Kansas State University, Manhattan, KS 66506.

All non-native English-speaking applicants, including those with a bachelor's degree from a U.S. college or university, must score at least 550 on the TOEFL and at least 50 on the Speak Test before being appointed to a graduate teaching assistantship in the Kansas State University Music Program.

Course loads

No graduate student in music shall take more than 16 hours of credit during fall or spring semesters. Most graduate students in theatre take 9 credit hours during fall or spring semesters and are typically involved in drama therapy internships and/or production work throughout the year. Courses taken during the summer are not covered under assistantship. Graduate assistantships will only cover the tuition for 10 credit hours per semester. Any credit hours above that amount are paid for at the in-state tuition cost. Graduate assistants may not take less than six hours in any semester.

Registration

Registration procedures are outlined each semester in the Schedule of Classes and Enrollment Procedures. First-term graduate students may be required to arrive on campus (for orientation and testing) one week before classes begin. The needed information will be communicated to each student in ample time by the Director of Graduate Studies. All music graduate students will register through the office of the Director of Graduate Studies in Music. All theatre graduate students will register through the office of the Director of Graduate Studies in Theatre.

Music Placement tests

Each entering music graduate student will take placement tests. The written tests will consist of two sections, theory and music history. The tests will include components equivalent to those of the KSU undergraduate program.

The results of these tests will be used in planning a suitable program of study for each individual. If remedial work is indicated, it may be accomplished through coursework or by doing independent study before re-examination.

Supervisory committee

During the **music student's** first semester, the director of graduate studies in music shall, in consultation with the student, appoint a major professor for each student. No later than the second semester, the major professor will organize a Supervisory Committee consisting of himself/herself as chair, the Director of Graduate Studies in Music, and at least one other faculty member.

By the end of the first semester **all theatre** students should have identified a major professor in consultation with the director of graduate studies in theatre. No later than end of the second semester, a Supervisory Committee of three faculty members, including the major professor, should be identified and a program of study filed with the Graduate School.

The duties of the Major Professor will be to (1) meet no later than the student's second semester to review the student's work, (2) meet with the student no later than the second semester in order to formulate and approve the student's academic program, (3) offer counsel and advice to the student throughout his/her academic career and to approve such changes in his/her program as are agreed upon, (4) advise the student in the selection of a topic for the master's thesis, report, or creative project or the program for master's recital, and to approve the final choice, (5) The Supervisory Committee will act as the final reading committee of the master's thesis, or report, or as the judging committee for the student's final master's recital (music) or creative project (theatre), (6) serve as the examining committee for the student's comprehensive examination.

The initial organization of the Supervisory Committee and the scheduling of its first meeting shall be the responsibility of the major professor. Thereafter, the student has the responsibility for consultation with members of his or her committee and for obtaining the approval of the committee on appropriate matters.

Student's program of study

No later than a student's second semester, each student will, at some time before preregistration for the following term, meet with his/her major professor and, in consultation with other members of his/her Supervisory Committee, plan his/her academic program. This program is entered on the official form which the student receives from the Graduate School. When each of the members of the Supervisory Committee and the head of the School has signified approval by signing the completed form, the student will make will deliver the original to the Graduate School office, keeping a copy for him/herself.

The student is then responsible for following the program through his/her academic career, for obtaining the Supervisory Committee's approval for any desired or needed changes, and for seeing that his/her major professor registers such changes with the Graduate School office.

Master of Arts

Theatre (M.A.)

Provided through the Music, Theatre, and Dance graduate program, the Masters of Art degree in Theatre offers students a broad base of theatre courses and the ability to emphasize in a specific area, such as acting, directing, playwriting, design, management or technical theatre. The degree prepares students for teaching at the high school or community college level, for professional theatre work and for advanced study in theatre.

30 semester credits are required. All students must take: three 800-level 3 credit hour courses in dramatic literature; 3 credit hours in a 600- or above level course in acting, directing or playwriting; 3 credit hours in a 600- or above level course in design technical theatre or theatre management. The 15 remaining credits constitute electives which are usually in the student's area of concentration. At least 15 credits must be at the 800-level.

Each student must complete a creative project. Creative projects involve an extended original project with written reflection. A review of the candidate's work is conducted through an oral examination administered near the end of the degree program.

Students may apply for graduate teaching assistantship positions in public speaking, introduction to theatre, technical theatre or acting. These GTA positions cover the cost of tuition and pay an additional stipend.

Master's Degree Requirements

Students are admitted on the basis of their undergraduate transcripts and three letters of recommendation. A major in theatre is expected, but students with degrees in other areas may take undergraduate courses to make up deficiencies. A 3.0 overall undergraduate average is required, but students who do not meet this requirement may be admitted on probation.

There are three categories to the degree requirements:

Core Courses (15 credits)

- Three 800-level 3 credit hour courses in dramatic literature
- 3 credit hours in a 600- or above level course in acting, directing or playwriting
- credit hours in a 600- or above level course in design technical theatre or theatre management

Elective Courses (15 credits)

- 15 credit hours of electives; 6 credit hours must be at the 800-level

Creative Project

Theatre with concentration in Drama Therapy (M.A.)

Kansas State University is one of the few master level theatre programs in the U.S. which offers a concentration in drama therapy, which is offered through the Music, Theatre, and Dance graduate program. One of the strengths of the program is its strong theatre base and opportunities for creating drama-in-education, theatre-in-education, or issue-based community projects. Service learning and internships are incorporated into courses to provide students with direct client contact experiences.

The KSU MA program fulfills all of the requirements of the North American Drama Therapy Association's requirements of training and education toward registry (the national credential for drama therapy in the U.S.).

53 semester credits are required, including a minimum of 8 courses (24 credits) in drama therapy, 1 course in research methods (1 credit), 7 credits in drama therapy practicum/internship and supervision, and 6 courses (18 credits) in psychology, counseling and student development, educational leadership, family studies and human services, marriage and family therapy or anthropology.

Students' Masters Project (3 credits), Reports (2 credits) or Theses (6 credits) will focus on an aspect of drama therapy. These written projects will be presented to the student's committee in an Oral Examination.

Students in the drama therapy concentration may apply for Graduate Teaching Assistantship positions in the Theatre Department and other programs on campus. These GTA positions cover the cost of tuition up to 10 credits per semester and pay an additional stipend. Students may also apply for Graduate Assistantships in other programs on campus. These GA positions provide in-state tuition and pay a stipend.

Students are admitted on the basis of their application essay, undergraduate transcripts, three letters of recommendation and an interview. A major in theatre is expected, but students with degrees in other areas may take undergraduate

courses to make up deficiencies. A 3.0 overall undergraduate average is required, but students who do not meet this requirement may be admitted on probation.

Core Credits (32 credits)

- THTRE 820 - Principles of Drama Therapy **Credits:** 3
- THTRE 830 - Creative Arts Therapies **Credits:** 3

One course in improvisation from:

- THTRE 664 - Creative Drama **Credits:** 3
- THTRE 670 - Playback Theatre **Credits:** 1-3

One course in drama therapy with a specific population from:

- THTRE 630 - Topics in Theatre **Credits:** 1-4
- THTRE 665 - Drama Therapy with Special Populations **Credits:** 3
- THTRE 674 - Drama Therapy with Adolescents **Credits:** 3
- THTRE 675 - Drama Therapy with Older Adults **Credits:** 1-3
- THTRE 840 - Play Therapy Practices and Techniques **Credits:** 3
- THTRE 820 - Principles of Drama Therapy **Credits:** 3
- THTRE 830 - Creative Arts Therapies **Credits:** 3

One course in Psychodrama or Sociodrama from:

- THTRE 784 - Psychodrama **Credits:** 3
- THTRE 785 - Sociodrama **Credits:** 3

Additional Required Courses to Complete Core:

- THTRE 710 - Practicum in Theatre **Credits:** 0-6
- Internship and Supervision **Credits:** 7 (1 credit first semester, 2 credits for each of the next 3 semesters (spring and fall)
- THTRE 800 - Introduction to Graduate Studies in Theatre: Library, Research, and Information Skills **Credits:** 1-3
- THTRE 862 - Workshop in Playwriting **Credits:** 3
- THTRE 865 - Ethics and Professionalism in Drama Therapy **Credits:** 3
- One 3 credit drama therapy elective or the equivalent in 1 or 2 credit drama therapy courses.

Psychology Courses (18 credits)

A minimum of six courses from the following:

One course in Research from:

- ANTH 710 - Writing Cultures: Ethnographic Methods **Credits:** 3
- ANTH 715 - Research Methods in Digital Ethnography **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- FSHS 888 - Research Methods in FSHS I **Credits:** 3
- THTRE 810 - Survey of Research in Drama Therapy **Credits:** 3

One course in Group Processes from:

- CFT 870 - Couples and Sex Therapy **Credits:** 3
- CFT 872 - Family Therapy **Credits:** 3
- CNRES 751 - Conflict Resolution: Core Skills and Strategies **Credits:** 3
- EDCEP 858 - Group Processes **Credits:** 3
- HDFS 785 - Family Dynamics **Credits:** 3

One course in Developmental Psychology from:

- HDFS 786 - Lifespan Development **Credits:** 3
- LSHD 810 - Child Development **Credits:** 3
- LSHD 820 - Theories of Human Development **Credits:** 3
- LSHD 845 - Adult Development and Aging **Credits:** 3

One course in Abnormal Psychology or Psychopathology from:

- CFT 879 - Systemic Assessment and Treatment of Psychopathology **Credits:** 3
- PSYCH 505 - Abnormal Psychology **Credits:** 3

One course in Theories of Personality/Theories of Counseling from:

- EDCEP 823 - Counseling Theory **Credits:** 3
- PSYCH 520 - Life Span Personality Development **Credits:** 3
- THTRE 876 - Seminar in Theatre **Credits:** 3

One course in Multicultural Counseling from:

- EDCEP 951 - Multicultural Counseling **Credits:** 3

Project, Thesis, or Report

Project: Demonstration of competence in a specific area of drama therapy (3 credits)

Report: Writing a research paper for the purposes of gathering and assimilating information on a particular topic of drama therapy (2 credits)

Thesis: Writing of a lengthy research paper that makes an original contribution to the field of drama therapy (6 credits)

Oral Examination on Project, Report, or Thesis

Master of Music

Master of Music (M.M.)

Master's degree options and requirements

Kansas State University offers the Master of Music degree with specialization in the following areas: music education, performance, music history/literature, keyboard pedagogy, and composition. The degree requires a minimum of between 32 and 36 credit hours including a master's report (or recital) or a master's thesis. Music education majors may elect to take 36 credit hours without master's report or master's thesis. Graduate students cannot register for both graduate report and graduate thesis.

Core requirements:

MUSIC 801 Introduction to Graduate Study (2).

Theory and history-literature 11-12 hours, including Music 702:Style Analysis and at least one seminar course or MUSIC 767:Topics in American Music.

- History options include: 530, 531, 532, 570, 601, 650, 707, 766, 803, 807, 830, 832, 834, 836, 837
- Theory options include: 615, 616, 620, 675, 711, 714, 802, 804, 857
- Literature options include: 704, 705, 706, 707, 708, 737, 738, 740

A Placement Examination will determine whether or not academic deficiencies exist. If they are present, the student is required to enroll in the appropriate remedial courses or by doing independent study before re-examination.

See areas of specialization for further explanation. (MUSIC 802, taken during the summer, does not fulfill the seminar requirement.)

Requirements for individual areas of specialization

Music education

Admission

An applicant in music education may arrange a personal audition or send a recording demonstrating ability in the major area of performance as part of the admission process. Those who do not do so will audition during the registration period.

Core requirements

As above with the following amplification: MUSIC 807: History and Philosophy of Music Education is required.

Performance

4 hours individual instruction in the major performance area of the student's undergraduate study, or in a chosen secondary performance area, or in advanced conducting.

Major field

Music education core: (6 credit hours.)

- MUSIC 805 - Theories of Music Education **Credits:** 3
- MUSIC 808 - Research in Music Education **Credits:** 3

Music education electives (6-7 credit hours)

not more than 2 hours of 811 or 814 may be counted

- MUSIC 806 - Psychology of Music **Credits:** 3
- MUSIC 809 - Seminar in Music Education **Credits:** 3
- MUSIC 811 - Symposium in Music **Credits:** 1-3
- MUSIC 814 - World Music Pedagogy, Culturally Relevant Pedagogy, and Special Populations in Music Education **Credits:** 3

Master's report, (2 credit hours)

With the approval of the student's advisory committee and the graduate faculty of the area concerned, the requirements may be satisfied by one of the following:

1. A scholarly paper on some aspect of the student's major area of teaching;
2. An original composition of acceptable proportions, with an accompanying report;
3. A recital on the student's major instrument, the recital to be given under the conditions listed under the performance major;
4. Six additional semester hours of graduate courses in music education and/or advanced courses related field, (e.g., art, drama, education, philosophy, psychology, statistics, etc.).

Performance

Admission

Each student wishing to major in performance must audition in person or send a recording of a recent concert. The audition, or audition recording, must be of substantial length and include music from at least three different style periods. The audition must be approved by the faculty of the appropriate division.

Core requirements as above with the following amplifications:

History-Literature hours must include:

For wind and percussion students:

- MUSIC 704 - Symphonic Literature **Credits:** 3

For choral conducting students:

- MUSIC 708 - Choral Literature **Credits:** 3

For band conducting students:

- MUSIC 707 - History of Wind Bands **Credits:** 3

For string students:

- MUSIC 705 - Chamber Music Literature **Credits:** 3

For voice students:

- MUSIC 706 - Song Literature **Credits:** 3

For organ students:

- MUSIC 737 - Organ Literature **Credits:** 3

For piano students:

- MUSIC 738 - Piano Literature **Credits:** 3

Electives (4 to 6 credit hours)

Major field

A minimum of 12 hours in the division of the student's major performance area, 8 hours of which must be individual instruction. The remaining 4 hours may be in pedagogy, methods, or ensemble. Voice majors who are found deficient in knowledge of foreign language diction will take 1 hour of diction.

Master's report (recital), (2 credit hours)

All graduate students majoring in performance will perform a full recital of not less than one hour. The program for the recital must be approved by the student's advisory committee, and the advisory committee will judge the recital. All solo literature (including concertos) will be played from memory, unless the advisory committee grants an exception in recognition of unusual circumstances. The recital will be digitally recorded and the recording uploaded to EDTR, with supporting material, for presentation as a master's report. The student will also either (a) prepare substantial program notes of a historical and analytical nature, these notes to be with the recorded recital; or (b) present a lecture-recital on a major work not included on the master's recital, the lecture-recital to be recorded and uploaded to EDTR with the master's recital. Under both options a and b, the project is to be done under supervision of the major professor or the director of graduate studies. The program notes or the lecture should demonstrate the student's ability to investigate and interpret the historical aspects of a work, to analyze style, and to use commendable English. The literary standards should be comparable to those required for the usual master's report. Under option b the student's choice of a work must be approved by his or her advisory committee.

Additional requirements and policies: students in areas in which ensemble performance plays an important role will be expected to take part in appropriate ensembles and organizations as determined in consultation with the student's advisory committee.

History-literature

Core requirements

As above.

Performance

Collegium Musicum, 2 hours.

Major field

12 hours minimum

including at least 9 hours from the following:

- MUSIC 709 - History of School Choral Music **Credits:** 3
- MUSIC 830 - Seminar in Medieval and Renaissance Music **Credits:** 3
- MUSIC 832 - Seminar in Baroque Music **Credits:** 3
- MUSIC 834 - Seminar in Classical Music **Credits:** 3
- MUSIC 836 - Seminar in Romantic Music **Credits:** 3
- MUSIC 837 - Seminar in 20th-Century Music **Credits:** 3

Master's report, (2 credit hours.)

or

Master's thesis, (6 credit hours)

This option is open by permission to history majors who are not required to take 601 and who have a special interest in research.

Electives (2 to 8 credit hours)

Additional requirements

Reading knowledge of foreign language; German or French preferred, Italian, Latin, Russian, or Spanish acceptable.

Oral examination

In defense of thesis or report.

Piano pedagogy

Major field

6 hours individual instruction and the following courses:

- MUSIC 821 - Piano Pedagogy I **Credits:** 3
- MUSIC 822 - Piano Pedagogy II **Credits:** 3
- MUSIC 823 - Supervised Teaching in Piano **Credits:** 2
- MUSIC 824 - Half Recital in Piano **Credits:** 1
- MUSIC 825 - Lecture Recital in Piano **Credits:** 1

Master's report (recital)

In place of a master's recital and report, all students will present a lecture–recital that will be musically-illustrated presentation on some aspect of piano pedagogy. MUSIC 824 and MUSIC 825 will replace the two credits of MUSIC 898 Graduate Report.

Composition

Admission

Entrance to the program normally requires at least 26 undergraduate hours of composition courses. The applicant should submit original scores to the composition faculty for approval.

Core requirements

As above with the following amplification:

- MUSIC 837 - Seminar in 20th-Century Music **Credits:** 3

Performance

One course (2 hours) in advanced conducting or score reading.

Major field

Total, 16 hours, as follows: 10 to 14 hours, including 802 (Seminar in Music Theory) or 804 (Advanced Analysis), and individual instruction in composition; and master's report, 2 hours or master's thesis, 6 hours. The report or thesis may be either a theoretical paper or a composition in a larger form with an accompanying report.

- MUSIC 802 - Seminar in Music Theory **Credits:** 3
  or
- MUSIC 804 - Advanced Analysis **Credits:** 3

Electives (Up to 6 credit hours.)

Additional requirements and policies

The composition student must prove his or her proficiency in conducting and in electronic instrumentation, either by class study or by actual performance in the area.

All students receiving individual instruction in composition are required to copy their music in the prescribed professional manner.

Wherever possible, the composer should assume the responsibility of seeing to the performance of his or her own music.

Music Education Summer Program

Please visit http://www.k-state.edu/musiceducation/summergrad/index.html for more information.

Core Requirements (17 credit hours)

- MUSIC 707 - History of Wind Bands **Credits:** 3
  or
- MUSIC 709 - History of School Choral Music **Credits:** 3
- MUSIC 801 - Introduction to Graduate Study in Music **Credits:** 2
- MUSIC 802 - Seminar in Music Theory **Credits:** 3
- MUSIC 807 - History and Philosophy of Music Education **Credits:** 3
- MUSIC 808 - Research in Music Education **Credits:** 3

Major Field (15 credit hours)

- MUSIC 660 - Marching Band Techniques **Credits:** 2
  or
- MUSIC 661 - Choral Ensemble Techniques **Credits:** 2
- MUSIC 680 - Advanced Instrumental Rehearsal Techniques **Credits:** 2
  or
- MUSIC 681 - Advanced Choral Rehearsal Techniques **Credits:** 2
- MUSIC 805 - Theories of Music Education **Credits:** 3
- MUSIC 858 - Advanced Choral Conducting **Credits:** 1-2
  or
- MUSIC 859 - Advanced Instrumental Conducting **Credits:** 1-2

Choose one from the following:

- MUSIC 675 - Arranging for Bands **Credits:** 2
- MUSIC 685 - Organization and Administration of School Music Programs **Credits:** 2
- MUSIC 806 - Psychology of Music **Credits:** 3

Electives (4 credit hours)

- MUSIC 603 - Percussion Pedagogy **Credits:** 2-3

- MUSIC 638 - Concert and Ethnic Percussion Techniques **Credits:** 2-3
- MUSIC 639 - Jazz and Marching Percussion Techniques **Credits:** 2-3
- MUSIC 665 - Jazz Techniques **Credits:** 2

Masters Report (2 credit hours)

With the approval of the student's advisory committee and the graduate faculty of the area concerned, the requirements will be satisfied by a scholarly paper that includes detailed analysis of performance literature, rehearsal plans, and performance documentation in the student's major area of teaching.

Master's report or thesis

The master's report should demonstrate the student's ability to locate and gather information, to organize this information, and to interpret and evaluate it. While the subject need not be taken from a totally unexplored area, the master's report should reflect originality of thought and approach, and it must represent essentially the student's own work. The report is written with the guidance of the major professor. The director of graduate studies is the second reader and should be consulted early in the work. The other member of the advisory committee also reads the report and should be consulted well before the work is finished.

The master's thesis differs from the report only in the broader scope and greater length required.

Both the thesis and the report must be in clear and commendable English. The form and style should follow Irvine's Writing About Music, 3rd edition, revised and enlarged by Mark A. Radice (Portland, Oregon: Amadeus Press, 1999). (Music education majors will use the Publication Manual of the American Psychological Association, most current edition, instead.)

For discussion of the master's report (recital), see above under the performance specialization.

Final examination

The purpose of the final examination is to expose required learnings from your graduate program of study and should include questions from the three general areas: the candidate's major field, history-literature, and theory. The candidate will be expected to demonstrate a breadth of knowledge in the field of music covered in their course work. The final examination for the master of music degree consists of either a written examination of four questions to be answered within a four hour period of time or an oral defense of their master's recital/report/thesis. The responsibility for evaluating the examination lies with the candidate's supervisory committee. Although focused on the program of study, the candidate will be expected to demonstrate a breadth of knowledge in the field of music beyond that covered in course work, as well as the ability to relate his or her special area to other areas. The responsibility for evaluating the examination lies with the candidate's supervisory committee.

Problems courses

Not more than three hours in MUSIC 799: Problems in Music should ordinarily be applied to the master's degree except that two hours of Problems in Music may be applied to the master's report.

The purpose of the Problems in Music course is to provide opportunity for guided independent study in areas not included in regular course offerings. If scheduling difficulties have made it impossible for the student to take a needed or desired course, Problems in Music may be used to cover that subject matter.

Symposium in music and workshops

MUSIC 811: Symposium in Music and the other short, concentrated workshop courses, designed especially for school music teachers and supervisors, are given during the summer session. Often these are taught by visiting musicians and educators of national prominence. The symposium and various workshops carry graduate credit, but only 2 hours of these courses may be applied toward the master's degree. Further information may be obtained from Professor Jana Fallin, Department of Music, Kansas State University, 109 McCain Auditorium, Manhattan, KS 66506-4702.

Philosophy

201 Dickens Hall
785-532-6758
Fax: 785-532-3522
philosophy@k-state.edu
http://www.ksu.edu/philos/

Department Head:

Bruce Glymour

Graduate Faculty:

Bruce Glymour, Ph.D., University of California - San Diego
James R. Hamilton, Ph.D., University of Texas - Austin
Jonathan Herington, Ph.D., Australian National University
Amelia Hicks, Ph.D., University of Notre Dame
Graham Leach-Krouse, Ph.D., University of Notre Dame
Shay Logan, Ph.D., University of Minnesota
Jon Mahoney, Ph.D., Binghamton University
Reuben Stern, Ph.D., University of Wisconsin - Madison
Scott Tanona, Ph.D., Indiana University
Rosa Terlazzo, Ph.D., Australian National University
Elliott Wagner, Ph.D., University of California - Irvine

Although Kansas State University does not offer a graduate degree in philosophy, the following courses are available for graduate credit and, when appropriate, may be used to support graduate degrees in other departments.

Physics

116 Cardwell Hall
785-532-6786
Fax: 785-532-6806
graduate@phys.ksu.edu
http://www.phys.ksu.edu/

Department Head:

Brett DePaola

Director of Graduate Studies:

Michael J. O'Shea

Graduate Faculty:

*Itzik Ben-Itzhak, Ph.D., Technion, Israel
*Matthew Berg, Ph.D., Kansas State University
*Cosmin I Blaga, Stony Brook University
*Timothy A. Bolton, Ph.D., Massachusetts Institute of Technology
*Kevin Carnes, Ph.D., Purdue University
*Amitabha Chakrabarti, Ph.D., University of Minnesota

*Brett DePaola, Ph.D., University of Texas - Dallas
*Brett D. Esry, Ph.D., University of Colorado - Boulder
*Charles C. Fehrenbach, Ph.D., University of Michigan
*Bret N. Flanders, Ph.D., University of Chicago
*Loren Greenman, Ph.D., University of Chicago
*Glenn Horton-Smith, Ph.D., Stanford University
*Andrew G. Ivanov, Ph.D., University of Rochester
*Ketino Kaadze, Ph.D., Kansas State University
*Vinod Kumarappan, Ph.D., Tata Institute of Fundamental Research, India
*James Laverty, Ph.D., Michigan State University
*Bruce Law, Ph.D., Victoria University, New Zealand

*Chii-Dong Lin, Ph.D., University of Chicago
*Yurii Maravin, Ph.D., Southern Methodist University
*Michael J. O'Shea, Ph.D., University of Sussex, England
*Bharat Ratra, Ph.D., Stanford University
*Daniel Rolles, Ph.D., Technical University Berlin, Germany
*Artem Rudenko, Ph.D., Moscow Institute of Physics and Technology, Russia
*Lado Samushia, Ph.D., Kansas State University
*Eleanor Sayre, Ph.D., University of Maine
*Jeremy Schmit, Ph.D., University of California - Santa Barbara
*Christopher M. Sorensen, Ph.D., University of Colorado - Boulder
*Uwe Thumm, Ph.D., University of Freiburg, Germany

*Gary M. Wysin, Ph.D., Cornell University

Emeritus Faculty:

*C. Lewis Cocke, Ph.D., California Institute of Technology
*Kristan L. Corwin, Ph.D., University of Colorado-Boulder
*Nathan Folland, Ph.D., Iowa State University
*Thomas J. Gray, Ph.D., Florida State University
*Siegbert J. Hagmann, Ph.D., University of Cologne, Germany
*Thomas R. Manney, Ph.D., University of California - Berkley
*Talat S. Rahman, Ph.D., University of Rochester
*Neville W. Reay, Ph.D., University of Minnesota
*Patrick Richard, Ph.D., Florida State University
*Noel R. Stanton, Ph.D., Cornell University
*O. Laurence Weaver, Ph.D., Duke University
*Dean A. Zollman, Ph.D., University of Maryland

Adjunct and Ancillary Faculty:

*Hongxing Jiang, Adjunct, Ph.D., Syracuse University
*Jingyu Lin, Adjunct, Ph.D., Syracuse University
*Brian Washburn, Ph.D., Georgia Institute of Technology

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Program description

The research programs of the Department of Physics are focused in the areas of atomic, molecular and optical physics, condensed and soft matter physics, physics education, cosmology, and high energy physics. We have concentrated our major research commitments in these areas to maintain strength and balance. The Department of Physics offers graduate programs leading to the Ph.D. degree. These are described here with the research interests of the faculty. Our graduate core curriculum is an excellent foundation for work in a large variety of specialties.

Careers

Graduate study in physics provides training for many varied academic and technological careers. Graduates in physics at all levels have found attractive careers in industrial and governmental laboratories and in academic departments. Graduates from K-State are presently engaged in communications research, x-ray laser development, genetic research, university teaching and research in various areas of physics, petroleum research, industrial electronics, and many other fields. M.S. graduates generally occupy skilled technical positions and Ph.D. graduates generally occupy positions requiring independent work in a wide range of areas.

Research and facilities

Atomic, molecular and optical physics

The experimental atomic, molecular and optical physics group is involved in a diverse program that investigates the interactions of atoms, molecules and light using intense ultrashort laser pulses. High harmonic generation, ionization, electron re-scattering and molecular breakup are a few of the problems being investigated using the state-of-the art lasers housed in the James R. Macdonald Ultrafast Laser Laboratory (JRML), which can produce pulses from the infrared to X-ray regimes. The Laboratory also houses research using ultrafast fiber lasers to investigate frequency combs, with a goal of developing applications useful in the telecommunications industry, and research into the coherent control of cold photo-association collisions.

The results of the experiments carried out in the lab are compared to the theoretical predictions made by the Kansas-State theory group as well as by theorists elsewhere. The close interplay between theorists and experimentalists often leads to a better understanding of the physics and in some cases suggests new phenomena, experimental methods, or improved calculation methods. The combination of strong groups in both theory and experiment within the same department makes Kansas State one of the leading atomic, molecular and optical physics groups in the world. Because of this, we have attracted researchers from around the world to come to Kansas State to carry out their experiments.

Soft and condensed matter physics

Our condensed matter physics group performs research in a multitude of areas, including controlled assembly of nanoparticles into 2-D and 3-D solids, the stretching of proteins, and growth of nanowires and their application to living cells. Our soft matter group works at the interface of physics, chemistry and biology.

Cosmology and particle astrophysics

The K-State cosmology group studies the physical properties and evolution of the Universe. Questions we are trying to address include: Why is the Universe's expansion accelerating? What is Dark Energy and Dark Matter? We develop theoretical models and look into cosmological data to provide answers to these fundamental questions."

High energy physics

This group studies physics at the smallest known scales of the universe; the indivisible particles that make up atoms and matter. The group seeks to provide answers to many fundamental questions of physics such as the existence of extra dimensions of space, dark energy and the nature of the dark matter of the universe, and the origin of mass. The group members collaborate with many groups throughout the world, including the Fermilab near Chicago, and with CERN in Switzerland, where recently they were involved in discovering the Higgs boson.

Physics education research

The physics education group conducts research related to the teaching and learning of physics, and develops learning materials based on that research and the research of others. The group continues to develop cutting-edge teaching technology, as well as improve both in-service and pre-service teacher education.

Financial support

The department is continually awarded outside support for research and teaching. The extramural research support for the department has averaged over $6.5 million during each of the last four years. This support is important for the graduate student because it is an indication that the research conducted by the department is regarded highly by the research peers who review the department's proposals. It also indicates that a large number of graduate research assistantships are available in the department. Exceptional students can compete for university graduate fellowships and graduate fellowships offered by the Graduate School. Applications must be completed by January 8 to be considered for a fellowship. The schedule for teaching assistants is about 8 to 10 hours per week in laboratory sections in the introductory physics courses. Summer appointments as research assistants are generally available. The stipend is sufficient for a comfortable life in Manhattan.

Doctor of Philosophy

Physics (Ph.D.)

Program description

The research programs of the Department of Physics are focused in the areas of atomic, molecular and optical physics, condensed soft and biological matter physics, cosmology and particle astrophysics, high energy physics, and physics education research. We have concentrated our major research commitments in these areas to maintain strength and balance. The Department of Physics offers graduate programs leading to the Ph.D. degree. These are described here with the research interests of the faculty. Our graduate core curriculum is an excellent foundation for work in a large variety of specialties.

Doctoral degree requirements

For regular admission to the graduate program, a bachelor's degree in physics, a minimum upperclass GPA of 3.0, and the results of the GRE advanced test in physics are recommended. Candidates with degrees in mathematics, chemistry or engineering will also be considered. Students from non-English speaking countries are required to show proficiency in English via the TOEFL, IELTS or PTE exams. See http://www.k-state.edu/grad/admissions/application-process/international/index.html#English-Proficiency-Requirements for more information. Applications for admission to the program in the fall semester should be completed by January 1 at https://www.applyweb.com/kstateg/.

Careers

Graduate study in physics provides training for many varied academic and technological careers. Graduates in physics at all levels have found attractive careers in industrial and governmental laboratories and in academic departments. Graduates from K-State are presently engaged in communications research, x-ray laser development, genetic research, university teaching and research in various areas of physics, petroleum research, industrial electronics, and many other fields. M.S. graduates generally occupy skilled technical positions and Ph.D. graduates generally occupy positions requiring independent work in a wide range of areas.

Research areas

Experimental atomic physics

The experimental atomic, molecular and optical physics group is involved in a diverse program that investigates the interaction of highly-charged ions with various target media. The ions are created as beams by several ion sources and accelerators located in the J. R. Macdonald Laboratory for atomic physics. The ion beams used in the experiments have a well-defined charge and energy and are thus ideally suited to investigating the behavior of collisions under a variety of well-defined conditions. Single- and multi-electron atomic and molecular processes are investigated by observing the final ionic species and their decay products. The targets in these collisions consist of ground state and laserexcited atoms and molecules, as well as atomic and molecular ion beams. Many measurements are precise enough to provide information about the specific quantum mechanical states involved in the reaction. The results of these observations are compared to the theoretical predictions made by the Kansas-State theory group as well as by theorists elsewhere. The close interplay between theorists and experimentalists often leads to a better understanding of the physics and in some cases suggests new phenomena, experimental methods, or improved calculation methods. The combination of strong groups in both theory and experiment within the same department makes Kansas State one of the leading atomic physics groups in the world. Because of this, we have attracted researchers from around the world to come to Kansas State to carry out their experiments.

A new ultra-short pulse, ultra-high intensity laser system is being used to study the interaction of the laser light with atoms, ions and molecules. High harmonic generation, ionization, electron re-scattering and molecular breakup are a few of the problems being investigated. The theorists are working in close collaboration with the experimentalists in these endeavors.

Experimental condensed matter physics

The experimental condensed matter group at K-State is conducting research in a wide range of often inter-related areas.

Research on condensed phases include the physics of aggregates, their optics (scattering and absorption), morphology, how they form and how they move; particularly in the context of aerosols, synthesis and properties (magnetic and optical) of nanoparticles and their assemblies (such as superlattices and gels) and of water, especially supercooled, and aqueous solutions.

Phase transitions at liquid surfaces and within multilayer liquid films are being studied via optical techniques in order to better understand the physics at the boundaries of bulk materials. Surface structure is strongly influenced not only by

the interactions at interfaces but also by any phenomena which is occurring in the adjacent bulk medium. We have therefore been studying (i) the coupling between bulk second order phase transitions and surface phenomena where we have observed universal surface critical behavior in both semi-infinite systems and within thin films and (ii) surface interactions and how these influence and govern surface phase transitions and surface dynamics on a molecular level. A more complete understanding of surface phenomena will be of benefit for many important technological and biological processes, such as, surface chemical reactions, lubrication, and fluid flow through biological membranes or porous media.

Magnetic nanostructures such as nanoscale particles, single layers and multilayers containing rareearths are prepared by sputter deposition. Making materials small modifies their properties in a number of interesting ways and in this work we look at how the properties of permanent magnets based on Nd2Fe14B and SmCo5 are modified. Magnetic properties down to 5 K are studied in fields up to 55 kOe and the structure of the materials is characterized with x-ray diffraction and electron microscopy. Our effort can be divided into two areas: 1) improving the hard magnetic properties of permanent magnets (coercivity, energy product) by preparing these materials in very small form, 2) understanding how the observed improvements can be explained in terms of size and interfacial effects.

Experimental high energy physics

The High Energy Physics group has strong research programs in collider physics. Kansas State physicists are playing a key role in building the silicon vertex detector for the next upgrade of the D0 experiment at Fermilab, and are now analyzing data from the frontier of high energy proton-antiproton collisions from the previous D0 experiment. To remain at the energy frontier, they are also heavily involved in preparations for the CMS experiment now under construction at CERN.

The High Energy Physics group is also strong in neutrino physics. K-State physicists have major roles in data analysis and Monte Carlo simulation for the KamLAND experiment and the proposed Double CHOOZ and Braidwood experiments. HEP group members are leaders in the background working group of Braidwood and the on-line group of Double CHOOZ, and have initiated several local research projects to advance the future development of Braidwood, Double CHOOZ, and KamLAND.

Theoretical and computational physics

The department offers a diversified program in theoretical and computational physics, including atomic, solid state, soft condensed matter, molecular and surface physics, statistical mechanics, materials physics, cosmology and particle astrophysics. There is significant interaction between experimentalists and theorists within the department and there is also collaboration with faculty in chemistry, biochemistry and engineering. Seminars are held weekly in several of these areas.

Computational physics students are trained to solve accurately and efficiently problems in physics using a wide range of computational techniques. An important aspect of the training is the presentation of problem solutions in a way that can be easily visualized and understood. Various algorithms for molecular dynamics simulation, Monte Carlo methods, ab-initio electronic structure calculations and solutions of generalized Langevin equations are being developed. A strong focus in this area is in the development of efficient algorithms to best exploit the benefits of parallel architecture in modern computers.

A broad range of computational facilities is available in our department with the main computations being carried out using the departmental cluster of Compaq Alpha workstations, high-end and low-end Unix and Linux workstations, and the high performance computational environment provided by clusters of Linux computers. A number of faculty members and their students use supercomputers at national centers in their work, in addition to facilities housed on our own campus.

Some studies of mathematical methods in physics have also been carried out by our faculty and graduate students. These include: studies in group theory with application to atoms, molecules, and nuclei; development of the method of

hyperspherical coordinates; and development of complex integration with application to Coulomb wavefunctions. Mathematical aspects of formulations of the fewbody and many-body problem have also been developed in our department.

There is strong national and international collaboration with other colleagues. We have a steady exchange with scientists in Argentina, Brazil, China, Denmark, England, France, Finland, Germany, India, Italy, Japan, Korea, Pakistan, Portugal, Spain, Sweden, and Taiwan. We participate actively in conferences ranging from regional to international. Professors, graduate students and post-doctoral fellows all take part in these meetings.

Theoretical atomic and molecular physics

A broad range of topics in both scattering theory and atomic and molecular structure are studied. These studies are often initially motivated by the need to understand experimental results; they provide broader perspectives on electronic interactions in atoms that are then further tested in experiments. To complement this focus on experimentally driven results, investigations of a fundamentally theoretical nature are also carried out including the development of novel theoretical and computational methods. Theoretical models for collisions of ions, electrons, and photons with atoms and molecules over a broad range of energies are being developed to understand the transfer of energy and momentum among the collision partners. These studies are developed to understand the results of experiments performed at Kansas State and at other laboratories. The study of atomic structure covers a detailed mapping of the de-excitation of atoms and ions produced in such collisions. Our studies of multiply excited states of atoms using hyperspherical coordinates are revealing the similarity between the collective electronic excitations of atoms and the rotational-vibrational modes of polyatomic molecules. Our investigations of interactions of ions (atoms) with surfaces and clusters (such as C60) contribute to a better understanding of corrosion, catalysis, and the still new field of fullerene chemistry.

Theoretical condensed matter physics

The Theoretical Condensed Matter Physics group works in a number of related areas, trying to understand structural, physical, chemical, electronic, vibrational, magnetic, optical, and other properties of solids and condensed phases. The types of systems studied include polymer mixtures and block copolymers, polymer films on rough substrates, metals and semiconductors and their alloys, surfaces, nanocrystallites and nanostructures, chemisorbed gases, magnetic layers, and fine magnetic particles. Theorists working in condensed matter theory apply quantum mechanics, statistical mechanics and advanced computational techniques such as ab-initio electronic structure calculations and classical and quantum Monte Carlo and molecular dynamics simulations, to model the fundamental interactions between atoms and molecules in a material. All of our theorists use computation as an important tool. In addition to achieving a basic theoretical understanding of how atomic interactions lead to interesting macroscopic behavior, an important goal of our condensed matter theorists is to describe many phenomena of technological importance, such as corrosion, catalysis, wetting, phase changes, magnetic and electronic data storage, and friction and nanotribology. Ultimately, theory developed in collaboration with experimentalists will contribute towards the development of novel materials and new and interesting devices based on those materials.

Cosmology and particle astrophysics

The cosmology research program spans both theoretical work and analyses of cosmological data. On the theoretical side we work on developing models for the large-scale matter and radiation distributions in the Universe. We study observational consequences of Dark Energy and gravity models and test them by comparing their predictions with observational data, including the anisotropy in the cosmic microwave background radiation, and the mass correlation function.

Physics education

The Physics Education Research Group at K-State investigates the learning and teaching of physics using methods drawn from physics education research, the learning sciences, and science education. The group applies evidence from research to develop ways to improve physics learning. In recent years the work of this group has concentrated research on how students learn physics and mathematics, how they come to think as physicists, and ways to make this and other research available to physics instructors at all levels. Further efforts have involved the development of learning materials for the high school and college level and the training and support of science teachers and physics faculty members through both in-person and online resources.

Master of Science

Physics (M.S.)

The Department of Physics offers an M.S. in Physics. However, please note that in the candidate selection process, strong preference is given to applicants who want to study for a Ph.D.

For more information, please see the Physics website.

Political Science

101D Calvin Hall
785-532-6842
Fax: 785-532-2339
polsci@k-state.edu
http://www.k-state.edu/polsci/

Department Head:

Sam Bell

Director of graduate studies:

Brianne Heidbreder

Graduate Faculty:

*Sam Bell, Ph.D., SUNY Binghamton
Ethan Bernick, Ph.D., Florida State University
Nathaniel Birkhead, Ph.D., Indiana University
*Sabri Ciftci, Ph.D., Florida State University
John Fliter, Ph.D., The University of Maryland
*Michael Flynn, Ph.D., SUNY Binghamton
James L. Franke, Emeritus, Ph.D., Northern Illinois University
Brianne Heidbreder, Ph.D., University of Wisconsin-Milwaukee
*Dale Herspring, Emeritus, Ph.D., University of Southern California
Laurie M. Johnson, Ph.D., Northern Illinois University
*Emizet Kisangani, Ph.D., University of Iowa
*Andrew Long, Ph.D., Florida State University
*Carla Martinez Machain, Ph.D., Rice University
Angela Young-Shin Park, Ph.D., Univeristy of Kansas

*Jeffrey Pickering, Ph.D., Indiana University
Linda Richter, Ph.D., Emeritus, University of Kansas
William Richter, Ph.D., Emeritus, University of Chicago
Alissandra Stoyan, Ph.D., University of North Carolina at Chapel Hill
*Michael D. Tyburski, Ph.D., University of Wisconsin
John Warner, Ph.D., University of California
Zhiwei Zhang, Ph.D., University of Kentucky

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Admissions Criteria

To be eligible for admission, a student must have a bachelor's degree with a minimum of 3.0 GPA (on a 4.0 scale). Others with at least a 2.7 GPA may be admitted on probation, or on special student category. Admission to the MPA and MA programs and financial assistance are based on academic accomplishment and promise. Admission applications are welcome at any time.

Application Procedure

- Go to https://www.applyweb.com/apply/kstateg/to fill out an online application. Supporting documents needs to be uploaded directly with your application.

- Supporting materials for *domestic* students:
    - Payment of a processing fee will be required before officially submitting your graduate school application.
    - Statement of objectives.
    - 3 letters of recommendation [must be originals on official letterhead uploaded directly to your application by your references].
    - Transcripts from all previous colleges attended [must be originals].
- Supporting materials for *international* students:
    - Payment of a processing fee will be required before officially submitting your graduate school application.
    - Statement of objectives.
    - 3 letters of recommendation [must be originals on official letterhead uploaded directly to your application by your references].
    - Transcripts from all previous colleges attended.
    - TOEFL or other English language competency score: less than 2 years old.
    - Financial affidavit plus **original** bank documents: **MUST BE CONVERTED TO USD.**

International Students: English Language Competency

- The Graduate School requires each international applicant whose native language is not English to demonstrate competence in the English language by achieving a satisfactory score (defined below) on the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS) and Pearson Test of English (PTE). The TOEFL, IELTS or PTE is required to ensure that the student's progress toward a degree is not jeopardized by language barriers.

- The TOEFL (K-State TOEFL school code 6334) is offered several times a year throughout the world by the Educational Testing Service, Princeton, New Jersey.
- International applicants are advised to take the TOEFL as early as possible to avoid delays in the processing of their applications for admission. However, the test date should be no older than eighteen months from the application deadline for international applicants.
- **English Proficiency Requirements**
    - Applicants who are submitting IBT TOEFL (internet based) scores must have a minimum total score of 79 with no part score below 20 on the reading, listening, and writing sections.
    - Applicants who are submitting paper-based TOEFL (PBT) test scores must have a minimum total score of 550 with no part score below 55 on reading or listening sections and a TWE (Test of Written English) score of 5.0 or higher.
    - Applicants who are submitting an IELTS score must have a minimum total score of 6.5 with part scores of 6.5 or higher on the reading, listening, and writing sections.
    - Applicants who are submitting a Pearson Test of English (PTE) score must have a minimum total score of 58 with part scores of 58 or higher.
    - Applicants who do not meet the scores specified above must meet the following criteria during the first semester of enrollment in order to satisfy the English proficiency requirement:
    - Applicants with **one or two low part scores** (14-19 IBT, 48-54 PBT, 5.0-6.4 IELTS , or 47-57 PTE) must successfully complete one or more of the specified classes based on the section of the examination that is below the minimum (20 IBT; 55 on reading or listening sections and a TWE of less than 5.0 on PBT; 6.5 IELTS; 58 PTE):
    - Applicants with **three part scores below** 20 IBT, 55 PBT, 6.5 IELTS, or 58 PTE are required to take the English Proficiency Test (EPT) and successfully complete the English course(s) specified on their EPT score reports.
    - Applicants with any one score below 14 IBT, 48 PBT, 5.0 IELTS, or 47 PTE must take the English Proficiency Test and successfully complete full time intensive English.

Financial Assistance

The Department of Political Science has two types of financial assistance available to support graduate study. This includes graduate assistantships and graduate scholarships. The application deadline for all department financial assistance is March 1.

- **Graduate Scholarships**
    - The Department of Political Science offers a number of scholarships. These vary in terms of the amount of assistance and the exact requirements of each. To view a list of available scholarships and fellowships, click here!

- **Graduate Assistantships**
    - The Department of Political Science also provides financial assistance in the form of a graduate assistantship on a competitive basis in exchange for assistance to faculty with their teaching, research, or administrative responsibilities. Specific assignments to teaching or research depend on the needs and abilities of the graduate assistant, and the needs of the department. Assistantships must be applied for on a yearly basis.

- **Selection criteria**
    - Academic performance, promise, and intellectual ability.
    - Past performance as a departmental assistant, if applicable.
    - Needs of the department faculty.
    - Financial need.

- **Conditions of Assistantship**
  Graduate assistants must enroll in a minimum of six credit hours per semester and make reasonable degree progress as reflected by at least a 3.5 GPA. During the period of appointment, assistants may not hold another paid full time position of any kind. The department reserves the right to withdraw support at any time if academic performance falls below the 3.5 GPA, or if the job performance is not satisfactory. The assistantship is awarded for one academic year, assuming all conditions are met. A reapplication is required for each additional year of support.

- **Amount of Assistantship**
  - Graduate assistantships involve a stipend, a tuition waiver for up to 10 credit hours per semester and fee reductions. The amount of the stipend changes from year-to-year and may be obtained by contacting the Director of Graduate Studies.
  - Graduate assistants are required to work a maximum of 20 hours per week in support of the research, teaching, and administrative activities of departmental faculty and staff.
- **How to Apply**
  Besides the materials discussed above for admission to the MPA Program, applicants should submit the following to the Director of Graduate studies:

  - One copy of an application form: **Graduate Financial Assistance Application**
  - A formal covering letter of application. This letter may also be used to expand on items in the application form, and to request financial assistance.
- Award Announcement
  All applicants will be notified of the department's decisions, and award recipients will be asked to acknowledge acceptance formally. Awards are announced mid-April.

Concurrent

Concurrent B.A./B.S. in Political Science and M.A. in Security Studies

Students who successfully complete this program will receive both a BA or BS in political science and a Masters of Arts in Security Studies.

Security Studies MA is a rigorous interdisciplinary program for students interested in national security, international affairs, world politics, and transnational problems. It boasts well-published faculty and an international student body. History and political science are the core departments in the Security Studies program, but students draw on expertise and coursework from other disciplines as well. Students in the MA program range from recent graduates of traditional undergraduate programs to field grade officers in the US military. The diversity of experience among our students is one of its key strengths. Most students plan to use their degrees for professional careers in international affairs.

This concurrent degree has the advantages of decreasing the amount of time required to earn an undergraduate and graduate degree and also reducing overall tuition costs. With careful attention to undergraduate course scheduling, this concurrent degree can be completed in five years as opposed to the traditional six years to obtain the degrees independent of one another. Since, a total of nine credit hours can be applied to both degrees, overall tuition cost is reduced by a corresponding amount.

Admission Requirements:

The following requirements must be met before an individual can be admitted into the program:

- The student must be seeking a B.A. or B.S. degree in political science.
- The student must have a GPA of 3.0 or above in all courses completed at Kansas State University and an overall GPA of 3.0 or above.

Application Process:

The application process will be the same as for applicants that are seeking the stand-alone M.A. in security studies, but they will not be required to have completed their undergraduate degree. The earliest that students can submit applications for admission is at the January submission deadline during their junior year (after five semesters). A completed application requires the following materials:

- A statement of objectives
- Three letters of recommendation
- A transcript from each academic institution since high school
- A writing sample

Program Guidelines:

The program requires a total of 150 credit hours including 120 undergraduate hours and 30 graduate hours.

- However, a maximum of 9 credit hours from the graduate degree can also be counted towards the undergraduate degree, effectively reducing the total number of hours to 141.
- Graduate courses must be completed with an overall GPA of at least a 3.0 GPA.
- At least 18 of the hours on the graduate program of study must be at the 700 or above level.
- The bachelor's degree may be awarded at any time following the completion of undergraduate degree requirements. Alternatively, the BA/BS and MA degrees may be awarded concurrently.
- In the event that a student enters the program but does not wish to finish the Master's degree, they must change the nine credit hours of graduate credit and then will receive a bachelor's degree once all other requirements are met.

Program Structure:

This is a sample course curriculum and includes both required courses and electives. Please see the following link for details on program course requirements: https://www.k-state.edu/securitystudies/maprogram/

Year	Semester	Plan	Hypothetical Course curriculum
Freshman and Sophomore	Fall and Spring	Not affected	Regular course curriculum for political science B.A./B.S.
Junior	Fall	Apply to security studies M.A. at end of Fall semester	Regular course curriculum for political science B.A./B.S.
JUNIOR	SPRING	Students will be informed of admission into the program	Regular course curriculum for political science B.A./B.S.

Year	Semester	Plan	Hypothetical Course curriculum
SENIOR	FALL	Student may take 1 or 2 graduate classes	POLSC 810 (2 credit course)[1]; POLSC 812
	SPRING	Student may take 1 or 2 graduate classes	HIST 850
	SUMMERStudent can take 1 coursePOLSC 813		
GRADUATE	FALL	Student may take 3 graduate classes	POLSC 814 ; HIST 855 ; POLSC 991
	SPRINGStudent may take 3 graduate classesPOLSC 815 (1 credit course); POLSC 737 ; POLSC 735 ; HIST 851		
	SUMMER	Student may take 1 course (if necessary)	No course necessary as 1 course taken during summer of senior year.

[1]810 and 815 combine to 3 credits and serve as the courses where students receive methodological training and produce their final projects.

Total hours required: 141

Concurrent B.A./B.S. in Political Science and Masters of Public Administration

Students who successfully complete this program will receive both a BA or BS in political science and a Masters of Public Administration (MPA).

The Master of Public Administration is a flexible professional degree designed for those who wish to hold administrative positions in a wide range of administrative environments in the public and nonprofit sectors. Graduates are trained for employment with government agencies at the federal, state, or local level, and with regional or sub-state organizations. Opportunities are also available for graduates of the program with non-profit organizations, public interest groups or commissions, private corporations that work with government agencies, and international organizations. For all relevant details concerning this Master's degree, please return to the home page.

This concurrent degree has the advantages of decreasing the amount of time required to earn an undergraduate and graduate degree and also reducing overall tuition costs. With careful and early attention to undergraduate course scheduling, this concurrent degree can be completed in six years and opposed to the usual six and one-half needed to obtain the degrees independent of one another. Since a total of nine credit hours can be applied to both degrees, overall tuition cost is reduced by a corresponding amount.

Admission Process/ Requirements

The application process is the same as for the traditional MPA degree except that completion of the bachelor's degree is not required. The following requirements must be met before an individual can be admitted to the program.

- The student must be seeking a bachelor's degree in Political Science.
- The student must have completed a minimum of 90 credit hours towards the bachelor's degree in Political Science.
- The student's cumulative undergraduate GPA and their GPA in Political Science courses must be at least 3.0.

Program Guidelines

- The program requires a total of 160 credit hours including 120 undergraduate hours and 40 graduate hours.
- However, a maximum of 9 credit hours from the graduate degree can also be counted towards the undergraduate degree, effectively reducing the total number of hours to 151.
- The 9 credit hours to be counted for both undergraduate and graduate credit must be chosen from among the "core courses" described below.
- Graduate courses must be completed with an overall GPA of at least a 3.0 GPA.
- At least 24 of the hours on the graduate program of study must be at the 700 or above level.
- The bachelor's degree may be awarded at any time following the completion of undergraduate degree requirements. Alternatively, the BA/BS and MPA degrees may be awarded concurrently.
- In the event that a student enters the program but does not wish to finish the Master's degree, he/she must change the nine credit hours of graduate credit and then will receive a bachelor's degree once all other requirements are met.

MPA Core Courses

Eligible for concurrent credit.

- POLSC 700 - Research Methods in Political Science **Credits:** 3
- POLSC 702 - Public Administration and Society **Credits:** 3
- POLSC 708 - Public Personnel Administration **Credits:** 3
- POLSC 710 - Policy Analysis and Evaluation **Credits:** 3
- POLSC 735 - Public Organization Theory **Credits:** 3
- POLSC 737 - Public Budgeting **Credits:** 3
- POLSC 738 - Public Finance **Credits:** 3

Master of Arts

Political Science (M.A.)

Offered through the Political Science department, the master of arts program meets the educational and professional needs of three groups of students: (1) working professionals and other adults desiring to improve their qualifications or seeking a greater understanding of political life; (2) those planning to become high school teachers or instructors in two year colleges; and (3) students wishing to prepare for Ph.D. or other advanced study. The degree requirements are structured, therefore, to provide students with an education which prepares them for a mature grasp of politics, a respect for intellectual integrity, and an ability to communicate effectively.

Required Courses

- POLSC 700 - Research Methods in Political Science **Credits:** 3
- POLSC 805 - Seminar in American Government **Credits:** 3

- POLSC 811 - Seminar in International Politics **Credits:** 3
  OR
- POLSC 813 - International Security **Credits:** 3
- POLSC 821 - Seminar: Political Thought **Credits:** 3
- POLSC 841 - Seminar: Comparative Politics **Credits:** 3

Subfield Specialization

Students are required to focus their studies in one of the four subfields of political science: American government and politics, comparative government and politics, international relations, and political thought. Most if not all courses taken beyond the required courses should be in the chosen subfield.

Additional Requirements:

- Master's students should earn 60% or more of their credit hours in courses numbered 700 or higher.
- No more than three hours of "non-class" seminars of courses (e.g., readings, problems, internships) are allowed to count toward the 30 hours required for the M.A.
- Written Comprehensive Examination
- Written Research Requirement:
  - **Option A:** This option requires 30 hours of graduate credit, including 6 hours of credit for a thesis. Of the remaining 24 hours, at least 18 must be in political science.
  - **Option B:** This option requires 30 hours of graduate credit, including 2 hours of credit for a written research report. Of the remaining 28 hours, at least 19 must be in political science.
  - **Option C:** This option requires 30 hours of graduate credit in political science, of which at least four courses should be 800-level seminars taken from at least three different professors. In addition, students in this option submit four seminar research papers acceptable to the professors involved.

Master of Public Administration

Master of Public Administration (M.P.A.)

The Master of Public Administration (MPA) degree at Kansas State University prepares both mid and pre-career students to serve the public interest and establish themselves as civic leaders. The program emphasizes a theoretically informed and research driven skills based approach to learning designed to insure that our students develop specific competencies which prepare them for the challenges of work in the public and nonprofit sectors immediately upon graduation. Students are given a broad exposure to policy systems, political environments, administrative principals and research methods. Additionally, students are required to think critically, apply knowledge and seek practical solutions to real world problems.

Degree requirements

For pre-career students lacking significant administrative experience, the degree requires 40 hours of graduate credit including a one credit hour internship involving at least 400 hours of employment in an appropriate public or nonprofit setting. The one credit hour internship is not required of mid-career students with administrative experience. Full-time students are normally able to complete the degree in two years- four semesters plus one summer course.

The curriculum of study for the Master of Public Administration program includes core, elective and area of emphasis courses.

All core and elective courses, and most area of emphasis courses, are taught on a regular basis- once per academic year or every other academic year. Students can obtain a projection of courses to be offered over the course of their program of study.

Core Curriculum	24 credit hours
Electives	9 credit hours
Area of Emphasis	6 credit hours
Internship	1 semester hour (pre-career students only)
Total	**40 semester hours (39 for mid-career students)**

Core Courses (24 Credit Hours)

The core curriculum is composed of eight required courses which focus upon subject matter that any administrator needs to master and use. Students are advised to take all core courses except POLSC 831 early in their degree programs. Please note that each of these courses is only offered once per academic year.

- POLSC 700 - Research Methods in Political Science **Credits:** 3 Fall Semester
- POLSC 702 - Public Administration and Society **Credits:** 3 Fall Semester
- POLSC 708 - Public Personnel Administration **Credits:** 3 Fall Semester
- POLSC 738 - Public Finance **Credits:** 3 Fall Semester

- POLSC 710 - Policy Analysis and Evaluation **Credits:** 3 Spring Semester
- POLSC 735 - Public Organization Theory **Credits:** 3 Spring Semester
- POLSC 737 - Public Budgeting **Credits:** 3 Spring Semester
- POLSC 831 - Public Administration Capstone **Credits:** 3 Spring Semester

MPA Elective Courses (9 Credit Hours)

These courses deal with specialized skills sets needed by 21st century administrators. Choose any three of the following five courses:

- POLSC 607 - Administrative Law **Credits:** 3
- POLSC 711 - Administrative Ethics **Credits:** 3
- POLSC 736 - Strategic Management of Public Organizations **Credits:** 3
- POLSC 740 - Nonprofit Financial Management **Credits:** 3
- POLSC 799 - Pro-Seminar in Political Science **Credits:** 3

MPA Area of Emphasis (6 Credit Hours)

Each student must develop a particular emphasis. Below are several areas of emphasis which we highly recommend to our students. Students wishing to propose other emphases may do so with the advice and consent of the Director of Graduate Studies.

- Public Budgeting and Finance
- Planning
- Security Studies
- State and Local Government

MPA Internship (1 Credit Hour)

Pre-Career Students

- Pre-service students are required to complete an internship (POLSC 897). This entails serving in a full-time administrative position for a period of at least 10 weeks (400 hours) in the public sector, or in a not-for-profit agency.
- Internship positions are coordinated by the Director of Graduate Studies. Ideally the internship should occur after the second semester of full time coursework. All internships are competitive in nature and are available on a regular basis with state, county, and local governments. A student's progress in the internship is monitored by the student's immediate supervisor and by the Director of Graduate Studies.
- Please note that the internship should not be done until most of the core courses are completed

Mid-Career Students

Mid-career students with significant employment experience may have the internship requirement waived. Students who wish an internship waiver, should send a request to the Director of Graduate Studies in writing during their first year of study.

Graduate Certificate

Public Administration Graduate Certificate

Contact: James Franke
E-mail: jfranke@k-state.edu
Home Page: www.k-state.edu/polsci/

The mission of the Graduate Certificate in Public Administration is to provide a flexible professional certificate program for those who desire to pursue professional training in principles of public management in order to advance their administrative careers in the public sector and the nonprofit sector. Certificate holders will be trained for entry level management positions with government and nonprofit agencies at the federal, state, or local level, and with regional or sub-state organizations.

Students with a Graduate Certificate in Public Administration will understand the general principles of public administration, including but not limited to public sector budgeting, personnel, public organization theory, and research methods. Course work may be accomplished entirely via various distance learning technologies so that students will not need to be resident in Manhattan in order to obtain this certificate.

After obtaining the certificate, if they so desire students may apply their certificate hours towards a Master of Public Administration at Kansas State University.

The Graduate Certificate in Public Administration is offered through the Political Science graduate program.

Program Requirements (15 credit hours):

Students are required to take 15 hours (5 courses) of course work, 12 of which are core courses and 3 of which are elective hours.

Core Courses (12 credit hours):

The core courses are listed below. POLSC 708, POLSC 735 and POLSC 737 are required. Students may choose either POLSC 700 or POLSC 710 as their fourth core course. Whichever of the two is not chosen may be taken as an elective.

- POLSC 708 - Public Personnel Administration **Credits:** 3
- POLSC 735 - Public Organization Theory **Credits:** 3
- POLSC 737 - Public Budgeting **Credits:** 3
- POLSC 700 - Research Methods in Political Science **Credits:** 3
  OR
- POLSC 710 - Policy Analysis and Evaluation **Credits:** 3

Elective Courses (3 credit hours):

Elective Courses are listed below. Students should choose one.

- * POLSC 607 - Administrative Law **Credits:** 3
- * POLSC 618 - Urban Politics **Credits:** 3
- POLSC 620 - State and Local Government **Credits:** 3
- POLSC 628 - Civic Engagement **Credits:** 3
- * POLSC 700 - Research Methods in Political Science **Credits:** 3
  OR
- * POLSC 710 - Policy Analysis and Evaluation **Credits:** 3
- POLSC 711 - Administrative Ethics **Credits:** 3
- POLSC 739 - Intergovernmental Relations **Credits:** 3
- POLSC 740 - Nonprofit Financial Management **Credits:** 3
- * POLSC 785 - Readings in Political Science **Credits:** 3
- POLSC 799 - Pro-Seminar in Political Science **Credits:** 3
- * POLSC 812 - Foundations of Security Studies **Credits:** 3
  *** Typically available online.**

Psychological Sciences

492 Bluemont Hall
785-532-6850
Fax: 785-532-5401
psych@k-state.edu
http://www.k-state.edu/psych/

Department Head:

Gary Brase

Director of graduate studies:

Mary E. Cain

Graduate faculty:

*Heather Bailey, Ph.D., Kent State University
*Mark A. Barnett, (Emeritus) Ph.D., Northwestern University
*Laura A. Brannon, Ph.D., Ohio State University
*Gary L. Brase, Ph.D., University of California, Santa Barbara
*Mary E. Cain, Ph.D., University of Vermont
Maria Diehl, Ph.D., University of Rochester
*Jerome Frieman, (Emeritus) Ph.D., Kent State University
*Clive J. A. Fullagar, (Emeritus) Ph.D., University of Witwatersrand
*Richard J. Harris, (Emeritus) Ph.D., University of Illinois
*Stephen W. Kiefer, (Emeritus) Ph.D., Arizona State University
*Kimberly Kirkpatrick, Ph.D., University of Iowa
*Patrick A. Knight, Ph.D., Purdue University
*Jin Lee, Ph.D., University of Connecticut
*Lester Loschky, Ph.D., University of Illinois at Urbana-Champaign
Sarina Maneotis, Ph.D., Pennsylvania State University
*Charles Pickens, Ph.D., John Hopkins University
Bethany Plakke, Ph.D., University of Iowa
*Donald Saucier, Ph.D., University of Vermont
*James Shanteau, (Emeritus) Ph.D., University of California at San Diego
Sun Tianjun, Ph.D., University of Illinois
*Charles P. Thompson, (Emeritus) Ph.D., University of Wisconsin
Matthew Wisniewski, Ph.D., University of Buffalo New York
*Michael Young, Ph.D., University of Minnesota

*Denotes graduate faculty who are certified to serve as the major professor for doctoral students.

Graduate Faculty Associate:

Andrew J. Wefald, Ph.D., Kansas State University
Barbara Pitts, Ph.D., University of America
Alexandria Zakrzewski, Ph.D., University of New York at Buffalo

Admission

For admission to graduate study, the university requires an undergraduate grade point average of B or better during the junior and senior years. As additional evidence of competence, the Department of Psychological Sciences requires the applicant to submit scores on the Graduate Record Examination (verbal, analytic and quantitative scores are required; and three letters of recommendation (preferably from faculty members at a previously attended institution). Students for whom English is not a native language will not be considered for admission unless they receive a minimum score or higher on the Test of English as a Foreign Language (550 on the paper-based test, 213 on the computer-based test, or 79 on the internet-based test). A TOEFL scores of less may require remedial English courses.

The Department of Psychological Sciences expects all applicants to have met the minimum standards for the bachelor's degree in psychology as recommended by the American Psychological Association. These include 18 semester hours of

psychology, or its equivalent, in such courses as research methods, statistics, cognitive psychobiology, personality, etc. Students who wish to concentrate in behavioral neuroscience must have the necessary background in the physical and biological sciences. In some prearranged cases, deficiencies can be made up after enrollment. A detailed description of the graduate programs, as well as additional information about financial support, can be obtained from the Department of Psychological Sciences website http://www.k-state.edu/psych.

Performance standards

Graduate students' performance is evaluated twice each year in the domains of classroom work, research, and (when appropriate) teaching or research assistantship activities. Each faculty member who has had significant contact with a graduate student during the preceding semester completes a standard evaluation instrument. These are then made available to the student, who is encouraged to consult with faculty and discuss their evaluations. Finally, faculty meet as a group to formally assess each student's individual performance and progress toward a graduate degree.

A preliminary examination is usually taken following completion of core courses and the Master's requirements and covers the student's area of concentration and tests a high level of competence.

Financial assistance

Departmental Assistantships

Providing excellent opportunities for research experience or classroom teaching, a number of these awards are made each year on a competitive basis. Such assistantships require approximately 20 hours work a week, allow students to carry a normal load of 10 to 12 semester hours of course work a semester, and provide tuition remission and fee reductions.

Research Assistantships

These positions are comparable to departmental assistantships except they are funded out of individual staff member's grant or contract funds. The student is assigned to a particular staff member's research project, and all course loads and stipends are like those of departmental assistants.

Campus Assistantships

Students not supported by the Department of Psychological Sciences are often successful in obtaining assistantships elsewhere on campus. For example, recent graduate students have found employment in the Affirmative Action Office, the Office of Student Activities and Services, the Division of Continuing Education, the Office of Admissions, Career and Employment Services, the Department of Management, the Department of Marketing and International Business, and Planning and Analysis.

Fees and Tuition

An incidental fee and other fees for the student health center, student union, and student activates are charged. As staff members, departmental or research assistants are charged in-state fees and tuition according to the number of semester hours carried. Teaching assistants receive a partial rebate of incidental fees and total tuition remission. Fees are subject to change without notice.

Housing

The university maintains modestly priced one- and two-bedroom apartments for married student and single parents. These are located close to the central campus. Residence halls are also available. Students who wish to apply for university housing should write to Housing and Dining Services soon after they are accepted into the program.

Doctor of Philosophy

Psychology (Ph.D.)

Graduate programs in Psychological Sciences

All doctoral candidates, regardless of special areas of interest, are expected to obtain a thorough grounding in general psychology, including theory, content, and methods. Such grounding is accomplished in part by requiring all students to take a series of basic core courses in both quantitative and substantive areas of psychology. Students who enter the program with a Master's degree may be required to do a Master's level project if, in the opinion of their advisor and at least one other faculty member in the same area, the previous thesis was not of sufficient quality or not based on empirical research.

Statistics Courses

Students are required to take the following sequence of courses.

- PSYCH 802 - Psychological Research Design and Analysis I **Credits:** 3
- PSYCH 805 - Psychological Research Design and Analysis II **Credits:** 3

Following the above two courses, one of the following courses:

- PSYCH 961 - Multivariate Analyses of Behavioral Data **Credits:** 3
- PSYCH 958 - Seminar in Mathematical Models of Behavior **Credits:** 1-3

Seminar in Professional Problems

All graduate students must take the Seminar in Professional Problems:

- PSYCH 968 - Seminar in Professional Problems **Credits:** 1-3

Core Courses

All graduate students must take at least 5 of the following 9 courses depending on their area of concentration. In general, students should take as many of these core courses as possible in their first two years in the graduate program. Requests to deviate from these guidelines due to special circumstances should be approved by the student's major advisor in consultation with the supervisory committee.

- PSYCH 775 - History of Current Trends **Credits:** 3
- PSYCH 803 - Physiological Psychology **Credits:** 3
- PSYCH 804 - Industrial/Organizational Psychology **Credits:** 3
- PSYCH 810 - Learning **Credits:** 3
- PSYCH 812 - Perception **Credits:** 3
- PSYCH 814 - Advanced Cognitive Psychology **Credits:** 3
- PSYCH 816 - Psychology of Health **Credits:** 3
- PSYCH 820 - Personality Theory and Research **Credits:** 3
- PSYCH 830 - Pro-Seminar in Social Psychology **Credits:** 3

  The first two years of graduate study are typically devoted to a broad survey of the major areas of psychology and the acquisition of certain basic research techniques. The first year of this period is spent primarily in basic courses. During the second year, students begin to satisfy related requirements, complete work on their

Master's thesis, and begin to develop a major area of professional interest. The third and fourth years of the doctoral program constitute a period of special training during which students are occupied to an increasing extent with pursuing their special research and professional interests. Most of their time is spent in small seminars and directed study. During this time, students must pass a final written examination that covers their major areas of interest, and complete a doctoral dissertation that constitutes an original contribution to the research literature in those areas.

Our graduate training includes an opportunity to gain supervised experience in teaching at the college level. The Teaching Apprenticeship Program provides both coursework on pedagogical methods and supervised experience as an instructor for an introductory level psychology course and, later, one or more of the department's core or service courses. Close interaction between the graduate student and two skilled faculty members is maintained to provide an optimum learning environment. Because most academic positions taken by our graduates involve teaching to a greater or lesser extent, this type of formal training makes our students highly competitive in the job market.

Students who complete the doctoral program are eligible for a variety of teaching, research, and professional positions in colleges and universities, governmental agencies, and business and industry.

Each of the specialization programs (Behavioral Neuroscience/Animal Learning, Cognitive/Human Factors, Industrial-Organizational, and Social-Personality) has particular course requirements. Students in these programs should consult with their advisors regularly to make sure of enrolling in the appropriate classes.

Behavioral Neuroscience/Animal Learning Program

Our program is designed to train students broadly in experimental psychology in addition to their behavioral neuroscience specialization. While courses are an important part of training, students should expect to engage in laboratory research throughout their Master's and doctoral program. Successful degree candidates typically have broad training in the biological sciences as undergraduates.

Program Requirements

In addition to the department requirements, students in the Behavioral Neuroscience/Animal Learning program are required to complete the following core courses:

- PSYCH 803 - Physiological Psychology **Credits:** 3
- PSYCH 810 - Learning **Credits:** 3
  Students are strongly encouraged to complete the following core courses:
- PSYCH 812 - Perception **Credits:** 3
- PSYCH 814 - Advanced Cognitive Psychology **Credits:** 3

Program Electives

Graduate students are encouraged to take advantage of other elective courses within the department as part of their program of study. In addition, extensive possibilities for courses outside of the department exist. Students should consult with their major advisor and supervisory committee to determine which of these courses would be most appropriate.

Cognitive/Human Factors Program

The Cognitive/Human Factors Psychology Graduate Program at Kansas State University is designed to prepare students for careers as psychologists in academia, government, and industry. The program provides students with a broad background in the research methodology used in experimental as well as many other areas of psychology. The students are expected to acquire a general knowledge of the research problems and practices of current experimental psychologists in their chosen area. Current active research areas include memory, judgment and decision making, visual perception, psycholinguistics, and applications of all of the above in various settings.

Program Requirements

- PSYCH 803 - Physiological Psychology **Credits:** 3
- PSYCH 812 - Perception **Credits:** 3
- PSYCH 814 - Advanced Cognitive Psychology **Credits:** 3

Industrial/Organizational Psychology Program

The doctoral program in Industrial and Organizational Psychology at Kansas State University prepares students for careers in consulting, private business, public agencies, and academic settings. The program was founded in the late 1950s, and has existed in its current form since 1976.

Program Requirements

The requirements for the degree are those established by the Department of Psychological Sciences. In addition to these requirements, we offer the following courses specifically related to industrial and organizational psychology. Descriptions of these courses can be found in the Kansas State University Graduate Catalog.

- PSYCH 804 - Industrial/Organizational Psychology **Credits:** 3
- PSYCH 875 - Industrial Psychology: Personnel Training **Credits:** 3
- PSYCH 876 - Industrial Psychology: Work Motivation **Credits:** 3
- PSYCH 877 - Industrial Psychology: Leadership **Credits:** 3
- PSYCH 878 - Industrial Psychology: Personnel Selection **Credits:** 3
- PSYCH 879 - Organizational Psychology **Credits:** 3
- PSYCH 880 - Industrial Psychology: Performance Appraisal **Credits:** 1
  These industrial and organizational psychology courses are offered on a regular basis to assure that all students are able to take them in a timely fashion.

Social-Personality Program

The faculty members directly connected with the program are very diversified in their theoretical and research interests, but all are strongly committed to the training of scholar-researcher "generalists" rather than technical specialists. That is, our students are expected to acquire a broad, theoretically informed understanding of the Social-Personality field, and its articulation with other branches of psychology, as well as the various technical skills necessary for basic and applied research. As students progress through the program, their areas of particular expertise become defined by their research projects, thesis, and dissertation. Graduate students within the Social-Personality Program will consult with their major advisor to select appropriate courses to fulfill the department's core course requirement.

Master of Science

Psychology (M.S.)

Graduate programs in Psychological Sciences provide professional training leading to the master of science degree.

Master's programs are offered in four broad areas:

(1) behavioral neuroscience/animal learning (with concentrations in animal learning/behavior or physiological psychology/behavioral neuroscience)

(2) cognitive/human factors psychology (with concentrations in psycholinguistics, judgment and decision making, human factors/engineering psychology, or sensation and perception)

(3) social-personality (with concentrations in social, personality, or developmental psychology)

(4) industrial/ organizational (with concentrations in human-resources/personnel issues and procedures, organizational behavior and theory)

At the master's level, students may specialize in any of the traditional areas. The first year of the Master's program is spent primarily in basic courses. Graduate students will also complete a first-year research project (see below). During the second year, students begin to satisfy related requirements, complete work on their master's thesis, and begin to develop a major area of professional interest.

Department Requirements

A minimum of 30 semester hours of graduate credit is required for the Psychology Master of Science degree program, of which no less than 22 hours must be earned in coursework. Coursework for the M.S. program in Psychology must include PSYCH 802, PSYCH 805, and the seminar in Professional Problems (PSYCH 968). Students must also complete a minimum of 6 Master's Thesis research credit hours (PSYCH 899) for their Master's program of study. Course selection is done in consultation with and with the approval of the student's supervisory committee.

First-Year Research Project

Graduate students will complete a first-year research project that is designed in consultation with their major adviser. This research endeavor is intended to reflect the importance of establishing a productive research component of an individual's graduate program. Early in the second year, students will present their first-year project to the department in a format similar to a national meeting of a scientific society.

Master's Thesis

Ideally, the Master's thesis should be completed by the end of the third year. Students will complete a Master's thesis prior to taking a preliminary examination and being advanced to candidacy in the doctoral program.

Distance Master's Program in Industrial/Organizational Psychology

Distinct from the on-campus graduate program area in Industrial/Organizational Psychology, there is a distance Master's program in Industrial/Organizational Psychology which does not include a thesis project. The Master of Science program in industrial/organizational psychology (MIOP) is a 38-hour sequence of on-campus and web-based courses. The program is directed at working human resource professionals and aims at teaching students to apply analytical behavioral science skill and course concepts to company related issues. The program spans 2 1/2 years and consists of eight courses in such areas as performance appraisal and compensation, training and program evaluation, job analysis and selection, organizational topics, ethical and legal issues, and applied research methods. The last semester of the program consists of students conducting a research practicum in their own organization under the supervision of faculty. Students attend campus once a year over the summer for two-week sessions. Four courses are

taught as on-campus courses, and the remaining four courses and practicum are delivered via web-based instruction.

Follow this link for more information about our distance master's program.

Security Studies

309 Calvin Hall
785-532-3786
securstu@ksu.edu
http://www.k-state.edu/securitystudies/

Security Studies is an interdepartmental graduate program with faculty participants from History and Political Science.

Director of Graduate Studies:

Andrew Long

Graduate faculty:

*Sam Bell, Ph.D., Binghamton University
*Sabri Ciftci, Ph.D., Florida State University
*Michael Flynn, Ph.D., Binghamton University
*Marsha L. Frey, Ph.D., Ohio State University
*David A. Graff, Ph.D., Princeton University
*Emizet Kisangani, Ph.D., University of Iowa
*Michael Krysko, Ph.D., Stony Brook University
*Robert D. Linder, Ph.D., University of Iowa
*Andrew Long, Ph.D., Florida State University
*Carla Martinez Machain, Ph.D., Rice University
*Heather L. McCrea, Ph.D., SUNY-Stony Brook
*Donald J. Mrozek, Ph.D., Rutgers University
Andrew Orr, Ph.D., University of Notre Dame
Suzanne Orr, Ph.D., University of Notre Dame
Nadia Oweidat, Ph.D., Oxford University
*Mark P. Parillo, Ph.D., Ohio State University
*Jeffrey Pickering, Ph.D., Indiana University
*Charles Sanders, Ph.D., Kansas State University
Alissandra Stoyan, Ph.D., University of North Carolina at Chapel Hill
Phil Tiemeyer, Ph.D., Ph.D., The University of Texas at Austin
Michael Tyburski, Ph.D., University of Wisconsin

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Security Studies (M.A.)

The graduate program in Security Studies is a rigorous, interdisciplinary, and professionally-oriented program of graduate studies. The resulting degree provides a broad, analytical perspective on national and international security issues while maintaining academic standards in accord with existing MA degrees in History and Political Science.

Coursework concentrates on issues of strategy, politics, economics, and society from both historical and social science perspectives. A minimum of 30 credits is required.

Committees

Each student will be supervised by a master's committee consisting of three members of the Security Studies graduate faculty. As in any graduate program, adjunct professors are eligible to serve on committees. For students at Fort Leavenworth, the MA committee will normally be made up of the Director of Security Studies and the two faculty members teaching 810/ 815.

Course requirements

Course requirements will consist of 30 hours of graduate-level work, up to 12 hours of which may be transfer credit from other graduate-level work. Students at Fort Leavenworth for ILE can normally transfer those 12 hours from their ILE work. The admissions committee will evaluate the suitability of transfer credits from other institutions. The remaining hours will consist of 18 hours of required courses and additional graduate-level electives as needed to total 30 hours.

1. Required: Fundamentals of Security (3 credit hours)

This course will introduce students to major themes covered in the M.A. program of study. It is designed to provide students with foundations for the other core courses and so must be completed in the first term of student enrollment. Students will read key texts on international security, military history, and strategy, as well as works on the theory and research practice of history and political science. They will write essays on the assigned readings, participate in on-line synchronous and asynchronous discussions, and compose a final paper or take a final exam on the issues raised by the course.

- HIST 812 - Foundations of Security Studies **Credits:** 3
- POLSC 812 - Foundations of Security Studies **Credits:** 3

2. Required: Security Studies Methodology (2 credit hours)

This course is a rigorous exploration of interdisciplinary methods in history and political science.

- POLSC 810 - Security Studies Methodology **Credits:** 2
- HIST 810 - Security Studies Methodology **Credits:** 2

3. Required: History and Security of Pivotal Regions (6 credit hours)

Students will take at least two courses on the history of regions of central importance to international affairs. These courses may focus on East Asia, Latin America, the Middle East, or other strategic areas.

- HIST 850 - History and Security: East Asia **Credits:** 3
- HIST 851 - History and Security: Latin America **Credits:** 3
- HIST 852 - History and Security: the Middle East **Credits:** 3
- HIST 853 - History and Security: Russia/Central Asia **Credits:** 3
- HIST 854 - History and Security: South Asia **Credits:** 3
- HIST 855 - History and Security: Modern Africa since 1850 **Credits:** 3
- HIST 860 - Topics in International History **Credits:** 3

4. Required: International Security and Transnational Security (6 credit hours)

Political Science will offer two courses. International Security will focus on traditional issues of the causes of war, deterrence, the relevance/role of international institutions, arms proliferation, the politics of international intervention, and conflict resolution. The second, Terrorism and Transnational Security, will cover security issues that have been given increasing emphasis over recent years. Examples include the unique context of security problems in the developing world, demographic developments and internal/external conflict, environmental issues and their relation to security, economic globalization and security, post-conflict reconstruction, and humanitarian emergencies.

- POLSC 813 - International Security **Credits:** 3
- POLSC 814 - Terrorism and Transnational Security Issues **Credits:** 3

5. Required: Research Design in Security Studies (1 credit hour)

This course is a study of research methods in history and political science culminating in a piece of original research in Security Studies.

- HIST 815 - Research Design in Security Studies **Credits:** 1
- POLSC 815 - Research Design in Security Studies **Credits:** 1

Thesis Option

Students completing the thesis option will take 24 credit hours of coursework consisting of the 18 credit hours of required courses and six credit hours of electives. They will also take six credit hours of Master's Research in either Political Science or History.

- POLSC 899 - Master's Thesis **Credits:** 6
  Or
- HIST 899 - Master's Research in History **Credits:** 1-18

Security Studies (Ph.D.)

The graduate program in Security Studies is a rigorous, interdisciplinary program intended to prepare its students for careers in research, teaching, and security and international affairs through a broad exploration of social science and historical methodologies as well as topics relating to security issues. Many students will already have a Master of Arts in Security Studies from Kansas State University, but this is not required. Students with other relevant masters degrees may apply to the Ph.D program directly.

Ph.D comprehensive exams

Comprehensive exams in Security Studies entail a written and oral examination, subdivided into a general field and a special field. The written component of the general field examination is one closed-book, 8-hour exam in the History of International Security, and one closed-book, 8-hour exam in the Politics of International Security (usually, these two exams will occur on successive days or two out of three days). An interdisciplinary Exam Committee of KSU Security Studies faculty, which may vary from year to year, will determine the precise format and administer the written general field exam. The student will be allowed to consult the history and political science reading lists in hardcopy form but will not be permitted to have any notes or other resources available during the examination.

Reading List for History of International Security Exam

Reading List for Politics of International Security Exam

Students should regard the reading lists as indispensable tools to help prepare them to be knowledgeable and independent thinkers. However, examiners also may pose questions on important Security Studies issues not specifically included in the readings. A successful exam does not merely summarize the findings of other scholars; it presents clear and well-argued theoretical arguments supported by the literature but rooted in the student's own ideas.

There is no guarantee that future exams will mirror the format of previous exams. Past general field written exams are available through the links below:

Spring 2015 exam questions
Fall 2014 exam questions
Spring 2014 exam questions
Fall 2013 exam questions

The subject of the special field exam is chosen by the student in consultation with his or her PhD adviser and committee. The special field may be geographic in focus (post-Soviet states, Africa, or Latin America, for example) or thematic (civil-military relations, crisis bargaining models, or arms proliferation, for example). The precise format of the special field exam will be determined by the PhD adviser/examiner in consultation with the student's PhD committee.

Dissertation prospectus defense

Following the completion of the Ph.D coursework, the student will submit a written dissertation prospectus to his/her Ph.D Committee. The Committee will provide written feedback on the prospectus. After the student revises the prospectus, he/she will present and defend it orally to the Committee (via live video streaming if necessary). After completion of comprehensive exams and the completion of an acceptable prospectus, the student officially becomes a Ph.D candidate in the program and commences the dissertation.

Writing the dissertation

The student will research and write the dissertation, consulting with the Ph.D Committee as often as necessary. The dissertation should be a substantial and original contribution to knowledge and scholarship.

Research Hours

By decision of the Security Studies faculty committee in consultation with the Dean of the Graduate School, Ph.D. students who are NOT resident in Mnahttan must register for Division of Continuing Education (DCE) research hours.

Dissertation defense

After completing the dissertation, the student will defend it orally before the Ph.D Committee (again, via live video streaming if necessary).

Submission of dissertation

Upon successful completion of the oral defense, the student will make any additional revisions to the dissertation required by the Ph.D Committee and submit the final version of the dissertation to the Graduate School at KSU.

Ph.D committee

Within their first two semesters in the program, students will choose a Ph.D Committee consisting of at least four members of the KSU Security Studies faculty, including at least one member from History and at least one member from Political Science. As in any graduate program, adjunct professors are eligible to serve on committees. This committee will work with the student to craft an appropriate and feasible dissertation topic and advise the student on suitable coursework and preparation. Students will report to their committee at regular intervals. The Ph.D Committee may require the student to master specific research skills appropriate for the dissertation, including foreign languages or quantitative methods.

Doctoral degree requirements

The Ph.D degree will require 90 hours of course work. Up to 30 hours from a previous masters degree may be counted towards these 90 hours. The Ph.D committee will judge the suitability and applicability of the previous credits. An additional 30 hours of those 90 will be research hours towards the dissertation. The remaining coursework to reach the total of 90 hours will include 15 hours of required courses. The required courses consist of:

1. The Historical Research Sequence.

This sequence consists of two courses of three hours each. The first will study various approaches to the history of security, international relations, and military affairs. The second will be a methodology course in the theory and concrete practice of historical research in security studies.

- HIST 911 - Historical Approaches to Security **Credits:** 3
- HIST 912 - Historical Methods in Security Studies **Credits:** 3

2. The Political Research Sequence.

This sequence also consists of two courses. The first, Research Design and Qualitative Methods, focuses on the construction of social science research and the various research design issues students must understand to construct qualitative social science studies. The second course, Quantitative Methods, will introduce students to the statistical tools used by political scientists studying international security issues.

- POLSC 900 - Advanced Research Methods I **Credits:** 3
- POLSC 901 - Advanced Research Methods II **Credits:** 3

3. The final PhD-level required course

The final PhD-level required course must be taken after completing the history and political science two course research sequences. Each student must complete a directed reading with the chair of the student's Ph.D committee. The course is intended to allow the student to hone his or her dissertation topic in one-on-one consultation with the PhD chair.

- HIST 985 - Readings in History **Credits:** 1-3
  or
- POLSC 985 - Readings in Security Studies **Credits:** 1-6

Notes

The other fifteen hours of coursework will be elective courses chosen in consultation with the Ph.D committee to prepare the student for research and teaching in security studies, as well as to help prepare for the Ph.D exams. These electives may be drawn from History, Political Science, or from other disciplines deemed appropriate by the committee.

The intent of the Ph.D coursework is to prepare students for writing the dissertation. Upon completion of the Ph.D coursework students will have the research skills necessary to complete a dissertation-length scholarly study on a well-defined topic developed in consultation with their PhD Chair.

Sociology, Anthropology, and Social Work

204 Waters Hall
785-532-6865

socansw@k-state.edu
http://www.ksu.edu/sasw/

Department Head

Don Kurtz, Interim

Director of Graduate Studies

Alisa Garni

Sociology Graduate Faculty

*Chardie Baird, Ph.D., Florida State University
Cornelia Flora, Ph.D., Cornell University
Jan Flora, Ph.D., Cornell University
*Alisa Garni, Ph.D., University of California - Los Angeles
*W. Richard Goe, Ph.D., Ohio State University
Travis Linnemann, Ph.D., Kansas State University
Lorenza Lockett, Ph.D., Kansas State University
Corina Medley, Ph.D., Northeastern University
*Lisa Melander, Ph.D., University of Nebraska - Lincoln
*Gerad D. Middendorf, Ph.D., Michigan State University
*Matthew Sanderson, Ph.D., University of Utah
Nadia Shapkina, Ph.D., Georgia State University
*Kevin Steinmetz, Ph.D., Sam Houston State University
*L. Frank Weyher, Ph.D., University of California - Los Angeles
*L. Susan Williams, Ph.D., University of Connecticut

Anthropology Graduate Faculty Members

Amber Campbell, Ph.D., Emory University
Trevor Durbin, Ph.D., Rice University
Marta Alfonso Durruty, Ph.D., State University of New York
Jessica Falcone, Ph.D., Cornell University

Lauren W. Ritterbush, Ph.D., University of Kansas
Michael Wesch, Ph.D., University of Virginia

Social Work Graduate Faculty members

Jung Sim Jun, Ph.D., University of Missouri-Columbia
Kristen Kremer, Ph.D., Saint Louis University
*Don L. Kurtz, Ph.D., Kansas State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Overview

The primary objective of the graduate program in sociology at Kansas State University is to provide the highest quality graduate training possible for students seeking to become teachers and scholars in the field of sociology or those seeking to enter careers in applied research in government or private industry. The program offers a small student/faculty ratio. Graduate students have a high level of contact with faculty and are provided with the opportunity to participate in supervised research.

The master's program provides in-depth exposure to sociological theory and methods of research, while providing flexibility in allowing students to design a program to meet their specific needs. It is intended for both students who are seeking to continue on for the Ph.D., and those seeking careers in government, business, or non-profit organizations.

The Ph.D. program offers specialized training in four areas: Community, Agriculture, Food, and Environment; Politics and Development; Criminology; and Social Inequalities. All students take core courses in sociological theory and research methods. Graduates will be prepared for academic careers in teaching and research and careers in applied social research.

Facilities

In addition to the university's computing center, the department has two graduate student computer lab's with direct access to the university mainframe. The computers contain data analysis software, word processing, spreadsheet, and data base management systems.

The department is active in interdisciplinary programs such as Women's Studies, Gerontology, American Ethnic Studies and International Studies.

Degree programs

The Master's of Arts degree requires a minimum of 30 graduate credit hours and normally takes two years to complete. It is offered under three degree options. The thesis option is designed primarily for students continuing on for a Ph.D. in sociology, or seeking a career in sociology. The non-thesis option is designed to provide general sociological knowledge for students seeking careers in government, business, or non-profit organizations. The Master's in Social Analysis option is designed to provide advanced research and analytical skills for students already employed, or those seeking careers in government, business, or non-profit organizations.

The Ph.D. degree requires a minimum of 60 credit hours beyond the Master's: 30 hours of course work and 30 dissertation hours. The course work includes 15 hours of core requirements and 18 hours in two major areas of concentration. Some core requirements can be met at the Master's level. All students must take two preliminary

examinations. Preliminary examinations in their theory and methods core are waived if performance in the required courses is sufficient.

Admissions

Transcripts from each college or university attended are required, as are a statement of purpose, three letters of reference, a sample of previous written work, and scores on the general test of the Graduate Record Examination (GRE). Admission decisions will be based on a careful evaluation of the information provided by all of these requirements. International Students must also provide a TOEFL score plus evidence of financial support as required by the Graduate School. Students must also an application fee as noted on the online Graduate School website at: www.k-state.edu/grad/application/index.html.

The general application deadline for the Fall semester is January 15 for domestic applicants and January 8 for international applicants. Applicants will receive notification about admittance in March. Notification about financial assistance (if requested) is usually sent out in early April.

Applications without financial support are considered if received before May 1 (for Fall admissions) and October 1 (for Spring admissions) for domestic applicants. August 1st is the deadline for Spring admissions for international students.

Assistantships

Teaching and research assistantships are available each year. They require approximately 16 hours of work per week. All assistants must be enrolled in a minimum of 6 hours of course work per semester, which can include hours for thesis or dissertation research.

Students awarded assistantships who make normal degree progress can expect to receive support for two years at the M.A. level and three years at the Ph.D. level, which is contingent upon university funding.

Proseminar

All entering graduate students are required to enroll in the departmental proseminar during their first fall semester on campus. The proseminar is conducted by the graduate director and consists of discussions designed to orient the graduate student to the discipline of sociology as a profession and to the department.

Graduate Handbook

Details of the procedures, deadlines, and policies of the department and the graduate school on all matters pertaining to graduate study in Sociology are available on the department's website.

Concurrent

Concurrent B.A./B.S. in Sociology and Masters of Sociology

Students who successfully complete this program will receive a BA or BS in Sociology or Criminology and a Masters of Sociology with an emphasis in General Sociology; Criminology; Community, Agriculture, Food and Environment; or Social Inequalities. The degree can be completed in a minimum of five academic years.

Admission Requirements

Applicants are encouraged to apply to the program during their junior year and must meet the following requirements:

- The student must be currently seeking a B.A. or B.S. degree in one of the concentrations of the Sociology program.
- The student must have completed a minimum of 90 credit hours before being formally admitted to the M.A. program and beginning graduate coursework.
- The student must have completed STAT 325 , SOCIO 423, and SOCIO 431 and a minimum of six additional credit hours in Sociology or Criminology.
- The student must have earned a GPA of 3.5 in the major and 3.0 overall.

Application Process

Students should apply to the program during their junior year. Applications should include the following:

- A completed on-line application to the K-State Graduate School with paid application fee.
- A statement of objectives indicating professional goals relative to the M.A. degree
- Three letters of recommendation; at least two of them must be from KSU Sociology faculty who are familiar with the student's ability.
- Official transcript(s) of all undergraduate course work completed at the time of application.
- A sample of written work (e.g. research paper, essay).
- The Graduate Record Exam (GRE) must be taken before starting graduate coursework. Students applying without having taken the GRE may be admitted on a probationary basis. They will then be considered for regular status after taking the GRE.

Applications are evaluated by the Graduate Admissions Committee, which will provide a recommendation to the Director of Graduate Studies about an applicant's suitability for the program.

Program Guidelines

The bachelor's degree normally requires 120 undergraduate credit hours and the M.A. degree 30 graduate credit hours. However, the program allows a maximum of 9 credit hours of graduate courses to be counted toward both the undergraduate and graduate degrees.

- Students may begin taking graduate courses during their 4th year of the program.
- Graduate courses must be completed with a minimum GPA of 3.0.
- The bachelor's degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.A./B.S. degree and the M.A. may be awarded concurrently following the completion of the M.A. degree.
- Students must choose one of four options in the M.A. program – Sociology, Sociology-CAFÉ, Sociology-Social Inequalities, Criminology.

M.A. in Sociology

Students pursuing the M.A. in Sociology are required to complete 12 hours of "core" courses.

Core Courses (12 credit hours)

- SOCIO 809 - Classical Social Theory **Credits:** 3
- SOCIO 810 - Contemporary Sociological Theory **Credits:** 3
- SOCIO 822 - Introduction to Methods of Social Analysis **Credits:** 3

- SOCIO 823 - Intermediate Methods of Social Research **Credits:** 3

Elective Courses (12 credit hours)

In addition, students must complete a minimum of 12 hours of elective graduate courses in Sociology. These courses can be in any area of the graduate program.

Thesis/Exam/Report (6 credit hours)

The remaining 6 hours required to finish the degree must be completed with one of the following options:

- Take 6 hours of SOCIO 899 Master's Thesis Research and successfully complete a Master's Thesis on a research topic related to Sociology.
- Complete 6 additional hours of elective graduate courses in Sociology and successfully pass the M.A. Comprehensive Examination.
- Complete 3 additional hours of elective graduate courses in Sociology, take 3 hours of SOCIO 898 Master's Report Research and successfully complete a Master's Research Report on a topic related to Sociology.

M.A. in Sociology - Criminology

Students pursuing the M.A. in Sociology with a concentration in Criminology are required to complete 12 hours of "core" courses.

Core Courses

- SOCIO 809 - Classical Social Theory **Credits:** 3
  Or
- SOCIO 810 - Contemporary Sociological Theory **Credits:** 3
- SOCIO 822 - Introduction to Methods of Social Analysis **Credits:** 3
- SOCIO 823 - Intermediate Methods of Social Research **Credits:** 3
- SOCIO 862 - Criminological Theory **Credits:** 3

Elective Courses (12 credit hours)

In addition, students pursuing the Criminology concentration must complete a minimum of 12 hours of elective graduate courses. A minimum of 9 of these credit hours must be in Criminology courses.

Thesis/Exam/Report (6 credit hours)

The remaining 6 hours required to finish the degree must be completed with one of the following options:

- Take 6 hours of SOCIO 899 Master's Thesis Research and successfully complete a Master's Thesis on a research topic related to Criminology.
- Complete 6 additional hours of elective graduate courses in Sociology and successfully pass the M.A. Comprehensive Examination.
- Complete 3 additional hours of elective graduate courses in Criminology or Sociology, take 3 hours of SOCIO 898 Master's Report Research and successfully complete a Master's Research Report on a topic related to Criminology.

M.A. in Sociology - Community, Agriculture, Food, and Environment

Students pursuing the M.A. in Sociology with a concentration in Community, Agriculture, Food, and Environment (CAFÉ) are required to complete 12 hours of "core" courses.

Core Courses (9 credit hours)

- SOCIO 809 - Classical Social Theory **Credits:** 3
  Or
- SOCIO 810 - Contemporary Sociological Theory **Credits:** 3
- SOCIO 822 - Introduction to Methods of Social Analysis **Credits:** 3
- SOCIO 823 - Intermediate Methods of Social Research **Credits:** 3

CAFÉ Elective Courses (9 credit hours)

In addition, students must complete a minimum of 9 hours of elective graduate courses from below:

- SOCIO 830 - Social Demography **Credits:** 3
- SOCIO 831 - Sociology of Agriculture **Credits:** 3
- SOCIO 832 - Sociology of Community **Credits:** 3
- SOCIO 835 - Environment and Society **Credits:** 3
- SOCIO 851 - Sociology of Development **Credits:** 3

Thesis/Exam/Report (6 credit hours)

The remaining 6 hours required to finish the degree must be completed with one of the following options:

- Take 6 hours of SOCIO 899 Master's Thesis Research and successfully complete a Master's Thesis on a research topic related to Sociology.
- Complete 6 additional hours of elective graduate courses in Sociology and successfully pass the M.A. Comprehensive Examination.
- Complete 3 additional hours of elective graduate courses in Sociology, take 3 hours of SOCIO 899 Master's Report Research and successfully complete a Master's Research Report on a topic related to Sociology-CAFÉ.

M.A. in Sociology - Social Inequalities

Students pursuing the M.A. in Sociology with a concentration in Social Inequalities are required to complete 12 hours of "core" courses.

Core Courses (9 credit hours)

- SOCIO 809 - Classical Social Theory **Credits:** 3
  Or
- SOCIO 810 - Contemporary Sociological Theory **Credits:** 3
- SOCIO 822 - Introduction to Methods of Social Analysis **Credits:** 3
- SOCIO 823 - Intermediate Methods of Social Research **Credits:** 3

Social Inequalities Elective Courses (9 credit hours)

In addition, students must complete a minimum of 9 hours of elective graduate courses from below:

- SOCIO 830 - Social Demography **Credits:** 3
- SOCIO 833 - Gender Differentiation and Inequality **Credits:** 3
- SOCIO 841 - Social Stratification **Credits:** 3
- SOCIO 933 - Gender and Society **Credits:** 3

Thesis/Exam/Report (6 credit hours)

The remaining 6 hours required to finish the degree must be completed with one of the following options:

- Take 6 hours of SOCIO 899 Master's Thesis Research and successfully complete a Master's Thesis on a research topic related to Sociology.
- Complete 6 additional hours of elective graduate courses in Sociology and successfully pass the M.A. Comprehensive Examination.

Complete 3 additional hours of elective graduate courses in Sociology, take 3 hours of SOCIO 898 Master's Report Research and successfully complete a Master's Research Report on a topic related to Sociology-Social Inequalities.

Doctor of Philosophy

Sociology (Ph.D.)

The Ph.D. degree in Sociology requires a minimum of 60 credit hours beyond the master's: 30 hours of course work and 30 dissertation hours. It normally takes three years of full-time work to complete. The course work includes 15 hours of core requirements and 18 hours in two major areas of concentration. Some core requirements can be met at the master's level. All students take preliminary examinations in their two areas of concentration. Preliminary examinations in their theory and methods core are waived if performance in the required courses is sufficient.

Master of Arts

Sociology (M.A.)

The Master of Arts degree in Sociology offered through the Sociology, Anthropology, and Social Work graduate program requires a minimum of 30 graduate credit hours and normally takes two years to complete. It is offered under three degree options. The thesis option is designed primarily for students continuing on for a Ph.D. in sociology, or seeking a career in sociology. The non-thesis option is designed to provide general sociological knowledge for students seeking careers in government, business, or non-profit organizations. The Master's in Social Analysis option is designed to provide advanced research and analytical skills for students already employed, or those seeking careers in government, business, or non-profit organizations.

Statistics

101 Dickens Hall
785-532-6883
gradrec@ksu.edu

http://www.ksu.edu/stats/

Department Head:

Christopher Vahl

Directors of Graduate Studies:

Juan Du
Michael Higgins

Graduate Faculty:

*Nora Bello, Ph.D., Michigan State University
*Juan Du, Ph.D., Michigan State University
*Gyuhyeong Goh, Ph.D., University of Connecticut
*Trevor Hefley, Ph.D., University of Nebraska-Lincoln
*Michael Higgins, Ph.D., University of California at Berkeley
*Wei-Wen Hsu, Ph.D., Michigan State University
*Qing Kang, Ph.D., University of Science and Technology of China
Karen Keating, Ph.D., Kansas State University
*Jingru Mu, Ph.D., Iowa State University
*Perla Reyes, Ph.D., University of Wisconsin-Madison
Pallavi Rajesh Sawant, Ph.D., Auburn University
*Weixing Song, Ph.D., Michigan State University
*Christopher I. Vahl, Ph.D., Kansas State University
*Haiyan Wang, Ph.D., Pennsylvania State University
*Cen Wu, Ph.D., Michigan State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Emeritus Faculty:

*John Boyer, Emeritus, Ph.D., Michigan State University
*Gary L. Gadbury, Ph.D., Colorado State University
*James Higgins, Emeritus, Ph.D., University of Missouri-Columbia
*Dallas Johnson, Emeritus, Ph.D., Colorado State University
*Kenneth Kemp, Emeritus, Ph.D., Michigan State University
*James Neill, Ph.D., Kansas State University
*George Milliken, Emeritus, Ph.D., Colorado State University
*Paul Nelson, Emeritus, Ph.D., Rutgers University

Graduate Faculty Associates:

Thomas Pawlowski III, Ph.D., Georgia Institute of Technology

Ancillary Faculty:

*Zhoumeng Lin, Ph.D., The University of Georgia

Careers

To solve problems we need information. But, what kind? How much? How to get it? And after we get it, what do we do with it? Statisticians deal with numerical information usually called data. Their job is to advise on data collection based on the problem to be solved, offer inferential procedures and conduct data analysis, and interpret results in appropriate settings. All areas that involve the retrieval, collection and analysis of data can significantly benefit from the skills of a statistician to help advance their fields, regardless of sciences, medicine, engineering or education. Monitoring the environment, developing new vaccines, making more reliable products, growing crops more efficiently, setting insurance rates, and providing recommender systems are just some endeavors in which statisticians have had a significant impact on. Statistics is a field in which experts have virtually unlimited opportunities.

One area of careers in statistics are those in the state and federal governments. Professionals are not only hired into such areas as the Bureau of Labor Statistics and the Bureau of the Census, but are in demand in many service agencies.

Universities hire statisticians in many academic departments, including public health, mathematics, management sciences, economics, genetics, history, and psychology, and at the administrative and service levels, including business affairs, research support, and personnel.

Private industry is a heavy user of the skills of the statistician. For example, the pharmaceutical industry employs many statisticians to design studies and analyze data to show the safety and effectiveness of new drug compounds. Manufacturing industries are increasingly using statisticians to help them improve quality and productivity. Private consulting can be lucrative for the experienced statistician who works with both private industry and government. Companies of all sizes employ statisticians to keep the business progressing and competitive.

Preparation

The Department of Statistics accepts students with a strong quantitative background. The graduate programs welcome students from many different disciplines. Students entering the M. S. program should have a background of calculus, matrix algebra, computer programming, and introductory statistics. Students entering the Ph.D. program should have additional course work in statistics and mathematics.

Degree Programs

The Department of Statistics offers four-degree programs: B.S. in statistics, a concurrent B.S./M.S. in statistics, M.S in statistics (Mathematical Statistics Track or Data Science and Analytics Track), and Ph.D. in statistics. A master's degree is recommended for a career in industry or government. The Ph.D. degree is usually required for post-secondary teaching and higher level positions. The department offers concentrations in applied, computational, and mathematical probability and statistics.

Graduate Certificate in Applied Statistics

The department offers the Graduate Certificate in Applied Statistics to recognize the preparation and proficiency of non-majors in data analysis in a wide variety of subject matter areas. Graduate students in a variety of academic disciplines are conducting research that requires knowledge in applied statistics. Such students may wish to demonstrate proficiency in applied statistics as it may be useful when looking for meaningful employment opportunities, in addition to helping them become better researchers in their chosen fields. In order to strengthen their educational programs and the quality of graduate education, a Graduate Certificate in Applied Statistics has been developed.

Consulting opportunities

The department does a tremendous amount of consulting work for researchers and students on campus and for individuals and agencies off campus. Projects vary in length of time and sophistication of methods needed to complete them. Students may contact the department head to find out what is available. Those who wish to do consulting will be assigned a faculty member to direct the work. At the student's discretion, up to 2 hours credit may be earned for consulting by registering for STAT 945.

Concurrent

Concurrent B.S./M.S. in Statistics

This program provides undergraduate students majoring in statistics the opportunity to be admitted into the master's degree program before completing their BS and count nine credit hours of undergraduate coursework towards their graduate program. Students may obtain the M.S. in either the comprehensive exam or report capstone options, in Statistics.

Admission Requirements

Students may apply for the concurrent BS/MS program from the second semester of the sophomore year through the second semester of the junior year (when they have accumulated 45-90 credit hours toward the BS degree). Students may apply with higher credit-hour accumulation or during the first semester of their senior year with special permission from the Department Head or the Director of Graduate Studies of the Statistics department.

- Students must have completed MATH 220, MATH 221, MATH 222, STAT 325, STAT 340/STAT 350 (or higher), STAT 341/STAT 351, STAT 610, and one additional STAT course at the 500-level or higher, either at K-State or by transfer credit. Students may use STAT 510 instead of STAT 610 with special permission from the Director of Graduate Studies of the Statistics department.
- Minimum standards to apply to the concurrent program are a cumulative GPA of 3.00 and a GPA of 3.25 in the STAT/MATH Core (above) courses, with a recommended GPA of 3.5 or higher in STAT/MATH for successful admission. Retention in the program requires maintenance of a 3.00 GPA in both undergraduate and graduate coursework.

Application Process

The application process will be the same as for the traditional MS degree except completion of the BS degree is not required. The following steps are required:

- Fill out the online KSU graduate application. Required supporting documents should be uploaded to the online application as requested in the application.
- All supplemental documents required by the Statistics Department (e.g., statement of objectives, scanned copies of transcripts, letters of recommendation) will be re- quested as the on-line application is completed.
- A copy of an applicant's statement of objectives is to be uploaded. A written personal statement of academic objectives, giving specific reasons for the selection of the discipline of Statistics for study, contemplated research areas and professional plans. In addition, the statement can also mention one or more KSU faculty with whom the applicant has an interest in working.

- An electronic copy (PDF preferred) of applicant's transcript(s) from each college or university where applicant completed any undergraduate coursework and completed any post-baccalaureate course work or degrees is to be uploaded.
- Provide three references. Recommenders will upload their letters of recommendation directly to the applicant's application.

Program Format and Guidelines

A maximum of 9 credit hours will count toward both the BS and MS degrees. The 9 credit hours counted toward both degrees will typically be courses among the following: STAT 713, STAT 720, STAT 722, STAT 770, or STAT 771, but may be any Statistics course numbered 700-999 that qualifies for the MS program in Statistics. These courses may be used either to fulfill the specific Statistics BS requirements or additional 700-level STAT courses or upper division electives.

Upon acceptance into the concurrent degree program, the student will be assigned a provisional graduate advisor from the Graduate Faculty in Statistics. The student will work closely with the provisional advisor to choose appropriate coursework and a major professor by the end of the first full semester following the student's acceptance into the concurrent degree program, or the second semester of the student's junior year, whichever is later. The undergraduate advisor will advise the student in the academic progress toward the BS degree, and the provisional advisor and major professor will supervise the student's academic progress and preparation for the MS degree capstone (examination or report). A typical MS program of study for students in the concurrent program would be identical to that for students in the traditional MS program:

- Examination Option: The student must take 36 hours of course work and pass a comprehensive exam approved by the supervisory committee.
- Report Option: The student must take 30 credit hours of course work and write a report for 2 additional credit hours (STAT 898).

Doctor of Philosophy

Statistics (Ph.D.)

Doctoral degree requirements

All doctoral students should have a background in certain mathematical topics usually presented in advanced calculus, and matrix or linear algebra courses. At K-State, these would be MATH 515, MATH 551, Math 633, and MATH 634. Students who do not have this background upon entering the PhD program should discuss with their major professor, provisional advisor, or graduate program directors the best way to quickly acquire this background after entering the program.

Students are required to have 90 semester hours of course work and research credit.

- Up to thirty hours from a Master's program may be applied toward the 90 hours
- The remaining credit hours may include the courses required below, elective courses approved by the student's major professor in consultation with the student's graduate committee, and research credits.
- Elective courses may be selected from courses offered by the Department of Statistics or by other disciplines.

Required Courses

All doctoral students are required to include the following courses in their programs of study.

- STAT 842 - Probability for Statistical Inference **Credits:** 3
- STAT 843 - Statistical Inference **Credits:** 3
- STAT 860 - Linear Models I **Credits:** 3
- STAT 861 - Linear Models II **Credits:** 3
- STAT 870 - Analysis of Messy Data **Credits:** 3

and at least 7 credit hours of 900 level Statistics classes selected from:

- STAT 903 - Statistical Methods for Spatial Data **Credits:** 3
- STAT 904 - Resampling Methods **Credits:** 3
- STAT 905 - High-Dimensional Data and Statistical Learning **Credits:** 3
- STAT 907 - Bayesian Statistical Inference **Credits:** 3
- STAT 940 - Advanced Statistical Methods **Credits:** 3
- STAT 941 - Advanced Statistical Inference **Credits:** 3
- STAT 945 - Problems in Statistical Consulting **Credits:** 1-3
- STAT 950 - Advanced Studies in Probability and Statistics **Credits:** 1-3

Ph.D. Qualifying Exam

Students interested in pursuing the Ph.D. are required to first pass a departmental Qualifying Exam. Subsequently, students pursuing the Ph.D. must pass the doctoral preliminary examination (see below) in order to be approved for degree candidacy by the Graduate School.

Students must enroll in at least one credit hour during any and all semesters in which they are actively engaged in the qualifying examination process.

The Qualifying Exam consists of three parts: applied statistics, mathematical statistics and linear models. The exam will be given once a year, in January. Students may take the exam as early as desired. The courses listed below are only intended to indicate the scope of the material covered. They are not required as prerequisite to taking the exam. Mathematical Statistics: Stat 842, 843; Linear Models: Stat 860, 861; Applied Statistics: Stat 720, 870. Students taking the Ph.D. qualifier are required to pass two of the three subject area exams. Students may take all three exams. Each of the three exam subcommittees will circulate to eligible students additional information regarding each exam during the summer semester prior to the January when the exams are given.

Preliminary Exam

The Ph.D. Preliminary Exam consists of two components: a dissertation proposal and a public seminar.

Students must enroll in at least one credit hour during any and all semesters in which they are actively engaged in the preliminary examination process.

For more information please see the department website: http://www.k-state.edu/stats/academics/gradstudents/DegreePhD.html

Master of Science

Statistics (M.S.)

Master's degree requirements

The Master of Science degree program offers two tracks: a Mathematical Statistics track, and a Data Science and Analytics track.

All master students should have a background in mathematics at least at the level of calculus, along with prior knowledge of matrix or linear algebra. The Data Science and Analytics track requires proficiency of STAT 510 and STAT 511 or equivalent, and at least 3 credit hours of a programming language course that uses C, C++, Fortran, R or Python, for admission. Students without the background of STAT 510 and STAT 511 prior to admission are required to take extra credits to fulfill the requirement.

Two master's degree completion options are available for each track: the master's report option and the non-report option.

- For the master's report option, the student must take 30 hours of coursework and write a report for 2 additional hours of credit in STAT 898 .
- For the non report option, the student must take 36 hours of coursework and pass a comprehensive exam for the Mathematical Statistics track, or complete a Capstone Project for the Data Science and Analytics track.
- Students must select either the report option or the non-report option by the first week of the fall semester of their second year in the MS program. At this time, the student is required to file a program of study. Students that do not file a program of study that specifies an explicit choice of degree option in a timely manner will be automatically assigned to the non-report option. Students are not allowed to switch between report versus non-report options after filing the program of study unless the switch is approved by the Graduate Program Committee.
- Students that are interested in pursuing the report option should contact potential faculty advisors by the end of their first year in the MS program in order to allow time to identify a suitable project.
- For both the Report Option and the Non-Report option: Students must be enrolled in at least one hour the semester in which they plan to complete the final examination or defend their report and graduate. In addition, international students should check with International Student and Scholar Services to be certain of the enrollment required.

Mathematical Statistics Track

For the Mathematical Statistics track, the course work must include:

- STAT 713 - Applied Linear Statistical Models **Credits:** 3
- Either STAT 720 - Design of Experiments **Credits:** 3
- or STAT 722 - Experimental Design for Product Development and Quality Improvement **Credits:** 3
- STAT 770 - Theory of Statistics I **Credits:** 3
- STAT 771 - Theory of Statistics II **Credits:** 3
- STAT 860 - Linear Models I **Credits:** 3
- STAT 861 - Linear Models II **Credits:** 3
- STAT 945 (Statistical Consulting) is recommended for those students with applied interests.

Data Science and Analytics Track

For the Data Science and Analytics track, the course work must include:

- STAT 727 - Statistical Computing/Numerical Methods of Statistics **Credits:** 3

At least 3 credits from:

- STAT 760 - Optimization for Data Science **Credits:** 3
- STAT 761 - Discrete Optimization and Scalability for Data Science **Credits:** 3

At least 6 credits from:

- STAT 713 - Applied Linear Statistical Models **Credits:** 3
- STAT 717 - Categorical Data Analysis **Credits:** 3
- Either STAT 720 - Design of Experiments **Credits:** 3
- or STAT 722 - Experimental Design for Product Development and Quality Improvement **Credits:** 3
- STAT 730 - Multivariate Statistical Methods **Credits:** 3

At least 6 credits from:

- STAT 764 - Applied Spatio-Temporal Statistics **Credits:** 3
- STAT 766 - Applied Data Mining/Machine Learning and Predictive Analytics **Credits:** 3
- STAT 768 - Applied Bayesian Modeling and Prediction **Credits:** 3

For both tracks, electives can be selected from Statistics courses at the 700 level and above, as well as from other departmental offerings, which requires approval by the department. Such approval is at the department's discretion.

Note:

- Students planning to pursue the PhD in Statistics at K-State are required to take STAT 720 .
- Master's students wishing to continue for the PhD must apply for admission to that program. Students should meet with the Department Head regarding available funding.

M.S. Exam or Capstone Project

Master's students in the non-report option in the Mathematical Statistics track will meet with the MS Exam committee near the beginning of the semester in which the student intends to take the MS Exam. The exam is offered twice each year, near the end of the fall and spring semesters. This committee will compose an exam based on material from STAT 770 , STAT 771 , and STAT 713 . The format will be a written 3 hour exam. A decision of Pass/Fail will be made by a two thirds vote in the exam committee, in accordance with section J.3 of the Graduate School Handbook. In the event of a Fail, a second attempt may be requested by the student in accordance with Graduate School policies.

Master's students in the non-report option in the Data Science and Analytics track will complete a capstone project, which can be conducted with industry, government, and academic partners, and which may result in the creation of a usable/public data product for real-world problems.

Students admitted to the Ph.D. program in statistics may, with approval of the MS Exam committee, use the Ph.D. Qualifying Exams to satisfy the exam requirement of the M.S. non-report option. A passing mark on at least one Ph.D. qualifying exam will be interpreted as a pass of the MS. Exam.

Graduate Certificate

Applied Statistics Graduate Certificate

Contact: Juan Du
E-mail: dujuan@ksu.edu
Home Page: http://www.k-state.edu/stats

The Department of Statistics offers the Graduate Certificate in Applied Statistics to recognize the preparation and proficiency of non-majors in data analysis in a wide variety of subject matter areas. Graduate students in a variety of academic disciplines are conducting research that requires knowledge in applied statistics. Such students may wish to demonstrate proficiency in applied statistics as it may be useful when looking for meaningful employment opportunities, in addition to helping them become better researchers in their chosen fields. In order to strengthen their educational programs and the quality of graduate education, a Graduate Certificate in Applied Statistics has been developed.

Certificate Requirements

A minimum of 15 credit hours with at least a 3.0 GPA in applied statistics courses at the 700 level and above. These courses may also be used for a student's Program of Study in his/her chosen field if approved by the student's Graduate Committee.

Courses that can be used for the Graduate Certificate in Applied Statistics Program are:

At most 3 credit hours from the following three courses can be counted toward the certificate:

- STAT 701 - Fundamental Methods of Biostatistics **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- STAT 706 - Basic Elements of Statistical Theory **Credits:** 3

At most 3 credit hours from the following two courses can be counted towards the certificate:

- STAT 705 - Regression and Analysis of Variance **Credits:** 3
  or
- STAT 713 - Applied Linear Statistical Models **Credits:** 3

Most of the classes listed above are prerequisites for the classes below. Students are recommended to take prerequisite courses before taking the courses below.

- STAT 710 - Sample Survey Methods **Credits:** 3
- STAT 716 - Nonparametric Statistics **Credits:** 3
- STAT 717 - Categorical Data Analysis **Credits:** 3
- STAT 720 - Design of Experiments **Credits:** 3
- STAT 722 - Experimental Design for Product Development and Quality Improvement **Credits:** 3
- STAT 725 - Introduction to the SAS Computing **Credits:** 1
- STAT 726 - Introduction to R Computing **Credits:** 1
- STAT 727 - Statistical Computing/Numerical Methods of Statistics **Credits:** 3
- STAT 730 - Multivariate Statistical Methods **Credits:** 3
- STAT 736 - Bioassay **Credits:** 2
- STAT 745 - Statistical Graphics **Credits:** 3
- STAT 750 - Studies in Probability and Statistics **Credits:** 1-4
- STAT 760 - Optimization for Data Science **Credits:** 3
- STAT 761 - Discrete Optimization and Scalability for Data Science **Credits:** 3
- STAT 764 - Applied Spatio-Temporal Statistics **Credits:** 3
- STAT 766 - Applied Data Mining/Machine Learning and Predictive Analytics **Credits:** 3
- STAT 768 - Applied Bayesian Modeling and Prediction **Credits:** 3
- STAT 870 - Analysis of Messy Data **Credits:** 3

Note

A maximum of three credit hours can be earned from coursework taken outside the Department of Statistics, either in another department on campus, or at another university. Persons wishing to apply such credits will gain approval from the director of the certificate program. Courses so approved must clearly be of an applied statistics nature, of a duration commensurate with the number of credit hours claimed on the certificate, and at a graduate level (under no circumstances will undergraduate courses be considered). The person asking for this exception will need to supply such information as deemed necessary by the director for such approval, possibly including syllabus and identification of textbook used.

College of Business Administration

2004 Business Building
1301 Lover's Lane
Manhattan, KS. 66506
785-532-7190
gradbusiness@ksu.edu
https://cba.k-state.edu/

Graduate faculty:

Marne Arthaud-Day, Ph.D., Indiana University.
James Bloodgood, Ph.D., University of South Carolina.
Bongsug Chae, Ph.D., Texas A&M University.
Michael Chilton, Ph.D., University of Arkansas.
Chairat Chuwonganant, Ph.D., University of Memphis.
Dan Deines, Ph.D., University of Nebraska.
Ike Ehie, Ph.D., University of Missouri at Rolla.
Dann Fisher, Ph.D., University of Missouri.
Kevin P. Gwinner, Ph.D., Arizona State University.
Eric Higgins, Ph.D., Florida State University.
Swinder Janda, Ph.D., University of Arkansas.
Stacy Kovar, Ph.D., Oklahoma State University.
Mark Linville, Ph.D., University of Washington.
Dawne Martin, Ph.D., University of Colorado.
Roger McHaney, Ph.D., University of Arkansas.
Peter Mudrack, Ph.D., University of Toronto.
Brian P. Niehoff, Ph.D., Indiana University.
Richard L. Ott, Ph.D., Texas Technical University.
J. Bruce Prince, Ph.D., University of Southern California.
Chwen Sheu, Ph.D., The Ohio State University.
Jaebeom Suh, Ph.D., University of Alabama.
Diane Swanson, Ph.D., University of Pittsburgh.
Esther Swilley, Ph.D., Florida State University.
William Turnley, Ph.D., University of South Carolina.

Mission statement

The mission of the College of Business Administration at Kansas State University is excellence in the advancement and dissemination of knowledge consistent with the needs of students, business, faculty and society.

Principles

To accomplish our mission, we strive for quality in our intellectual contributions, teaching and service activities.

1. Intellectual contributions include basic and applied scholarship and instructional development. These activities support and foster continuous improvement in teaching and hence are inseparable from it. The College, therefore, places major and approximately equal emphasis on intellectual contributions and teaching, while providing sufficient flexibility to accommodate the unique objectives of individual departments. Service receives relatively minor emphasis.
2. Within the area of intellectual contributions, we seek a balance between basis scholarship, applied scholarship and instructional development, while again providing sufficient flexibility to accommodate the unique objectives of each department. These contributions address both domestic and global market environments and are disseminated in the classroom, scholarly and applied journals, professional conferences, books and continuing education courses.
3. Quality teaching goes beyond merely emphasizing a body of knowledge. We help students develop a sense of values; an appreciation of the diversity of their world; an ability to work with others and to communicate effectively; the skill to solve complex and ambiguous problems and a belief in lifelong learning.
4. To maintain the high quality of our degree programs, we continuously review and improve them in accordance with the principles above.

Accreditation

Kansas State University's College of Business Administration is accredited by the Association to Advance Collegiate Schools of Business (AACSB) at both the undergraduate and graduate levels.

The International Association of Management Education is an international organization that requires that its members maintain high educational standards. The AACSB is recognized as the sole accrediting agency for baccalaureate and master's degree programs in business administration by the U.S. Office of Education and the Council on Post-Secondary Accreditation. Members of the organization have established high standards for the professional achievement of the faculty, their teaching effectiveness and research productivity, proper balance in the curriculum, and effective student job placement. AACSB-accredited programs meet the rigorous standards of quality set by the organization. Only 25 percent of the approximately 1,300 Colleges of Business Administration in the United States are accredited by the AACSB. The Department of Accounting became the first in Kansas to receive accreditation by the AACSB for both undergraduate and graduate programs. Approximately 50 graduate accounting programs are accredited in the United States, which places the master of accountancy program among the top in the nation.

Application requirements

A complete application file must be received in the College of Business Administration Graduate Studies Office before the deadlines indicated below in order to be considered for admission. Requests for financial aid applications (assistantships, scholarships, and/or fellowships) should be communicated directly to the Director of Graduate Studies using the above address and telephone number or the email address below. The following items constitute a complete application:

- completed Application for Admission to Graduate School (Online application is preferred.)
- non-refundable application fee (Online fee payment is preferred.)
- official record of your GMAT score sent directly from Educational Testing Service (ETS). (GMAT waiver is considered for an applicant who demonstrates a high level of academic performance, analytical skill, and ability of academic success.)
- two official copies of your transcript(s) from all universities attended
- three letters of recommendation from former professors or employers (Reference Form for Graduate Study preferred)
- one page Statement of Objectives in pursuing the program

- official record of your TOEFL score sent directly from ETS (for applicants whose native language is not English)
- completed Affidavit of Financial Support [PDF] dated **within nine months of desired entry date** (for international applicants only) Note: Substitute documentation other than the Affidavit cannot be accepted

Deadlines
Students are admitted to the MBA program only at the start of the Fall semester. The completed application deadline is March 1.

Assistantships

Many graduate teaching and research assistantships are available each year. Assistantships vary between two-tenths and four-tenths time (40-hour per week basis) for the nine-month academic year. The amount of such stipends is reviewed annually. Some assistantships also carry a partial tuition waiver. A student on a four-tenths time appointment may not carry more than 12 credit hours per semester.

In recent years, graduate assistants have performed research with professors, advised undergraduate students, proctored exams, and assisted in the college's computer laboratory. An applicant interested in obtaining an assistantship should request an application form from the Director of Graduate Studies. When possible, all assistantship positions will be granted immediately following the application deadlines.

For specific information about graduate assistantships, fellowships, or College of Business Administration scholarships, contact the Director of Graduate Studies.

Concurrent Degree

B.S. in Computer Science and Master of Business Administration

Dual Degree

Master of Business Administration and MS in Hospitality Administration
Master of Business Administration and MS in Hospitality Administration

Concurrent

Concurrent B.S. in Business Administration/Master of Science in Data Analytics

The concurrent BS in BA / MS-Data Analytics (MSDA) provides high-performing CBA undergraduates the opportunity to earn a master's degree in data analytics with early admission to the graduate program as well as the ability to count nine credit hours of coursework in their graduate program toward their undergraduate unrestricted electives.

Admission Requirements

The following requirements must be met before an individual can be admitted into this program.

- The student must be seeking a BS degree from the College of Business Administration
- The student must have a GPA of 3.0 or above in all courses completed at Kansas State University and an overall GPA of 3.0 or above.
- The student must have a grade of B or above in STAT courses and MANGT366.

Application Process:

The application process is the same as for the stand-alone MSDA degree except that completion of the B.S.B.A. degree is not required. Students may begin the application process in the semester they are completing the final course requirement for admission, but formal admission will not be granted until all admission requirements are completed. The student must submit all of the following documents to be considered. Typically, application is made in the second semester of the student's Junior year, with acceptance following posting of final grades.

- KSU graduate application form completed on-line before semester of enrollment.
- Student's statement of academic objective(s).
- Two letters of recommendation.

Official transcript(s) of all undergraduate work.

Admission to the MSDA program is provisional, subject to completion of the B.S.B.A. degree and maintaining a 3.0 GPA in the final 60 credit hours of coursework. Once admitted, the requirements for the graduate degree are the same as for the regular MSDA program. Students may count up to 9 credit hours of courses taken for graduate credit toward the unrestricted electives in the B.S.B.A. The B.S. degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.S. and MSDA degrees may be awarded concurrently.

Program Structure:

The concurrent program allows students to being taking graduate classes during the student's senior year at K-State.

JUNIOR	SPRING	A student may apply to the concurrent program. Admission determined.
SENIOR	FALL	Student may take 1 or 2 graduate classes
	SPRING	Student may take 1 or 2 graduate classes
GRADUATE	FALL	Student may take 4 graduate classes
	SPRING	Student may take 3 graduate classes

Concurrent B.S. in Economics/Master of Business Administration

A student that successfully completes this program will receive both a B.S. in Economics and an M.B.A. in the same semester.

Admission Requirements:

A student must petition Kansas State University's Graduate School to be admitted into this program. The following requirements must be met before an individual can be admitted into this program.

- The student must be seeking a B.S. in Economics from K-State.
- The student must have completed at least 80 credit hours of his/her undergraduate degree.
- The student's cumulative undergraduate GPA must be at least 3.0.
- The student must have a member of KSU's Graduate Faculty in the Business School agree to be his/her major professor (this professor can be changed in accordance to K-State's policies.)

- The student must apply for this program before receiving his/her B.S. in Economics.

Program Formats and Guidelines:

The student must complete all B.S. in economics undergraduate requirements with the exception that up to 9 credit hours of 600 or 700 level professional electives taken for graduate credit can also count toward his/her undergraduate degree requirements.

The student must complete all the requirements of the M.B.A. program.

Once an individual is admitted to the concurrent B.S. Economics/M.B.A. degree program, the student should consult the graduate handbook for policies and procedures for graduate degrees, which include: supervisory committee, final examination, thesis defense, etc. The student's supervisory committee must approve the program of study, which is that student's graduation requirements for the M.B.A.

Once a student has completed all of the graduation requirements, he/she will graduate with both a B.S. in Economics and an M.B.A. degree in the same semester. Note: These are two separate degrees and it is not one degree.

In the event that a student begins this program, but does not wish to finish it, he/she must change the nine credit hours of his/her graduate classes to undergraduate credit and then he/she will receive a B.S. in economics degree.

The degree requires continuous enrollment. If a student fails to enroll in classes for over a year, then student has lost the ability to count courses toward both his/her undergraduate and graduate degree requirements unless granted permission by the respective departments.

Concurrent B.S. in Physics and Master of Business Administration

Freshman Fall Semester (15-16 credits)

- PHYS 122 - Physics Today I **Credits:** 1
- PHYS 223 - Physics I **Credits:** 5
  OR
- PHYS 213 - Engineering Physics I **Credits:** 5
- MATH 220 - Analytic Geometry and Calculus I **Credits:** 4
- ENGL 100 - Expository Writing I **Credits:** 3
- Fine Arts **Credits:** 2-3

Freshman Spring Semester (16 credits)

- PHYS 123 - Physics Today II Credits: 1
- PHYS 224 - Physics II, Electromagnetism, and Sound **Credits:** 5
  OR
- PHYS 214 - Engineering Physics II **Credits:** 5
- MATH 221 - Analytic Geometry and Calculus III Credits: 4
- ENGL 200 - Fiction into Film **Credits:** 3
- ECON 110 - Principles of Macroeconomics **Credits:** 3

Sophomore Fall Semester (14 credits)

- PHYS 325 - Physics III, Relativity, and Quantum Physics **Credits:** 4
- MATH 222 - Analytic Geometry and Calculus III **Credits:** 4
- Literature/Rhetorical Arts **Credits:** 3
- ECON 120 - Principles of Microeconomics **Credits:** 3

Sophomore Fall Semester (15 credits)

- PHYS 506 - Advanced Physics Laboratory Credits: 4
- PHYS 522 - Mechanics Credits: 4
- MATH 240 -

Master of Business Administration

Master of Business Administration (M.B.A.)

The master of business administration (MBA) program, offered through the College of Business Administration , is designed to provide professional business education to individuals who wish to pursue a variety of administrative careers in both the private and public sectors. The theme of the curriculum is intrapreneurship which can be defined as an "entrepreneurial attitude and approach to management and problem-solving within any organization, large or small." Throughout the program, the focus is "what one needs to know to run a business" while developing the ability to analyze all types of business situations and propose appropriate, creative and financially sound solutions. The curriculum combines conceptual, analytical and experiential approaches to learning both in and out of the classroom. Once the foundation of basic problem solving tools and knowledge in each functional area is established, the program deepens the interdisciplinary understanding of problem-solving approaches and their functional, ethical, environmental and international ramifications. The program concludes with a culminating learning experience.

The MBA curriculum is a 36 credit hour program designed to be completed in one and a half to two years of full-time study or four years of part-time, typically evening study. Three components comprise the curriculum:

- Business core (24 credit hours)
- Culminating experience (3 credit hours)
- Set of Electives (9 credit hours-see below)

On-Campus students may choose to pursue a prespecified, focused Concentration in lieu of the Set of Electives. Students pursuing a masters degree in another field may choose to use 9 credit hours from their other Masters as the Set of Electives in the MBA. Thus, a dual Masters/MBA can be obtained with an additional 27 credit hours.

The culminating experience requirement can be accomplished in one of two ways: (1) approved internship (campus students only), or (2) a business capstone course.

Online students must have three years of full-time approved work experience and should take GENBA 875 International Business Experience (3 credits), MANGT 830 - Information Technology Strategy and Application (3 credits), and one three hour elective in place of the Set of Electives.

Before beginning the MBA coursework, students must acquire basic competency in mathematical analysis, statistics and economic theory and analysis. These competencies may be acquired through specific undergraduate course work with the number of courses required depending on the applicant's prior academic work. This basic competency coursework may be taken after admission to the MBA program during the student's first semester.

Once admitted, MBA students are responsible for making themselves aware of Graduate School policies and deadlines.

Areas of concentration - Available only to on-campus students

K-State's MBA offers its on-campus students the opportunity to gain general business knowledge as well as develop a focus in a particular area of interest. Concentration areas are available in accounting, data analytics, finance, management, technology entrepreneurship, and international business. Students must take 12 credit hours in the concentration area. Specific courses have been carefully developed to complement one another and best meet the needs of our students. Students wishing to complete specific concentrations will be restricted to designated course work.

Accounting

The MBA concentration in accounting allows students to expand their basic knowledge of accounting topics. It is not intended to be a substitute for a masters degree in accounting, nor to prepare students for the CPA exam. Students interested in a career in accounting should enroll in the Master of Accountancy (MAcc) program.

Data Analytics

A concentration in data analytics will allow students to analyze large data sets to provide insight for practical problems, and to relate patterns shown in the data to real-world situations and communicate the implications of these patterns to others.

Finance

The finance concentration will allow students to combine the broad MBA education with specific skills necessary to be a successful financial analyst or manager. Students will specialize in controlling the resource investments required to support an enterprise's operating activities, planning and negotiating appropriate financing arrangements to support these investment requirements, and managing the risks inherent in an enterprise's investment and financing activities.

Management

A concentration in management will allow a student to develop their knowledge in human resource management and/or operations management. Courses are offered in a variety of areas of management such as leadership, entrepreneurship, supply chain management, personnel law, etc.

Marketing

A concentration in marketing will allow a student to develop their knowledge of marketing strategy, research, analytics and sales management. Courses are offered in a variety of areas in marketing.

Technology entrepreneurship

The technology entrepreneurship concentration allows graduate students to gain valuable exposure to the innovation and technology commercialization process at Kansas State University through in-class teaching and on-the-job training programs. Students in the concentration focus on the creation and management of innovation in organizations with a particular emphasis on the commercialization of intellectual property. Students with undergraduate degrees in the sciences and engineering are especially encouraged to consider this concentration as part of their programs.

International Business

The international business concentration provides graduate students with the knowledge and skills to conduct business in a global context. Students are required to understand the international dimensions of business. Courses are offered in various areas, including accounting, management, marketing, and finance.

Curriculum prerequisite courses

- Six hours of economics
- MATH 205 General Calculus and Linear Algebra or evidence of equivalent preparation
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
  or equivalent preparation

Business core

24 credit hours; may waive 6 credit hours if "B" or better is achieved in equivalent courses at the discretion of the program director. Typically waivers are only granted for multiple undergraduate courses taken, and only credits from AACSB accredited institutions are accepted.

- ACCTG 810 - Foundations of Accounting **Credits:** 3
- ECON 815 - Economic Analysis for Business **Credits:** 3
- FINAN 815 - Foundations of Finance **Credits:** 3
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- MANGT 860 - Managing the Triple Bottom Line Business **Credits:** 3
- MANGT 880 - Business Strategy **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3

Integrated core

- GENBA 890 - Business Capstone **Credits:** 3

Electives/concentration

9 credit hours of courses offered at the graduate level (600 or above) from any college, **with the approval from the student's advisory committee**. Similar courses available at both the upper-division undergraduate (600) and graduate (700-800) level MUST be taken at the graduate level. A limited number of business concentrations will be available on campus only.

Online students must have the following in lieu of the series of electives

- Three years of full-time approved work experience
- One elective offered for graduate credit **Credits**: (3)
- MANGT 830 - Information Technology Strategy and Application **Credits:** 3
- GENBA 875 - MBA International Business Experience **Credits:** 1-3
  * GENBA 875 3 credits required

Master of Science

Data Analytics (M.S.)

This Master of Science – Data Analytics (MS-DA) program is a graduate program, in collaboration with the Departments of Computer Science, Economics, Mathematics, Industrial Management and Systems Engineering, Statistics, and Geography, focusing on using advanced technologies to manipulate big data, utilizing rigorous methods to interpret the data, and obtaining the business skills necessary to translate understanding into actionable organizational strategies. Specifically, upon completion of the Master of Science – Data Analytics program, students will possess the following knowledge and skills:

Knowledge

- demonstrate knowledge of big data management, predictive modeling using machine learning/statistical methods, and model validation and evaluation
- demonstrate knowledge of analytics project requirements, data acquisition and visualization, and business communication/presentation

Skills

- demonstrate the ability to convert client's business (or problem domain) into analytics project requirements
- demonstrate the ability to collect data from social media and corporate databases, to assess data quality assessment, and provide analysis in terms of exploratory data analysis and data visualization
- demonstrate the ability to clean and transform raw data sets for further data analytics processes
- demonstrate the ability to use various machine learning algorithms (e.g., hierarchical clustering, association) & statistical modeling techniques (e.g., regression, classification) to the data, including feature engineering and parameter optimization
- demonstrate the ability to use proper model validation (e.g., cross validation) and evaluation methods and performance metrics (e.g., prediction accuracy)
- demonstrate the ability to interpret model outputs, develop managerial and technical implications, and express oneself clearly, accurately, and professionally in both oral and written form

Students will be required to complete 30 hours of coursework: 21 hours of required and 9 hours of electives (Data Science track or Applied Analytics track).

Required courses (21 credit hours)

- CIS 731 - Programming Techniques for Data Science and Analytics **Credits:** 3
- ECON 630 - Introduction to Econometrics **Credits:** 3
- IMSE 785 - Big Data Analytics **Credits:** 3
- MANGT 830 - Information Technology Strategy and Application **Credits:** 3
- MIS 665 - Business Analytics and Data Mining **Credits:** 3
- MIS 670 - Social Media Analytics and Web Mining **Credits:** 3
- MKTG 880 - Applied Marketing Analytics **Credits:** 3

Track Electives (9 credit hours)

Data Science Track

- CIS 730 - Principles of Artificial Intelligence **Credits:** 3

- CIS 732 - Machine Learning and Pattern Recognition **Credits:** 3
- CIS 751 - Computer and Information Security **Credits:** 3
- CIS 833 - Information Retrieval and Text Mining **Credits:** 3
- IMSE 680 - Quantitative Problem Solving Techniques **Credits:** 3
- MATH 725 - The Mathematics of Data and Networks I **Credits:** 3
- MATH 726 - The Mathematics of Data and Networks II **Credits:** 3
- STAT 717 - Categorical Data Analysis **Credits:** 3
- STAT 730 - Multivariate Statistical Methods **Credits:** 3
- STAT 766 - Applied Data Mining/Machine Learning and Predictive Analytics **Credits:** 3

Applied Analytics Track

- ACCTG 856 - Accounting Analytics **Credits:** 3
- CIS 732 - Machine Learning and Pattern Recognition **Credits:** 3
- ECON 686 - Economics Forecasting **Credits:** 3
- FINAN 623 - Financial Modeling **Credits:** 3
- GEOG 608 - Geographic Information Systems II **Credits:** 3
- GEOG 712 - Internet GIS and Distributed Geographic Information Services **Credits:** 3
- GEOG 728 - Programming for Geographic Analysis **Credits:** 3
- GEOG 808 - Geocomputation **Credits:** 3
- MANGT 662 - Procurement, Logistics and Supply Chain Design **Credits:** 3
- MKTG 881 - Advanced Marketing Analytics **Credits:** 3
- GENBA 890 - Business Capstone **Credits:** 3
- ACCTG 844 - Design of Accounting and Business Information Processes **Credits:** 3
- GENBA 894 - Data Analytics Capstone **Credits:** 3
- IMSE 680 - Quantitative Problem Solving Techniques **Credits:** 3
- MANGT 663 - Supply Chain Analytics **Credits:** 3
- STAT 730 - Multivariate Statistical Methods **Credits:** 3
- STAT 766 - Applied Data Mining/Machine Learning and Predictive Analytics **Credits:** 3

Total hours required: 30

Graduate Certificate

Business Administration Graduate Certificate

Contact: Chwen Sheu
E-mail: gradbusiness@ksu.edu
Home Page: www.dce.k-state.edu/business/administration/
DCE Home Page: http://www.dce.ksu.edu/gradcib/

The graduate certificate in Business Administration is offered through College of Business Administration. The certificate is designed for non-business graduate students who want to gain basic business knowledge in five different functional areas of business. Students in the certificate program are expected to complete 15 credit hours in accounting, finance, marketing, operations management and behavior management. The primary goal of the business certificate program is to prepare any graduate student so that he or she is better able to both "speak" and understand the language of business and interact successfully with anyone in the business world.

Required Courses

- ACCTG 810 - Foundations of Accounting **Credits:** 3
- FINAN 815 - Foundations of Finance **Credits:** 3
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3

Data Analytics Graduate Certificate

Contact: Chwen Sheu

E-mail: gradbusiness@ksu.edu

Home Page: global.k-state.edu/business/analytics/

A 15-credit-hour graduate certificate program, delivered completely online, is offered to enable students to increase their knowledge and to prepare them for expanding opportunities in this high demand area. The area of Data Analytics is broad, and the skill needs of professionals in this area span both technical data science capabilities and applied data analytics capabilities. As such, the certificate brings together courses that are foundational to knowledge and skill development in both data sciences and applied data analytics, in order to provide alternatives to develop a personalized plan to meet the needs of individual students in the program.

Program Administration

The Data Analytics certificate is a cooperative interdisciplinary program of the colleges of Business Administration, Arts and Sciences, and Engineering. The College of Business Administration serves as the academic home for the program, coordinating administration of the program and providing administrative support.

Academically, the program is governed by a steering committee with representatives from the participating departments, currently Computing and Information Sciences, Industrial and Manufacturing Systems Engineering, Management, Marketing, Mathematics, Statistics, and Global Campus.

Two faculty, one with an applied analytics focus and the other with a focus on data science, serve as advisors for the program. The advisors provide curriculum leadership, respond to student inquiries, evaluate student admissions, advise students and develop plans of study, as well as other academic related tasks. All correspondence should be directed to the College of Business Administration.

Program Requirements:

The Graduate Certificate in Data Analytics consists of 15 credit hours.

Students will be required to complete 12 credit hours from the list of approved courses below plus a 3-credit-hour capstone course. Each student will be required to take at least one course from each area to ensure that they are gaining background in both data science and applied analytics. Additional credits may be earned from the selection of elective courses.

- CIS 730 - Principles of Artificial Intelligence **Credits:** 3
- CIS 732 - Machine Learning and Pattern Recognition **Credits:** 3
- CIS 734 - Introduction to Genomics and Bioinformatics **Credits:** 4

- CIS 833 - Information Retrieval and Text Mining **Credits:** 3
- ECE 841 - Network Theory **Credits:** 3
- IMSE 785 - Big Data Analytics **Credits:** 3
- MATH 725 - The Mathematics of Data and Networks I **Credits:** 3
- MATH 726 - The Mathematics of Data and Networks II **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 730 - Multivariate Statistical Methods **Credits:** 3

Courses in Applied Analytics

- IMSE 785 - Big Data Analytics **Credits:** 3
- MIS 665 - Business Analytics and Data Mining **Credits:** 3
- MIS 670 - Social Media Analytics and Web Mining **Credits:** 3
- MKTG 880 - Applied Marketing Analytics **Credits:** 3
- MKTG 881 - Advanced Marketing Analytics **Credits:** 3

Capstone Course

- GENBA 894 - Data Analytics Capstone **Credits:** 3

Total hours required: 15

Organizational Leadership Graduate Certificate

Contact: Stacy Kovar
E-mail: gradbusiness@ksu.edu
Home Page: www.dce.k-state.edu/business/leadership/

The purpose of the online Graduate Certificate in Organizational Leadership (GCOL) program is to provide an opportunity for individuals to gain leadership skills and basic business knowledge without having to participate in a full MBA program (52 credit hours). Students will attain an understanding of leadership skills and the basic functional areas of business and how each contributes to an effective business organization. Results of an online survey of K-State alumni provide evidence of potential demand for a graduate certificate in this area.

Program Requirements:

The Graduate Certificate in Organizational Leadership consists of 15 credit hours.

- LEAD 801 - Foundations of Leadership **Credits:** 3
- GRAD 820 - Leadership Practicum **Credits:** 3

Choose three from the following:

- ACCTG 810 - Foundations of Accounting **Credits:** 3
- FINAN 815 - Foundations of Finance **Credits:** 3
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3

Accounting

Business Building Ste 2140

1301 Lovers Lane
785-532-6184
Fax: 785-532-7809
E-mail: gradbusiness@ksu.edu
https://cba.k-state.edu/academics/departments/accounting/

Department Head

Brett Wilkinson

Director of Graduate Studies

Chwen Sheu

Graduate Faculty:

Brooke Beyer, Ph.D., Oklahoma State University
Dann G. Fisher, Ph.D., University of Missouri
Amy Hageman, Ph.D., University of Central Florida
Rebekah Heath, Ph.D., University of Nebraska
Stacy E. Kovar, Ph.D., Oklahoma State University
Mark E. Linville, Ph.D., University of Washington
Terry Mason, Ph.D., Florida State University
John Morris, Ph.D., Kent State University
Kingsley O. Olibe, Ph.D., Texas A&M University
Ashley West, Ph.D., Texas Tech University
Brett Wilkinson, Ph.D., Texas Tech University

Graduate Faculty Associate:

Jane Bloodgood, MAcc, Kansas State University
Kimberly D. Charland, MAcc, Kansas State University

Mission Statement

The mission of the Department of Accounting at Kansas State University is to ensure a quality liberal, general business, and accounting education at the undergraduate and master's levels that prepares students to become both productive citizens and successful professional accountants.

Statement of Focus and Commitment

The focus of the faculty of the Department of Accounting in achieving its mission is on maintaining a responsive accounting program that provides students with sufficient technical and conceptual knowledge for a successful career in accounting as well as with the problem-solving and communication skills necessary to apply their knowledge in a professional setting.

To maintain such a program and as a matter of principle, the faculty of the Department of Accounting is committed to and considers its highest priority high-quality teaching, including innovative curriculum and other instructional development. The faculty is also committed to research and other forms of scholarly activity that add to the body of knowledge or support and foster improvement in teaching. In addition, the faculty is committed to participation in service activities that advance the profession and maintain the faculty's professional currentness.

Also to maintain such a program and as a matter of principle, the faculty of the Department of Accounting is committed to attracting and retaining highly motivated students with promise of success both in the Department's academic program and in the accounting profession. To this end, the faculty actively engages in student recruitment and placement, and strives to provide a supportive instructional environment.

Concurrent

Concurrent B.S. in Accounting and Master of Accountancy

The concurrent B.A./B.S. in Accounting/Master of Accountancy, offered through the Department of Accounting will provide high-performing undergraduates the opportunity to concurrently pursue their Master of Accountancy degree with early admission to the graduate program as well as the ability to count nine credit hours of coursework in their graduate program toward their undergraduate unrestricted electives.

Admission Requirements

The following requirements must be met before an individual can be admitted into this program:

- The student must be seeking a BSBA degree majoring in accounting from the College of Business Administration
- The student must have completed the following courses:
- ACCTG 331- Intermediate Accounting Processes **Credits: 3**
- ACCTG 641- Accounting Theory and History **Credits: 3**

One of the following:

- ACCTG 342- Taxation I **Credits:3**
  or
- ACCTG 432- Managerial Reporting **Credits: 3**
  or
- ACCTG 433- Financial Reporting **Credits: 3**
- The student must have a GPA of 3.00 or above in all accounting courses completed at Kansas State University and an overall GPA of 3.00 or above.

Application Process

The application process is the same as for the stand-alone MAcc degree except that completion of the B.S.B.A. degree is not required and the GMAT score requirement will be waived as long as the student maintains a 3.0 GPA in the last 60 hours of coursework and 3.0 in accounting. The student must submit all of the following documents to be considered. Students may begin the application process in the semester they are completing the final course requirement for admission, but formal admission will not be granted until all admission requirements are completed. Typically, application is made in the second semester of the student's Junior year, with acceptance following posting of final grades.

- KSU graduate application form completed on-line and submitted before semester of enrollment. Application fee submitted with application.
- Applicant's statement of academic objective(s) and must be submitted with application.
- Three letters of recommendation are required.
- Transcript(s) of all undergraduate work must be submitted through the Graduate School's online application system.

Admission to the MAcc program is provisional, subject to completion of the B.S.B.A. degree and maintaining a 3.0 GPA in the final 60 credit hours of coursework with a 3.0 in accounting. Once admitted, the requirements for the graduate degree are the same as for the regular MAcc program. Students may count up to 9 credit hours of courses taken for graduate credit toward the unrestricted electives in the B.S.B.A. The B.S. degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.S. and M.S. degrees may be awarded concurrently.

Master of Accountancy or Business Administration

Master of Accountancy (M.ACC)

The M.ACC curriculum is a 30-credit-hour program of study offered through the Accounting graduate program that may be completed in two regular semesters and a summer term or in three semesters. Students without prior or complete business and accounting training must acquire basic competency in the following business core foundation areas: accounting, statistics, management information systems, economics, finance, marketing, and management. These competencies may be acquired through specified business core foundation course work. The specific number of business core foundation courses required depends on the applicant's prior academic work. The basic competency course work may be taken after admission to the MAcc program, but certain business core foundation courses must be completed prior to taking MAcc courses that are in the same subject or that otherwise require a knowledge of the business core foundation material.

The objective of the master of accountancy program is to provide candidates with a greater breadth and depth in accounting than is possible in the baccalaureate or master of business administration program in preparation for careers as professional accountants in financial institutions, government, industry, nonprofit organizations, and public practice. For complete application information, see the College of Business Administration website.

Requirements

All MAcc students are expected to make themselves aware of and conform to the academic policies of the Graduate School as described in the Graduate Handbook and the Graduate Catalog. **In addition to an overall 3.0 GPA required by the graduate school, Master of Accountancy students must maintain a 3.0 GPA in graduate accounting course.**

Required Courses

- ACCTG 811 - Advanced Financial Reporting **Credits:** 3
- ACCTG 833 - Corporate Taxation **Credits:** 3

Accounting Electives (12 credit hours)

Students may select 12 credit hours from ACCTG labelled courses at the 800 level. Students are encouraged to consult with their Master of Accountancy advisor to design a set of accounting and other electives consistent with their planned career objective.

- ACCTG 810 - Foundations of Accounting **Credits:** 3
- ACCTG 832 - Advanced Auditing **Credits:** 3
- ACCTG 833 - Corporate Taxation **Credits:** 3
- ACCTG 834 - Partnership Taxation **Credits:** 3
- ACCTG 835 - Advanced Management Accounting **Credits:** 3
- ACCTG 841 - Advanced Accounting Theory **Credits:** 3
- ACCTG 842 - Advanced Topics in Taxation **Credits:** 3
- ACCTG 843 - Management Accounting and Behavior **Credits:** 3
- ACCTG 844 - Design of Accounting and Business Information Processes **Credits:** 3
- ACCTG 845 - International Accounting **Credits:** 3
- ACCTG 846 - International and Multijurisdictional Taxation **Credits:** 3
- ACCTG 852 - Accounting Research and Communication **Credits:** 3
- ACCTG 855 - Financial Statement Analysis and Business Valuation **Credits:** 3
- ACCTG 856 - Accounting Analytics **Credits:** 3
- ACCTG 857 - Accounting for Not-For-Profit Entities **Credits:** 3
- ACCTG 860 - Management Accounting and Business Problem Solving **Credits:** 3
- ACCTG 870 - Problems in Accounting **Credits:** 3
- ACCTG 890 - Seminars in Professional Accounting **Credits:** 1-3
- ACCTG 895 - Accounting Internship **Credits:** 3
- ACCTG 896 - Accounting International Experience **Credits:** 3

Other Electives (12 credit hours)

Students may select courses based on the following criteria.

- Any accounting course at the 800 level not taken as an accounting elective.
- Other business or non-business courses at the 600 level or above *approved by the student's supervisory committee*.

Culminating experience

All students must complete one of the following four activities as an integrative/culminating experience as part of the Master of Accountancy program. The experience must be completed after admission to the program, or after commencement of graduate coursework, whichever is earlier.

- An approved study abroad experience of at least 7 days (for or not for credit)
- An approved internship consisting of at least four weeks of full-time work (for or not for credit)
- A course such as GENBA 890 involving a semester-long hands-on project.
- A written comprehensive exam

Consult with your Master of Accountancy advisor prior to commencing any integrative/culminating activity for pre-approval.

Finance

Business Building Ste 3092

1301 Lovers Lane
785-532-6892

Fax: 785-532-7809
gradbusiness@ksu.edu
https://cba.k-state.edu/academics/departments/finance/

Department Head:

Ansley Chua

Director of Graduate Studies:

Chwen Sheu

Graduate faculty:

Ansley Chua, Ph.D., Florida State University
Chairat Chuwonganant, Ph.D., University of Memphis
Eric J. Higgins, Ph.D., Florida State University
Benjamin Johnson, Ph.D., University of Mississippi
Tareque Nasser, Ph.D., University of Alabama
Sabuhi Sardarli, Ph.D., University of Florida
Shuang Zhu, Ph.D., Louisiana State University

Programs

The Department of Finance supports the Master of Business Administration (MBA) and Master of Accountancy (MACC) degrees.

Master of Accountancy or Business Administration

Finance (M.ACC or M.B.A.)

The Department of Finance supports the Master of Business Administration (MBA) and Master of Accountancy (MACC) degrees.

Please see the College of Business Administration graduate program or the MBA pages for more information.

Management

Business Building Suite 30911301 Lovers Lane
785-532-6296
Fax: 785-532-7809
gradbusiness@ksu.edu
https://cba.k-state.edu/academics/departments/management/

Department Head:

William Turnley

Director of graduate studies:

Chwen Sheu

Graduate faculty:

Marne Arthaud-Day, PhD, Indiana University
Hansin Bilgili, PhD, University of Arkansas
Tsvetomira Bilgili, PhD, University of Memphis
James M. Bloodgood, PhD, University of South Carolina
Kyle Bradley, PhD, Indiana University
Joseph Buchman, PhD, University of Arizona
Bongsug Chae, PhD, Texas A&M University
Michael Chilton, PhD, University of Arkansas
Satoris Culbertson Howes (Adjunct), PhD, Texas A&M University
Ike C. Ehie, PhD, University of Missouri-Rolla
Myung Kyo (MK) Kim, PhD, Michigan State University
Roger McHaney, PhD, University of Arkansas
Brian P. Niehoff, PhD, Indiana University
Saurav Pathak, PhD, University of Florida & Imperial College Business School (UK)
J. Bruce Prince, PhD, University of Southern California
Chwen Sheu, PhD, The Ohio State University
Diane Swanson, PhD, University of Pittsburgh
William Turnley, PhD, University of South Carolina
Ji Ho Yoon, PhD, Michigan State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Graduate Faculty Associate

Tom Hollinberger, MS, Naval Postgraduate School
Chad Jackson, PhD, Kansas State University
Michael Mayo, MBA, Kansas State University
Kathy Seeberger, JD, University of Kansas
Jiho Yoon, PhD, Michigan State University
Jiena McLellan, M, Kansas State University

Programs

The Department of Management supports the Master of Business Administration (MBA) and Master of Accountancy (MACC) degrees.

Master of Accountancy or Business Administration

Management (M.ACC or M.B.A.)

Programs

The Department of Management supports the Master of Business Administration (MBA) and Master of Accountancy (MACC) degrees.

Please see the College of Business Administration graduate program or the MBA pages for more information.

Marketing

Business Building Ste 2093

1301 Lovers Lane
785-532-6008
gradbusiness@ksu.edu
https://cba.k-state.edu/academics/departments/marketing/index.html

Department Head:

Esther Swilley

Director of graduate studies:

Chwen Sheu

Graduate faculty:

Jihoon Cho, Ph.D., University of Michigan
Janis Crow, Ph.D., Kansas State University
Dawn Deeter-Schmelz, Ph.D., University of South Florida
Kevin P. Gwinner, Ph.D., Arizona State University
Swinder Janda, Ph.D., University of Arkansas
Michael Krush, Ph.D., University of Nebraska
Edward Nowlin, Ph.D., University of Nebraska-Lincoln
Jaebeom Suh, Ph.D., University of Alabama
Esther Swilley, Ph.D., Florida State University
Douglas Walker, Ph.D., University of Houston

See Business Administration in this catalog for additional information and listing of graduate faculty.

Programs

The Department of Marketing supports the Master of Business Administration (MBA) and Master of Accountancy (MACC) degrees.

Master of Accountancy or Business Administration

Marketing (M.ACC or M.B.A.)

Please see the College of Business Administration graduate program or the MBA pages for additional information and listing of graduate faculty.

Programs

The Department of Marketing supports the Master of Business Administration (MBA) and Master of Accountancy (MACC) degrees.

College of Education

College of Education
006 Bluemont Hall
785-532-5525
Fax: 785-532-7304
coegrads@ksu.edu
http://www.coe.ksu.edu

Debbie K. Mercer, Dean
Todd F. Goodson, Assistant Dean for Teacher Education
Roger Schieferecke, Assistant Dean- Center for Student Success

"Preparing educators to be knowledgeable, ethical, caring decision makers for a diverse and changing world"

Our Mission is fulfilled through:

- the delivery of exemplary instruction to students at the undergraduate and graduate levels;
- production, interpretation, and dissemination of sound and useful research and scholarship;
- leadership, collaboration, and service within the profession;
- and promotion, understanding, and celebration of diversity.

Information about our Graduate Programs and Graduate Certificates can be found here
http://coe.ksu.edu/academics/graduate/index.html

General information including Graduate Assistantships, scholarships, enrolling in classes, and much more can be found here: http://coe.ksu.edu/grad/

Curriculum and Instruction

261 Bluemont Hall
785-532-5550
edci@ksu.edu
https://coe.ksu.edu/academics/departments/curriculum-and-instruction/

Department Chair:

F. Todd Goodson

Director of Graduate Studies:

Kay Ann Taylor

Graduate Faculty:

*David Allen, Ed.D., Texas Tech University
*Andrew G. Bennett, Ph.D., Princeton University
*Bradley Burenheide, Ph.D., Kansas State University
*Frederick Burrack, Ph.D., University of Illinois

*J. Spencer Clark, Ph.D., Indiana University
*Janine Duncan, Ph.D., University of Missouri
Mark Ellner, Ph.D., Kansas State University
Pedro Espinoza, Ed.D., Kansas State University
*Melia Fritch, Ph.D., Kansas State University
*F. Todd Goodson, Ph.D., University of Kansas
Lori Goodson, Ph.D., Kansas State University
*Socorro Herrera, Ph.D., Texas Tech University
*Gaea Hock, Ph.D., Texas Tech University
*Lotta C. Larson, Ph.D., Kansas State University
Michael Lawson, Ph.D., University of Tennessee
Tonnie Martinez, Ph.D., Kansas State University
*Sherri Martinie, Ph.D., Kansas State University
Leah McKeeman, Ph.D., Kansas State University
*Debbie Mercer, Ph.D., Kansas State University
*Kevin Murry, Ph.D., Texas Tech University
*Tuan Nguyen, Ph.D., Vanderbilt University
*Phillip Payne, Ph.D., University of Maryland
Della Perez, Ph.D., Kansas State University
Beth Pesnell, Ph.D., University of Arkansas
*Suzanne Lynn Porath, Ph.D., University of Wisconsin-Madison
*Vicki S. Sherbert, Ph.D., Kansas State University
*Jacqueline Spears, Ph.D., Kansas State University
*Kimberly Staples, Ph.D., University of Alabama, Tuscaloosa
BeEtta Stoney, Ph.D., University of Texas at Austin
*Deepak Subramony, Ph.D., Indiana University
*Kay Ann Taylor, Ph.D., Iowa State University
*Jonathan Ulmer, Ph.D., University of Missouri-Columbia
*Thomas Vontz, Ph.D., Indiana University-Bloomington
*Jeffrey Ward, DMA, Shenandoah Conservatory

*Denotes graduate faculty who are certified to serve as the major professor for doctoral students.

Graduate Faculty Associates:

Robert Leming, E.D.S., Indiana University
Stephen Schechter, Ph.D., University of Pittsburgh
Ramona Stowe, Ph.D., Kansas State University
Dorothy Thompson, Ph.D., University of Georgia
Charles White, Ph.D., Indiana University

Emeritus Faculty:

James Boyer,*Paul R. Burden, Jack Byars, John Dalida, David Griffin, Ed.D., Mary Evan Griffith, Marjorie Hancock, Steve Harbstreit, Charles Heerman, Kathryn Holen, John Hortin, Ray Kurtz, David Laurie, Diane McGrath, Michael Perl, Floyd Price, Larry Scharmann, Leo Schell, Margaret Gail Shroyer, Ben Smith, Rosemary Talab, Richard Welton, Janice Wissman, Emmett Wright, Sally Yahnke,

Admission

For admission requirements, please see https://coe.k-state.edu/academics/graduate/curriculum-instruction/

Program description

The curriculum and instruction graduate programs offer a variety of graduate-level courses in all curricular areas with specific emphasis upon trends and recent developments in practice, theory, and research. These courses are offered on-campus, at selected off-campus sites, or via distance learning.

This program supports the following degrees: the master of science in curriculum and instruction, the doctor of education in curriculum and instruction, and the doctor of philosophy in curriculum and instruction. In all of these programs, breadth of study is stressed with students taking courses in other programs in the College of Education and the university.

The program offers numerous short courses, workshops, and seminars in addition to courses in the catalog. These can be applied to degree programs or taken for personal or professional development unrelated to a degree program.

Doctor of Education

Curriculum and Instruction (Ed.D.)

The Curriculum and Instruction Ed.D. program is directed by a minimum of five members of the university graduate faculty, including a major professor with substantial expertise in the area of emphasis, two other faculty members with strengths in the area of emphasis, one faculty member outside the student's specialization, and one faculty member, appointed by the dean of the Graduate School, from another department within the College of Education who serves as the chair of the examination committee for the oral defense of the dissertation.

Each student's program of study is individualized with the approval of the major professor and the supervisory committee to optimize the student's interests, expertise, and professional goals.

Information on the Ed.D. programs may be obtained from the College of Education Office of Graduate Studies in 018 Bluemont Hall or from the relevant department chair.

Credit hour requirements

The Doctor of Education (Ed.D.) in Curriculum and Instruction requires a minimum of 94 post-baccalaureate, graduate credit hours. With the approval of the supervisory committee, up to 30 graduate hours earned as part of the Master's degree may be used to satisfy the degree requirements.

Prerequisite

An introductory survey to research methods and methodologies in the social sciences. The course may be included on the Program of Study.

Possible courses: EDCEP 816 Research Methods in Education or a course approved by the supervisory committee.

Area of emphasis (48 credit hours)

Introductory Courses (6 credit hours)

- EDCI 900 - Introduction to Ed.D. Doctoral Studies **Credits:** 3
- EDCI 901 - Literature Reviews for Doctoral Research **Credits:** 3

Analysis and Interpretation of Educational Research: A Theory Course (3 credit hours)

Possible course includes:
EDCI 907 Curriculum Theory
Or, a Theory Course approved by the supervisory committee.

Courses with EDCI prefix (12 credit hours)

A minimum of 12 credit hours of the post-master's credits on the Ed.D. Program of Study must designate the EDCI prefix at the 800 or 900 course level. Research credits (EDCI 999) and internship credits (EDCI 991) may not be applied to the 12 credit hour minimum.

Courses in the major and minor area (27 credit hours)

Foundational Knowledge (12 credit hours)

Possible courses for 1-4 below include:

History and Philosophy of Educational Ideas and Practice (3 credit hours)

- EDCI 812 - History of Education **Credits:** 3
- EDCI 813 - Comparative Philosophies of Education **Credits:** 3

Education in a Diverse Society (3 credit hours)

- EDCI 864 - Social/Cultural Issues in Educational Technology **Credits:** 3

Supporting Positive Change through Educational Technology (3 credit hours)

- EDCI 866 - Educational Technology Change Management **Credits:** 3

Curriculum (3 credit hours)

- EDCI 831 - Contemporary Issues in Teaching and Learning **Credits:** 3
- EDCI 882 - Teaching and Learning Models **Credits:** 3

ELD Track (9 credit hours)

Applies to EFL track only; all 9 hours of EFL courses listed are required for EFL track

- EDCI 845 - ELD/Dual Language Methods **Credits:** 3
- EDCI 846 - ELD/Dual Language Culture and Language in Classroom Practice **Credits:** 3

- EDCI 847 - ELD/Dual Language Assessment **Credits:** 3

Or, Foundational Knowledge courses approved by the supervisory committee.

Research courses (12 credit hours)

Research courses addressing methodology consistent with that required for the dissertation and approved by the supervisory committee.
Possible courses include:

- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 819 - Survey Research **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
  Or, Research courses approved by the supervisory committee.

Clinical Experience (12 credit hours)

- EDCI 991 - Internship in Curriculum and Instruction **Credits:** 12
- EDCI 991 Internship I in Curriculum & Instruction, Fall Year 1
- EDCI 991 Internship II in Curriculum & Instruction, Spring Year 1
- EDCI 991 Internship III in Curriculum & Instruction, Fall Year 2
- EDCI 991 Internship IV in Curriculum & Instruction, Spring Year 2

Doctoral Research (16 credit hours)

- EDCI 999 - Research in Curriculum and Instruction **Credits:** 16

Preliminary examination

Satisfactory completion of all segments of a written examination of at least 12 hours over all areas of the program of study.

Dissertation research (16 credit hours)

Completion of a dissertation which treats an important topic of professional education practice using a systematic methodology consistent with accepted research paradigms; the dissertation must be successfully defended in a public, oral defense.

- EDCI 999 - Research in Curriculum and Instruction **Credits:** 16

Doctor of Philosophy

Curriculum and Instruction (Ph.D.)

The Curriculum and Instruction Ph.D. program is directed by a minimum of five members of the university graduate faculty, including a major professor with substantial expertise in the area of emphasis, two other faculty members with

strengths in the area of emphasis, one faculty member outside the student's specialization, and one faculty member appointed by the dean of the Graduate School who serves as the chair of the examination committee for the oral defense of the dissertation.

Each student's program of study is individualized with the approval of the major professor and the supervisory committee to optimize the student's interests, expertise, and professional goals.

Information on the Ph.D. programs may be obtained from the College of Education Office of Graduate Studies in 018 Bluemont Hall or from the relevant department chair.

Credit hour requirements

The Doctor of Philosophy (Ph.D.) in Curriculum and Instruction requires a minimum of 90 postbaccalaureate, graduate credit hours. With the approval of the supervisory committee, up to 30 graduate hours earned as part of the Master's degree may be used to satisfy the degree
requirements.

Areas of emphasis (54 credit hours)

Theory Course (3 credit hours)

Possible courses include:

- EDCI 907 - Curriculum Theory **Credits:** 3 (This course is offered in the Fall of odd years.)
- Or a theory course in the content field (e.g., EDCI 818 Theoretical Models of Reading)
- Or a theory course approved by the advisor

Courses with the EDCI prefix (12 hours)

A minimum of 12 credit hours of the post-master's credits on the Ph.D. Program of Study must designate the EDCI prefix at the 800 or 900 course level. Research credits (EDCI 999) and internship credits (EDCI 991) may not be applied to the 12 credit hour minimum.

Courses in the major and minor area (42 hours)

Foundations of Education (3 credit hours)

Possible courses include:

- EDCI 812 - History of Education **Credits:** 3
- EDCI 813 - Comparative Philosophies of Education **Credits:** 3

Research courses (15 credit hours)

Programs of Study must include quantitative and qualitative methodologies.

Possible courses include:

- EDCI 912 - Historical Research Methods in Education **Credits:** 3

- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 819 - Survey Research **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- EDLEA 938 - Advanced Data Analysis in Qualitative Methods **Credits:** 3
- EDLEA 948 - Data Representation and Writing in Qualitative Research **Credits:** 3

Note

EDCEP 816 Research Methods or its equivalent is considered a *prerequisite* for the 15 hours of research in the PhD program. Also, EDCI 760 Action Research in Education cannot be included in the 15-hour research course requirement.

Doctoral Research (18 hours minimum; no more than 30 hours)

- EDCI 999 - Research in Curriculum and Instruction **Credits:** 1-18

Preliminary examination

Satisfactory completion of all segments of an examination over all areas of the program of study.

Dissertation research (18 credit hours minimum; no more than 30 credit hours)

Completion of a dissertation which examines a topic congruent with the program of study using a systematic methodology consistent with accepted research paradigms; the dissertation must be successfully defended in a public, oral defense.

- EDCI 999 - Research in Curriculum and Instruction **Credits:** 1-18 ; no more than 30

Master of Arts

Master of Arts in Teaching (elementary track)

The Master of Arts in Teaching (MAT) program is designed for second-career adults who have previously attained a Bachelor's degree and would like to become elementary or secondary teacher. Program completers would earn a Master of Arts in Teaching degree and a recommendation for initial teacher licensure. The MAT has the choice of an elementary track or a secondary track. Candidates for secondary education must have a bachelor's degree in the subject field where licensure is sought.

The program is designed as a cohort model and is delivered exclusively online in 12 months. Each cohort begins with the May intersession. The program provides an alternative pathway to teaching that is not currently available to Kansans or others who live outside a reasonable radius of a university or other teacher education unit.

As part of the program, candidates complete a 2-credit hour practicum (EDCI 800) and a 4-credit hour teaching internship (EDCI 801). These field experiences are arranged in accredited schools convenient to students in the program.

Application requirements and information about the program can be found in the MAT Handbook at the Master of Arts in Teaching website (http://coe.ksu.edu/academics/mateaching/index.html)

Elementary Track

All courses will be delivered online through a cohort model. Until demand justifies additions, one cohort of students will be admitted per year beginning with the May Intersession. All courses are required and there are no electives.

Students will complete a 2-credit-hour practicum (EDCI 800) and a 4-credit-hour teaching internship (EDCI 801). Field experiences will be arranged in accredited elementary schools convenient to students in the program.

May Intersession

- EDCI 710 - Social Foundations of K-12 Education **Credits:** 3
- EDCI 890 - Master's Project **Credits:** 1-6

Summer

- EDCI 702 - Curriculum, Instruction, and Assessment **Credits:** 3
- EDCI 716 - Teaching Diverse Learners **Credits:** 3

Fall

- EDCI 791 - Teaching Science and Mathematics in the Elementary School **Credits:** 4
- EDCI 792 - Teaching Social Studies, Reading, and Literacy in the Elementary School **Credits:** 4
- EDCI 800 - Teaching Practicum **Credits:** 1-6

January Intersession

- EDCI 793 - Teaching Health, Movement, and Fine Arts in Elementary Schools **Credits:** 4

Spring

- EDCI 801 - Internship in K-12 Schools **Credits:** 4
- EDCI 760 - Action Research in Education **Credits:** 3

Master of Arts in Teaching (secondary track)

The Master of Arts in Teaching (MAT) program is designed for second-career adults who have previously attained a bachelor's degree and would like to become an elementary or a secondary teacher. Program completers will earn a Master of Arts in Teaching degree and a recommendation for an initial teacher license. The MAT has the choice of an elementary track or a secondary track. Candidates for secondary education must have a bachelor's degree in the subject field where licensure is sought.

The program is designed as a cohort model and is delivered exclusively online in 12 months. Each cohort begins with the May intersession. The program provides an alternative pathway to teaching that is not currently available to Kansans or others who live outside a reasonable radius of a university or other teacher education unit.

As part of the program, candidates complete a 2-credit hour practicum (EDCI 800) and a 4-credit hour teaching internship (EDCI 801). These field experiences are arranged in accredited schools convenient to students in the program.

Application requirements and information about the program can be found in the *MAT Handbook* at the Master of Arts in Teaching website (http://coe.ksu.edu/academics/mateaching/index.html)

Secondary Track

All courses will be delivered online through a cohort model. Until demand justifies additions, one cohort of students will be admitted per year beginning with the May Intersession. All courses are required and there are no electives.

Applicants must possess an undergraduate degree in the appropriate content field and present a passing score on the content area licensure exam.

Students will complete a 2-credit-hour practicum (EDCI 800) and a 4-credit-hour teaching internship (EDCI 801). Field experiences will be arranged in accredited middle or secondary schools convenient to students in the program.

May Intersession

- EDCI 710 - Social Foundations of K-12 Education **Credits:** 3
- EDCI 890 - Master's Project **Credits:** 1-6

Summer

- EDCI 702 - Curriculum, Instruction, and Assessment **Credits:** 3
- EDCI 716 - Teaching Diverse Learners **Credits:** 3
- EDCI 797 - Secondary Content Field Colloquium I **Credits:** 2

Fall

- EDCI 715 - Literacy and Diverse Learners in the Content Areas **Credits:** 3

- EDCI 703 - MAT Secondary Math Methods **Credits:** 3
  or
- EDCI 705 - MAT Social Studies Methods **Credits:** 3
  or
- EDCI 706 - MAT Secondary English/Language Arts **Credits:** 3

or

- EDCI 712 - MAT Foreign Language Methods **Credits:** 3

or

- AGED 790 - Agricultural Education Methods and Practicum for Teaching and Learning **Credits:** 3

- EDCI 798 - Secondary Content Field Colloquium II **Credits:** 2
- EDCI 800 - Teaching Practicum **Credits:** 1-6

Winter Intersession

- EDCI 799 - Secondary Content Field Colloquium III **Credits:** 2

Spring

- EDCI 801 - Internship in K-12 Schools **Credits:** 4
- EDCI 760 - Action Research in Education **Credits:** 3

Total: 31

The Graduate Catalog.

Final Project
Information about the Teaching and Learning Portfolio is provided by the Colege of Education.

Master of Science

Curriculum and Instruction (M.S.)

Master's degree requirements

The M.S. in Curriculum and Instruction requires a minimum of 31 hours of graduate credits. Three hours in each of these core areas is required: curriculum, teaching and learning, diversity, educational technology, and research and scholarship. In addition, at least 15 hours in an area of specialization are required. All students take the Master's Project (1 hr.), while others also take the Master's Report (2 hours) or the Master's Thesis (6 hours). The requirements for each core area and for each of these specializations are described below.

A. Curriculum (3 credit hours)

This category addresses all aspects of K-12 curriculum. It is intended that one course in curriculum would address the broad range of these issues.

- The foundations of curriculum (philosophical, historical, psychological, and social foundations; curriculum theory)
- The principles of curriculum (aims, goals, objectives; curriculum design, development, implementation, and evaluation)
- Issues of curriculum (trends and issues; future directions; national standards)

Recommended courses for this core category

- EDCI 803 - Curriculum Development **Credits:** 3
  OR a curriculum course approved by the student's advisor and committee.

B. Teaching and learning

This category deals with theoretical, practical, and research-based issues associated with the creation of an environment for effective teaching and learning. The following topics are representative of the issues that might affect the creation of the learning environment:

- Teaching strategies (e.g., direct instruction, cooperative learning)
- Learning theory (e.g., sociocultural theory, schema theory)
- Theory and research into practice
- Instructional planning and design
- Assessment
- Learning environments (organization, management, discipline)
- Standards and practices

One course in teaching and learning may address only one of these issues; one course is not intended to provide a survey of all possible issues that affect the creation of a learning environment.

Recommended courses for this category:

- EDCEP 715 - Principles of Assessment **Credits:** 3
- EDCI 720 - ESL/Dual Language Methods **Credits:** 3
- EDCI 831 - Contemporary Issues in Teaching and Learning **Credits:** 3
- EDCI 862 - Instructional Systems Design **Credits:** 3
- EDCI 882 - Teaching and Learning Models **Credits:** 3
  OR a teaching and learning course approved by the student's advisor and committee.

C. Diversity (3 credit hours)

This category addresses the nature of learner differences and the instructional implications of these differences. Teaching students in a pluralistic society entails knowledge of many possible factors that may affect student performance, behavior, and instruction.

Student diversity may be due to factors such as: ethnicity, race, socioeconomic status, gender, exceptionalities, language, religion, sexual orientation, or geographical areas. One course in diversity may address several of these issues; but one course is not intended to provide a survey of all possible issues that address the nature of learner differences, the instructional implications of these differences, and the nature of the institution of schooling and biases that may exist.

Recommended courses for this core category:

- EDCI 740 - Culture and Language in Classroom Practice **Credits:** 3
- EDCI 755 - Multicultural Issues in Teaching **Credits:** 3
- EDCI 812 - History of Education **Credits:** 3
- EDCI 813 - Comparative Philosophies of Education **Credits:** 3

- EDCI 864 - Social/Cultural Issues in Educational Technology **Credits:** 3
  OR a diversity course approved by the student's advisor and committee.

D. Educational technology (3 credit hours)

This category examines:

- Roles that technology, teachers, and learners may take in any educational context
- Ways of integrating technology into teaching and learning
- Issues involved in using technology in K-12 settings

Recommended courses for this category:

- EDCI 718 - Introduction to Educational Technology **Credits:** 3

E. Research and scholarship (3 credit hours)

This category deals with interpreting, using, and conducting research and scholarly activities. Scholarship might include analysis, position papers, essays, research into
practice, and other creative endeavors. Scholarship is broader and more inclusive than research. Research is a form of scholarship.

This category addresses:

- The many forms of scholarship
- Scientific and naturalistic research
- Analysis, interpretation, and application of research and scholarship to improve teaching and learning
- Designing and conducting research and scholarship
- How research relates to practice

It is intended that one course in research and scholarship would address the broad range of these items.

Students must complete the research course before starting the master's degree project, report, or thesis (see category F).

Recommended courses for this category:

- EDCEP 816 - Research Methods in Education **Credits:** 3
- EDCI 760 - Action Research in Education **Credits:** 3
  OR a research and scholarship course approved by the student's advisor and committee.

F. Project, report, or thesis (1-6 credit hours)

Students must complete a research course in Category E before starting this project, report, or thesis. The results of the research project, report, or thesis are to be reported to the student's supervisory committee in the oral exam in the last semester of the degree program.

Project (1 credit hour)

The master's project is conducted under EDCI 890 Master's Project. The objective of the project is to improve the student's own practice. Students select a topic pertinent to their own practice. This project includes the construction of a professional portfolio to represent the student's learning throughout the master's degree program.

- EDCI 890 - Master's Project **Credits:** 1-6

Report (2 credit hours)

The master's report is conducted under EDCI 898 Master's Report. A master's report is generally shorter than a thesis, and it may present the results of a more limited investigation. Alternatively, it may review the state of a particular scholarly or scientific problem, or - especially in the case of professional programs or applied disciplines - it may describe a project appropriate to the disciplines.

- EDCI 898 - Master's Report **Credits:** 1-18

Thesis (6 credit hours)

The master's thesis is conducted under EDCI 899 Master's Thesis. The master's thesis presents the results of an original investigation of a problem or topic approved by the candidate's supervisory committee. Its purpose is to demonstrate the candidate's ability to conduct original research, and to present the results in a form acceptable to the supervisory committee.

- EDCI 899 - Master's Thesis **Credits:** 1-18

G. Area of specialization (15 credit hours)

Students must select one of the following areas of specialization (details for each are on the following pages):

- G1. Elementary/Middle-Level Curriculum and Instruction
- G2. Reading/Language Arts
- G3. The Reading Specialist Endorsement
- G4. Middle Level/Secondary Curriculum and Instruction
- G5. Educational Technology
- G7. English as a Second Language
- G8. Learning Skills/School Improvement
- G9. Mathematics Education
- G10. Civic Education
- G11. World Modern Language

G1. Elementary/middle level curriculum and instruction (15 credit hours)

This specialization is intended for elementary teachers who teach a variety of subjects and middle-level teachers who teach in more than one subject field. Core and elective courses for this specialization are intended to focus on curricular issues of the subjects that elementary/middle level teachers teach (e.g., math, science, social studies, science, language arts, reading).

Recommended courses:

- EDCI 776 - Teaching in Middle Schools **Credits:** 3
- EDCI 816 - Approaches to Reading Instruction **Credits:** 3
- EDCI 820 - Contemporary Issues in Language Arts **Credits:** 3
- EDCI 821 - Advanced Methods in the Teaching of K-12 Mathematics **Credits:** 3
- EDCI 822 - Contemporary Issues in Social Studies **Credits:** 3
- EDCI 834 - Improving Science Teaching **Credits:** 3
  OR other courses approved by the advisor.

G2. Reading/language arts (15 credit hours)

Master's degree candidates may specialize in reading/language arts course without taking the particular courses for the reading endorsement (that endorsement can be obtained with specialization G3). Students may choose any 15 hours of approved elementary/middle level and/or secondary courses that emphasize reading and the language arts. Some of the courses may have prerequisites; see the catalog for that information.

Recommended courses:

- EDCI 715 - Literacy and Diverse Learners in the Content Areas **Credits:** 3
- EDCI 756 - Tradebooks across the Curriculum **Credits:** 3
- EDCI 758 - Reading/Writing Connections **Credits:** 3
- EDCI 816 - Approaches to Reading Instruction **Credits:** 3
- EDCI 820 - Contemporary Issues in Language Arts **Credits:** 3
- EDCI 840 - Literacy Assessment **Credits:** 3
- EDCI 841 - Supporting Struggling Readers **Credits:** 3
- EDCI 878 - The Language Arts Curriculum **Credits:** 3
  OR other courses approved by the advisor.

G3. Reading specialist endorsement (15 credit hours)

Special licensure requirements exist for K-12 school teachers of special reading classes in Kansas. In addition to degree certification and teaching experience, a planned sequence of graduate reading courses are required for licensure endorsement. Students seeking this endorsement must hold a valid Kansas Professional teaching license.

Required courses (15 credit hours):

- EDCI 816 - Approaches to Reading Instruction **Credits:** 3
- EDCI 818 - Theoretical Models of Reading **Credits:** 3
- EDCI 840 - Literacy Assessment **Credits:** 3
- EDCI 841 - Supporting Struggling Readers **Credits:** 3
- EDCI 930 - Leadership in Literacy **Credits:** 3

Required practicum (3 credit hours):

- EDCI 945 - Clinical Practicum in Reading **Credits:** 3

Additional requirements:

After completing the required courses and practicum, the applicant must fulfill these additional requirements to obtain an initial reading specialist license:

1. Hold a currently valid Kansas professional teaching license.
2. Present a score of 164 or above on the Praxis II exam for the Reading Specialist (test number 5301).
3. Hold a masters degree. (It is permitted but not necessary to include the required courses as part of the masters degree.)
4. Have a 3.25 grade point average in graduate coursework.
5. Have recent teaching experience or coursework (i.e., at least one year of teaching or 8 credit hours within the last six years.)

G4. Middle level/secondary curriculum and instruction (15 credit hours)

This specialization is intended for middle-level and secondary teachers who teach in one subject field. This specialization is intended to enhance one's knowledge and skills about their teaching field (e.g., education in math, science, social studies, language arts, family and consumer sciences, agriculture, vocational fields).

- A curriculum course in the teaching field (3 hours)
- Electives (12 hours)
- These courses may relate to the content being taught, the curricular program, or instructional aspects of the teaching field.

G5. Educational Technology (15 credit hours)

This area of specialization focuses – following guidelines prescribed by the Association for Educational Communications and Technology (AECT) – on the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources. While K-12 educators constitute its largest audience, this specialization is equally appropriate for those from higher education or corporate/industry backgrounds who want to explore the role of educational and communications technologies in enabling effective teaching and meaningful learning. This specialization also provides a solid foundation for those wishing to pursue a doctoral program in Educational Technology.

Required Foundations Courses

B: Teaching and Learning (3 credit hours)

- EDCI 862 - Instructional Systems Design **Credits:** 3

C: Diversity (3 credit hours)

- EDCI 864 - Social/Cultural Issues in Educational Technology **Credits:** 3

D: Educational Technology (3 credit hours)

- EDCI 718 - Introduction to Educational Technology **Credits:** 3

Area of Specialization Courses

Required (12 credit hours)

- EDCI 863 - Online Teaching and Learning **Credits:** 3
- EDCI 866 - Educational Technology Change Management **Credits:** 3
- EDCI 887 - Educational Technology Proseminar I **Credits:** 3
- EDCI 888 - Educational Technology Proseminar II **Credits:** 3

Electives (select at least 3 credit hours from the following)

- EDCI 826 - Contemporary Technologies in Mathematics Education **Credits:** 3
- Any other Educational Technology centered elective approved by the advisor **Credits:** 3

G7. English as a second language (ESL endorsement) (15 credit hours)

(For students seeking the ESL endorsement, any substituted course must closely address the content of the course it is replacing.)

- EDCI 720 - ESL/Dual Language Methods **Credits:** 3
- EDCI 731 - ESL/Dual Language Linguistics **Credits:** 3
- EDCI 740 - Culture and Language in Classroom Practice **Credits:** 3
- EDCI 742 - ESL/Dual Language Assessment **Credits:** 3
- EDCI 745 - ESL/Dual Language Elementary Practicum **Credits:** 3
  OR
- EDCI 746 - ESL/Dual Language Secondary Practicum **Credits:** 3

G8. Learning Skills/School improvement (15 credit hours)

This area is appropriate for educators who want to develop knowledge and skills to work with others in the school or district on improvement in curriculum and instruction. Course selection should be done with the guidance of an advisor.

- EDCI 991 - Internship in Curriculum and Instruction **Credits:** 1-18
  OR other courses approved by the advisor.

G9. Mathematics Education (15 credit hours)

This area of specialization is designed for teachers who wish to further their understandings of mathematics curriculum, content, and pedagogy. Courses are designed to provide a contemporary perspective on teaching mathematics in K-12 schools.

- EDCI 729 - Middle-Level Mathematics for Teachers **Credits:** 3
- EDCI 821 - Advanced Methods in the Teaching of K-12 Mathematics **Credits:** 3
- EDCI 823 - History of Mathematics Education **Credits:** 3
- EDCI 825 - Research in Mathematics Teaching and Learning **Credits:** 3
- EDCI 826 - Contemporary Technologies in Mathematics Education **Credits:** 3
- EDCI 827 - Theoretical Models of Mathematics Teaching and Learning **Credits:** 3
- EDCI 828 - Assessment in Mathematics Education **Credits:** 3
- EDCI 886 - Seminar in Curriculum and Instruction **Credits:** 1-18

- Other courses may be approved by the advisor. These hours may include up to six hours from the KSU Math Department (e.g., MATH 591, MATH 791).

G10. Civic Education (15 credit hours)

This area of specialization is designed for teachers who wish to further their understandings of civic education curriculum, content, and pedagogy. Courses are designed to provide a contemporary perspective on teaching civic education in K-12 schools.

- EDCI 781 - Teaching the Theoretical Foundations of Constitutional Government **Credits:** 1
- EDCI 782 - Teaching the Historical Origins of Constitutional Government **Credits:** 1
- EDCI 783 - Teaching the Development of Constitutional Principles **Credits:** 1
- EDCI 784 - Teaching the Institutions of Government **Credits:** 1
- EDCI 785 - Teaching the Bill of Rights **Credits:** 1
- EDCI 787 - Teaching Citizenship **Credits:** 1
- EDCI 788 - Teaching the Constitutional Principles of America's Founders. **Credits:** 3
- EDCI 789 - Methods and Materials in Civic Education **Credits:** 3
- EDCI 790 - Engaged Citizens: Public Policy Issues and Processes **Credits:** 3
  Or other courses approved by the adviser; these hours may include up to six hours in political science, history, or law.

G.11 World Modern Languages (15 hours)

This area of specialization is designed for teachers who wish to further their understandings of world modern language education curriculum, content, and pedagogy. Courses are designed to provide a contemporary perspective on teaching world modern language education in K-12 schools.

Recommended Courses:

- EDCI 770 - Advanced Approaches in World Lang Ed **Credits:** 3
- EDCI 771 - Assessment in World Language Education **Credits:** 3
- EDCI 772 - Current Trends and Research in World Language Education **Credits:** 3
- EDCI 773 - Contemporary Technology in World Language Education **Credits:** 3
- EDCI 871 - World Language Education Practicum **Credits:** 3

Graduate Certificate

Educational Technology Graduate Certificate

Contact: Deepak Prem Subramony
E-mail: deepak7@ksu.edu

This 12-credit graduate certificate focuses on the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources (following guidelines prescribed by the Association for Educational Communications and Technology).

Students seeking this certificate must submit a Graduate School application indicating the field of study will be the Educational Technology Graduate Certificate program. This is a separate application from the one for admission into a master's degree. In addition to the Graduate School application, applicants need to submit the following:

- An official transcript for the bachelor's degree and for any subsequent undergraduate and graduate coursework.
- A statement of objectives explaining the goals and purposes for seeking this graduate certificate.
- Three letters of recommendation.

Prerequisite Course

- EDCI 718 - Introduction to Educational Technology **Credits:** 3
- OR similar graduate level introductory educational technology course

Required Courses (12 hrs. total)

- EDCI 862 - Instructional Systems Design **Credits:** 3
- EDCI 863 - Online Teaching and Learning **Credits:** 3
- EDCI 864 - Social/Cultural Issues in Educational Technology **Credits:** 3
- EDCI 866 - Educational Technology Change Management **Credits:** 3

Teaching and Learning Graduate Certificate

Contact: Kay Ann Taylor
E-mail: ktaylor@ksu.edu
Homepage: https://coe.k-state.edu/academics/certificates/teaching-learning.html

The Graduate Certificate in Teaching and Learning is offered through the Curriculum and Instruction graduate program. The certificate provides two tracks of graduate-level professional course work in education. The licensure track leads to teacher licensure to address critical statewide and national shortages in the following subjects:

- Agriculture (Grades 6-12)
- Art (Grades PK-12)
- Biology (Grades 6-12)
- Business (Grades 6-12)
- Chemistry (Grades 6-12)
- Earth and Space Sciences (Grades 6-12)
- English (Grades 6-12)
- Family and Consumer Sciences (Grades 6-12)
- Journalism (Grades 6-12)
- Mathematics (Grades 6-12)
- Modern Language (Grades PK-12)
- Music (Grades PK-12)
- Physical Education and Health (PK-12)
- Physics (Grades 6-12)
- Speech and Theatre (Grades 6-12)
- Social Studies (Grades 6-12)

The licensure track of the certificate program was designed to attract qualified candidates to the profession of teaching. Candidates must have a baccalaureate degree in the subject field where licensure is sought.

The non-licensure track is offered to address global shortages in qualified teachers in ESL/EFL education (Grades PK-16). Candidates must have a baccalaureate degree in education. The non-licensure track is intended for international students through contractual relationships with the College of Education regarding international ESL programs.

This program is a 19-20 credit hour curriculum. The licensure track consists of three carefully articulated "blocks" of course work. While it is not required that the courses within either Block I or Block II be completed concurrently, it is a general expectation that the course work listed for Block I be completed before Block II. All courses in Blocks I and II must, however, be completed before enrolling in the Block III Internship semester. Questions concerning exceptions (or substitutions) within the licensure track should be directed to the Licensure Officer, Di Murphy, dim@k-state.edu.

The non-licensure track consists of two "blocks" of course work. The order in which Block I courses are completed may vary. However, all Block I courses must be completed prior to enrolling in the Block II Internship semester.

Students seeking this certificate must submit a Graduate School application indicating the field of study will be the Teaching and Learning graduate certificate program. This is a separate application from the one for admission into a master's degree. In addition to the Graduate School application, applicants need to submit the following:

- An official transcript for the bachelor's degree and for any subsequent undergraduate and graduate coursework.
- A statement of objectives explaining the goals and purposes for seeking this graduate certificate.
- Three letters of recommendation.

English language proficiency

If your native language is not English, the Graduate School requires each applicant to provide a satisfactory test score for TOEFL, IELTS or PTE (see chart below).

An applicant who has received a degree in the last two years from a United States college or university is exempt from this requirement.

English Proficiency Test Score Requirements

Test	Minimum Score
IBT TOEFL (internet based)	79
TOEFL (PBT)	550
IELTS	6.5
Pearson Test of English (PTE)	58

The TOEFL is offered several times a year throughout the world by the Educational Testing Service. Accepted TOEFL test scores are from the TOEFL IBT (Internet Based Test) and TOEFL PBT (Paper Based Test). International applicants are advised to take the TOEFL as early as possible to avoid delays in the processing of their applications. Please request your scores to be sent to Kansas State University (K-State TOEFL school code 6334). All scores are valid for two years from the initial test date.

Admission Criteria

Acceptance of students leading to a Graduate Certificate in Teaching and Learning is contingent on being eligible for admission to the Graduate School and meeting the following specific criteria:

Licensure Track:

- Represent a teaching field identified as a critical area of need: Agriculture (6-12), Art (PK-12), Biology (6-12), Business (6-12), Chemistry (6-12), Earth & Space Science (6-12), English (6-12), Family & Consumer Sciences (6-12), Journalism (6-12), Mathematics (6-12), Music (PK-12), Physics (6-12), and Speech and Theatre (6-12)
- Meet all undergraduate content requirements (or equivalent) for subject in which licensure is sought (most subject areas require additional content hours);
- Possess a baccalaureate (or equivalent) in the subject area in which licensure is sought;
- Receive the support, through personal interview, of at least one member of the faculty sponsoring the Graduate Certificate;
- Have documented experiences working with youth.

Prior to application, you must first meet with Licensing Officer Di Murphy to determine your eligibility for the certificate and your faculty content advisor.

Official application to the certificate occurs when you begin the completion of any required undergraduate coursework, and have met with Di Murphy and your faculty content advisor.

Non-Licensure Track:

- Represent the field of ESL/EFL education (Grades PK-16).
- Possess a baccalaureate (or equivalent) in education.
- Receive the support, through personal interview, of at least one member of the faculty sponsoring the Graduate Certificate.

Prior to application, you must first meet with your faculty content advisor.

Official application to the certificate occurs when you begin the completion of required coursework and have met with your faculty content advisor.

Application

Students seeking this certificate must submit a Graduate School application indicating the field of study will be the Teaching and Learning graduate certificate program. This is a separate application from the one for admission into a master's degree. In addition to the Graduate School application, applicants need to submit the following:

- An official transcript for the bachelor's degree and for any subsequent undergraduate and graduate coursework.
- A statement of objectives explaining the goals and purposes for seeking this graduate certificate.
- Three letters of recommendation.

Students seeking this certificate and who need financial aid should apply to the Master's in Curriculum and Instruction (M.S.) program. If your program is Modern Language, Music, or Agriculture, apply for the M.S. in your respective area

Curriculum

Licensure Track:

Block I (9 credit hours)

- EDCI 702 - Curriculum, Instruction, and Assessment **Credits:** 3
  OR
- MUSIC 810 - Curriculum Development and Learning Assessment **Credits:** 3
- EDCI 715 - Literacy and Diverse Learners in the Content Areas **Credits:** 3
- EDSP 711 - Characteristics of Exceptionalities **Credits:** 3

Block II (6-7 credit hours)

Foundations, one of the following:

- EDCI 812 - History of Education **Credits:** 3
  OR
- EDCI 813 - Comparative Philosophies of Education **Credits:** 3
  OR
- MUSIC 807 - History and Philosophy of Music Education **Credits:** 3

Content Area Teaching Methods, one of the following:

- EDCI 703 - MAT Secondary Math Methods **Credits:** 3
  Or
- EDCI 704 - Science Methods and Practicum for Teaching and Learning **Credits:** 3
  Or
- EDCI 705 - MAT Social Studies Methods **Credits:** 3
  Or
- EDCI 706 - MAT Secondary English/Language Arts **Credits:** 3
  Or
- EDCI 707 - FACS Methods and Practicum for Teaching and Learning **Credits:** 3
  Or
- EDCI 708 - Business Methods and Practicum for Teaching and Learning **Credits:** 3
  Or
- EDCI 709 - Agricultural Education Methods and Practicum for Teaching and Learning **Credits:** 3
  Or
- EDCI 711 - Art Methods and Practicum for Teaching and Learning **Credits:** 3
  Or
- EDCI 712 - MAT Foreign Language Methods **Credits:** 3
  Or
- EDCI 719 - Physical Education and Health Methods and Practicum for Teaching and Learning **Credits:** 3
  Or
- EDCI 724 - Fundamentals of Teaching Music **Credits:** 1
  and
- EDCI 725 - Music Methods for Elementary Schools **Credits:** 1
  and
- EDCI 726 - Music Program in Middle and Secondary Schools **Credits:** 1
  and
- EDCI 727 - Advanced Methods in Music Education **Credits:** 1

Block III (4 credit hours)

- EDCI 801 - Internship in K-12 Schools **Credits:** 4

Non-Licensure Track:

The non-licensure track consists of two "blocks" of course work. The order in which Block I courses are completed may vary. However, all Block I courses must be completed prior to enrolling in the Block II Internship semester.

Block I (15 credit hours)

- EDCI 718 - Introduction to Educational Technology **Credits:** 3
- EDCI 845 - ELD/Dual Language Methods **Credits:** 3
- EDCI 846 - ELD/Dual Language Culture and Language in Classroom Practice **Credits:** 3
- EDCI 847 - ELD/Dual Language Assessment **Credits:** 3
- EDCI 910 - Multicultural Curriculum Programming **Credits:** 3

Block II (4 credit hours)

- EDCI 991 - Internship in Curriculum and Instruction **Credits:** 1-18

Technology Requirement

Upon admission to the Graduate Certificate in Teaching and Learning, students must purchase an iPad for the duration of their study.

Dean of Education

Non Degree

Endorsement for certification or licensure requiring work beyond the bachelor's degree

The College of Education will recommend for licensure individuals satisfying program requirements for the following: building leader (administrator), district leader (administrator), school counselor, reading specialist, early childhood unified education, and English as a second language (ESL). Licensure recommendations are initiated through the Office of Licensure, 13 Bluemont Hall.

Administrative leadership endorsements

A graduate degree is required for any professional administrative leadership license granted by the state of Kansas. The program required by the College of Education must be completed. A minimum of eight hours from courses required for the administrative leadership license must be earned at K-State before the College of Education may recommend administrative leadership licensure. The educational leadership faculty should be contacted regarding advisement for specific administrative leadership licensure.

There are two Kansas administrative leadership endorsements: the building leadership endorsement for the principalship and the district leadership endorsement for the superintendency, which also covers other positions such as special education director (see special education, below).

Building administrative leadership endorsement

This endorsement is for licensure for the principalship. It includes 36 hours of course work. Many courses required for this endorsement are the same as those required in the M.S. in educational leadership. Students who already have applicable course work from another graduate degree do not need a second degree in order to qualify for the license. Endorsement requirements are listed here.

Initial Building Leadership License* (36 hours)

- EDLEA 801 - Ethical Dimensions of Educational Leadership **Credits:** 3
- EDLEA 810 - Historical and Philosophical Analysis of Leadership in Education **Credits:** 3
- EDLEA 836 - School-Community Relations **Credits:** 3
- EDLEA 886 - Leadership for Special Populations **Credits:** (3)
- EDLEA 886 - Leadership in Assessment Issues **Credits:** (3)
- EDLEA 855 - Administrative Leadership in Curriculum **Credits:** 3
- EDLEA 885 - Technology Leadership for Administrators **Credits:** 3
- EDLEA 819 - Introduction to Education Finance **Credits:** 3
- EDLEA 865 - Administrative Leadership in Staff Development **Credits:** 3
- EDLEA 831 - Educational Law **Credits:** 3
- EDLEA 835 - The Principalship **Credits:** 2
- EDLEA 889 - Practicum in Educational Leadership **Credits:** 1-3
- EDLEA 910 - Educational Human Resource Administration **Credits:** 3

Professional Building Leadership License***

* All initial building leadership license candidates must complete the School Leaders Licensure Assessment through ETS (www.ets.org) and meet a minimum score of 165.

** Students are required to document a minimum of 150 clock hours guided field experience through the formal practicum and other coursework (i.e. additional practicum requirements are imbedded in many courses in the licensure sequence to assist in reaching the 150 clock hour requirement). A written log of practicum activities must be included with the student's final portfolio assessment. Further, see policy on acceptable internship settings.

*** After receiving an initial license, students must complete a one-year supervised internship in an administrative position to earn the professional license.

District administrative leadership endorsement

This endorsement is for licensure for the superintendency. It includes 60 total hours of graduate course work. Much of this same work is also required for building-level leadership licensure. Accordingly, students who already hold a master's degree in educational leadership may apply those degree hours toward this license. The course work for this endorsement is listed below:

Initial District Leadership License (60 total required hours)

Prerequisite to Pursuit of District Leadership License (36* hours)

- Candidates for the initial district leadership license must have a masters degree from an accredited university.
- Candidates must hold a current Kansas building administrative leadership license OR have satisfied the requirements for the Initial Building Leadership License.
- Candidates must have completed the School Superintendent Assessment (through ETS www.ets.org) with a score of 157 or above.

District Leadership (24 hours)

- EDLEA 827 - Political and Community Leadership in Education **Credits:** 3
- EDLEA 830 - Introduction to Educational Facility Planning **Credits:** 3
- EDLEA 834 - Strategies for Educational Change **Credits:** 3
- EDLEA 845 - Leadership for Diverse Populations **Credits:** 3
- EDLEA 801 - Ethical Dimensions of Educational Leadership **Credits:** 3
- EDLEA 901 - The School District Leader **Credits:** 3
- EDLEA 950 - Advanced School Business Management **Credits:** 3
- EDLEA 986 - Advanced Seminars in Educational Leadership **Credits:** 1-18
- EDLEA 902 - District Leader Internship **Credits:** 1-3

Professional District Leadership License****

* Candidates holding degrees from other universities may be required to take additional coursework to total 60 hours beyond the bachelor's degree.

** If the candidate obtained building licensure through Kansas State University and his/her transcript shows completion of EDADL 886 Ethical Dimensions of Leadership during the building license program, this requirement has been satisfied. Otherwise, the requirement applies.

*** Students are required to document a minimum 150 clock hours guided field experience through the formal intership and other coursework (i.e. additional internship requirements are imbedded in many courses in the licensure sequence to assist in reaching the 150 clock hour requirement). Further, see policy on acceptable internship settings.

**** After receiving an initial license, students must complete a one-year supervised internship in an administrative leadership position to earn the professional license.

School counseling endorsements

(The official title of this degree approved by the Board of Regents is M.S. in Counseling and Student Development.)

The Master of Science Degree in School Counseling is accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP). Students who complete the 48-hour program are eligible for school counseling licensure. There are two options for licensure as a school counselor in the State of Kansas. One option is for individuals who have a professional teaching license; the second option, the parallel pathway, is for individuals who do not have a professional teaching license. The parallel pathway option requires additional field experiences over two semesters in schools.

Core requirements (27 hours)

- EDCEP 810 - Mental Health in Schools **Credits:** 3
- EDCEP 822 - Counseling Adolescents **Credits:** 3

- EDCEP 823 - Counseling Theory **Credits:** 3
- EDCEP 852 - Career Development for School Counselors **Credits:** 3
- EDCEP 856 - Counseling Children **Credits:** 3
- EDCEP 857 - Counseling Program Management **Credits:** 3
- EDCEP 871 - Leadership, Advocacy, and Consultation for Counselors **Credits:** 3
- EDCEP 824 - Development Across the Lifespan for School Counselors **Credits:** 3
- EDCEP 951 - Multicultural Counseling **Credits:** 3

Research and appraisal requirements (9 hours)

- EDCEP 715 - Principles of Assessment **Credits:** 3
- EDCEP 815 - Using Tests in Counseling **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3

Clinical Requirements (12 hours)

- EDCEP 858 - Group Processes **Credits:** 3
- EDCEP 877 - Practicum in Counseling **Credits:** 3
- EDCEP 887 - Counseling Internship **Credits:** 1-3
  (6 hours of EDCEP 887 required)

Reading Specialist Endorsement (18 hours)

Special licensure requirements exist for K-12 school teachers of special reading classes in Kansas. In addition to degree certification and teaching experience, a planned sequence of graduate reading courses are required for licensure endorsement. Students seeking this endorsement must hold a valid Kansas Professional teaching license.

Required courses (15 hours)

- EDCI 816 - Approaches to Reading Instruction **Credits:** 3
- EDCI 818 - Theoretical Models of Reading **Credits:** 3
- EDCI 840 - Literacy Assessment **Credits:** 3
- EDCI 841 - Supporting Struggling Readers **Credits:** 3
- EDCI 930 - Leadership in Literacy **Credits:** 3

Required Practicum (3 hours)

- EDCI 945 - Clinical Practicum in Reading **Credits:** 3

Additional Requirements

After completing the required courses and practicum, the applicant must fulfill these additional requirements to obtain a conditional reading specialist license:

1. Hold a valid professional teaching license.
2. Present a score of 560 or above on the Praxis II exam for the Reading Specialist (test number 0300).

3. Hold a masters degree. (It is permitted but not necessary to include the required courses as part of the masters degree.)

Special education endorsements

Endorsements can be in one or more of the following areas: adaptive or functional special education. The endorsement programs for adaptive or functional special education may lead to a master's degree. Specific requirements for these endorsement areas are included in the description for the M.S. in special education. At least half of the credits required for special education endorsement must be earned at K-State, including at least one major course and one practicum, before the College of Education may recommend for special education endorsement.

The special education endorsement can be granted to a person who holds a valid Kansas teaching license for the level (i.e., elementary, or secondary) of special education preparation. Contact the department of special education, counseling and student affairs for information about provisional endorsement.

Teaching endorsement for adaptive special education elementary and/or secondary

Prerequisites

Eligible for licensure in elementary or secondary education, and one of the following courses:

Required courses for elementary and secondary (39 hours)

- EDCEP 715 - Principles of Assessment **Credits:** 3
- EDSP 742 - Interventions: Emotional and Behavioral Disorders **Credits:** 3
- EDSP 743 - Interventions: Academic Disabilities **Credits:** 3
- EDSP 745 - The Consulting Process in Special Education **Credits:** 3
- EDSP 777 - Social Emotional Learning and Behavior Management Strategies **Credits:** 3
- EDSP 778 - Technology for Special Education **Credits:** 3
- EDSP 785 - Practicum I **Credits:** 3
- EDSP 830 - Assessment in Special Education **Credits:** 3
- EDSP 848 - Transitions in Special Education **Credits:** 3

Required course for Secondary

- EDSP 844 - Special Education in Secondary Schools **Credits:** 2

Teaching endorsement for functional special education elementary and/or secondary

Prerequisites

Eligible for certification in elementary or secondary education, and one of the following courses:

Required courses (48 hours)

- EDCEP 715 - Principles of Assessment **Credits:** 3
- EDSP 742 - Interventions: Emotional and Behavioral Disorders **Credits:** 3
- EDSP 743 - Interventions: Academic Disabilities **Credits:** 3
- EDSP 745 - The Consulting Process in Special Education **Credits:** 3
- EDSP 777 - Social Emotional Learning and Behavior Management Strategies **Credits:** 3
- EDSP 778 - Technology for Special Education **Credits:** 3
- EDSP 785 - Practicum I **Credits:** 3
- EDSP 830 - Assessment in Special Education **Credits:** 3
- EDSP 841 - Interventions: Low Incidence Special Education **Credits:** 3
- EDSP 848 - Transitions in Special Education **Credits:** 3
- EDSP 849 - Interventions: Autism Spectrum Disorders **Credits:** 3
- EDSP 885 - Practicum in Education of Individuals with Low Incidence Special Education Needs **Credits:** 1-6

English as second language (ESL) endorsement

Completion of the following five courses meets requirements for ESL endorsement through Kansas State University. Students enroll in one course per semester; each is offered for three hours of graduate or undergraduate credit. The courses in the endorsement are:

- EDCI 720 - ESL/Dual Language Methods **Credits:** 3
- EDCI 731 - ESL/Dual Language Linguistics **Credits:** 3
- EDCI 740 - Culture and Language in Classroom Practice **Credits:** 3
- EDCI 742 - ESL/Dual Language Assessment **Credits:** 3
- EDCI 745 - ESL/Dual Language Elementary Practicum **Credits:** 3
  OR
- EDCI 746 - ESL/Dual Language Secondary Practicum **Credits:** 3
  Endorsement in many states, including Kansas, also requires a passing score on a Praxis exam.

Educational Leadership

363 Bluemont Hall
785-532-5535
Fax: 532-7304
edlea@k-state.edu
http://coe.k-state.edu/edlea/

Department Chair:

Jerry D. Johnson

Directors of Graduate Studies:

Royce Ann Collins (Adult Learning and Leadership, MS/Ph.D./EdD)
Jerry D. Johnson (Educational Leadership, MS & EdD)

Graduate Faculty:

*Donna Augustine-Shaw, Ed.D., Wichita State University
*Elisabeth Barnett, Ph.D., University of Illinois - Urbana-Champaign
Paul Berg, Ph.D., Kansas State University
*Kakali Bhattacharya, Ph.D., University of Georgia
*George Boggs, Ph.D., University of Texas
*Royce Ann Collins, Ph.D., Kansas State University
Mary Devin, Ph.D., Kansas State University
Richard Doll, Ph.D., Kansas State University
Martha Ellis, Ph.D., University of North Texas
Judith Favor, Ph.D., University of Kansas
Larry Galizio, Ph.D., Portland State University School of Urban and Public Affairs
Linda Garcia, Ph.D., University of Texas - Austin
Steven Gonzales, Ph.D., University of Texas - Austin
*Trisha Gott, Ed.D., Kansas State University
*Sarah Jane Fishback, Ph.D., Kansas State University
*Robert Hachiya, Ed.D., University of Kansas
Hobart Harmon, Ph.D., Pennsylvania State University
*Jerry D. Johnson, Ed.D., Ohio University
Robert Johnstone, Ph.D., University of Oregon
*Haijun Kang, Ph.D., Pennsylvania State University
*Brandon Kliewer, Ph.D., University of Georgia
*Jia Liang, Ph.D., University of Georgia
*Margaretta Mathis, Ph.D., University of Texas
Christine McPhail, Ed.D., University of Southern California
Irving McPhail, Ed.D., University of Pennsylvania
Cynthia Miles, Ph.D., University of Texas
*Kerry Priest, Ph.D., Virginia Polytechnic Institute
*Sean Alexander "Alex" Red Corn, Ed.D., Kansas State University
*John E. Roueche, Ed.D., Lenoir-Ryne University
Gerardo de los Santos, Ph.D University of Texas - Austin
Cynthia Shuman, Ph.D., Kansas State University
*David C. Thompson, Ed.D., Oklahoma State University
*Mary Tolar, Ed.D., Kansas State University
*Leonard Valverde, Ph.D., Claremont University
Richard Voorhees, Ph.D., Arizona State University
Evelyn Waiwaiole, Ed.D., University of Texas
*Andrew J. Wefald, Ph.D., Kansas State Unversity
*Susan Yelich-Biniecki, Ph.D., University of Wisconsin - Milwaukee
*Jeffrey T. Zacharakis, Ed.D., Northern Illinois University

*Denotes graduate faculty who are certified to serve as the major professor for doctoral students.

Graduate Faculty Associates:

Kellen Adams, Ed.D., Kansas State University
Katie Allen, Ed.D., Kansas State University
Nozella Brown, Ph.D., Kansas State University
Michael Burke, Ph.D., University of Texas - Austin
Terry Calaway, Ed.D., University of Texas - Austin
Donald Cameron, Ed.D., Nova South Eastern University
David Culkin, Ph.D., Kansas State University

Harvey Dorrah, Ph.D., Bowling Green University
Allen Goben, Ed.D., University of Texas - Austin
Debra Gustafson, Ed.D., Kansas State University
Robert Exley, Ph.D., University of Texas - Austin
Ben Ferrell, Ph.D. University of Texas - Austin
Donna Jovanovich-Monse, Ph.D., Virginia Commonwealth University
Cathy Kemper-Pelle, Ph.D., University of Texas - Austin
Jason Kovac, Ph.D., University of Texas
William Lasher, Ph.D., University of Michigan
William Law, Ph.D., Florida State University
Bruce Leslie, Ph.D., University of Texas - Austin
Terri Long, Ed.D., University of Southern California
JaNice Marshall, Ed.D., University of Texas - Austin
Keondria McClish, Ph.D., Kansas State University
Bill McCollum, Ed.D., University of Sarasota
Jacque Messinger, Ed.D., National American University
Miles Nevin, Ed.D., California State University - Long Beach
Martha Parham, Ed.D., California State University - Long Beach
Greg Peterson, Ed.D., University of Texas - Austin
Cassandra Rincones, Ph. D., Texas A&M Univesity
Sandra Robinson, Ph.D., Kent State University
Kathie Sigler, Ed.D. Nova University, Ft. Lauderdale Florida
Jennifer Spielvogel, Ph.D., University of Michigan
Cynthia Tanner, Ed.D., National American University
Jacqueline Vietti, Ph.D., Kansas State University
Evelyn Waiwaiole, Ph.D., University of Texas

Adjunct Graduate Faculty:

Carolyn Carlson, Ph.D., University of Kansas
Cari D. Lott, Ed.D., Kansas State University
Michael Rettig, Ph.D., University of Kansas

Emeritus Graduate Faculty:

Gerald Bailey
David Byrne
Robert Meisner
Teresa Miller
Charles Oaklief
Cheryl J. Polson
Charles Rankin
Tweed Ross
Trudy Salsberry
Robert Shoop
W. Franklin Spikes
G. Kent Stewart
Alfred Wilson

Admission

For admission requirements, please see the Education catalog page.

Program description

The Department of Educational Leadership offers several degrees within two programs: educational leadership, and adult learning and leadership. Courses leading to the Master's degree and Ed.D. degree in Educational Leadership may also lead to licensure as a building administrator (principal) or a district administrator (superintendent). Other leadership positions in educational organizations are also enhanced by masters and/or doctoral degrees in educational leadership.

Three degrees are offered within the adult learning and leadership program, including: (1) the Master of Science in Adult Learning and Leadership, designed to prepare practitioners for careers in a variety of adult education and leadership settings; (2) the Ph.D. in Adult Learning and Leadership, designed to prepare scholars for careers in college and university settings; and (3) the Ed.D. in Adult Learning and Leadership, designed to provide advanced education and experience by preparing people for work in business, industry, training, government, health services, community agencies, and careers in two- and four-year colleges and universities. Courses focus on issues related to planning, developing, delivering, or facilitating instruction for adult learners. Courses in the adult learning and leadership education program also support the master's degree, Ph.D. and Ed.D. in Curriculum and Instruction. The graduate programs are compatible with a variety of delivery settings where the following specializations and support areas are required or desired: adult and continuing education, extension education, administration and leadership of programs, human resource development, training, community education and development, and institutions, agencies, and organizations that deal primarily with adult needs and education.

Doctor of Education

Adult Learning and Leadership (Ed.D.)

The Doctor of Education degree in Adult Learning and Leadership offered through the Educational Leadership graduate program requires a minimum of 90 post-baccalaureate, graduate credit hours. With the approval of the supervisory committee, up to 30 graduate hours earned as part of the Master's degree may be used to satisfy the degree requirements.

A. Required Academic Core Course (15 credit hours)

(Students without a master's degree in adult education must take these courses in addition to the 90 credit hours in the doctoral degree, as determined
by the supervisory committee.)

- EDACE 780 - Introduction to Adult Learning and Leadership **Credits:** 3
- EDACE 790 - Characteristics of the Adult Learner **Credits:** 3
- EDACE 818 - Critical and Social Issues in Adult Learning **Credits:** 3
- EDACE 830 - Program Planning in Adult Learning and Leadership **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3

  or equivalent research methods course

B. Required Doctoral Courses (minimum of 12 hours from the following list or equivalent)

- EDACE 916 - Foundations of Adult Learning and Leadership **Credits:** 3
- EDACE 817 - Reflective Practice in Social Justice Education **Credits:** 3

- EDACE 886 - Seminars in Adult Learning and Leadership **Credits:** 1-18
- EDCI 910 - Multicultural Curriculum Programming **Credits:** 3
- EDACE 937 - Organization and Administration of Adult Learning and Leadership **Credits:** 3
- EDACE 986 - Advanced Seminars in Adult Learning and Leadership **Credits:** 1-18

C. Required Research courses (15 credit hours minimum)

- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- EDLEA 938 - Advanced Data Analysis in Qualitative Methods **Credits:** 3
- EDLEA 948 - Data Representation and Writing in Qualitative Research **Credits:** 3
- EDACE 980 - The Dissertation Process **Credits:** 3

  or quantitative/qualitative research courses taken from other disciplines at K-State and approved by the supervisory committee.

D. Elective Courses (Select electives appropriate to the area of emphasis that satisfy the minimum 90 credit hours for the program.)

EDACE prefix, additional quantitative/qualitative research courses or other disciplines at K-State and approved by the supervisory committee.

E. Experiential and Individualized Courses (0-6 credit hours)

- EDACE 733 - Practicum in Adult Learning and Leadership **Credits:** 1-6
- EDACE 775 - Readings in Adult Learning and Leadership **Credits:** 1-3
- EDACE 795 - Problems in Adult Learning and Leadership **Credits:** 1-18

F. Clinical Experience (6 credit hours)

- EDACE 991 - Internship in Adult Learning and Leadership **Credits:** 1-6
  or equivalent

G. Doctoral research (minimum of 12 credit hours)

- EDACE 999 - Doctoral Research **Credits:** 1-18

Preliminary Examination

The requirement for the preliminary examination is satisfactory completion of all segments of a monitored written examination of at least 12 hours over all areas of the program of study.

Ed.D. in Community College Leadership

Curriculum

Total includes 30 semester credits transferred from master's degree. New credits earned = 60.

Year 1: Fall

SCH = Semester Credit Hours

Course #	Course Name	SCH
EDACE 851	The Historical and Contemporary Community college	1
EDACE 852	Field Study: Historical and Contemporary Community College	1
EDACE 852	Field Study The Historical & Contemporary Community College (var 1-2 credits; repeatable)	1
EDACE 853	Access, Equity, and Success	2
EDACE 854	Field Study: Access, Equity, and Success	1

Year 1: Spring

Course #	Course Name	SCH
EDACE 882	Introduction to Educational Research	2
EDACE 883	Field Study: Educatinal Research	1
EDACE 861	Fostering Desired Culture: Fundamentals and Strategies for Organizational Development	2
EDACE 862	Field Study: Organizational Development	1

Year 1: Summer

Course #	Course Name	SCH
EDACE 857	Effective Leadership	4
EDACE 858	Field Study: Effective Leadership	1
EDACE 859	Effective Leadership Institute	1
EDACE 991	Internship	3

Year 2: Fall

Course #	Course Name	SCH
EDACE 863	Creating a Culture of Evidence and Inquiry: From Enrollment to Outcomes	2
EDACE 864	Field Study: Enrollment to Outcomes	1
EDACE 855	Aligning Vision, Planning, and Resources	2

Course #	Course Name	SCH
EDACE 856	Field Study: Planning and Resources	1

Year 2: Spring

Course #	**Course Name**	**SCH**
EDACE 920	Educational Value Choices: Access, Equity, and Success	2
EDACE 921	Field Study Access, Equity, and Success	1
EDACE 922	Policy Formation for Public Process	2
EDACE 923	Field Study: Policy and Public Process	1
EDACE 924	Effective Governance and Leadership	2
EDACE 925	Field Study: Governance and Leadership	1

Year 2: Summer

Course #	Course Name	SCH
EDACE 926	Leadership for Transformation	2
EDACE 927	Field Study: Transformational Leadership	1
EDACE 928	Designing a Comprehensive Plan for Success	2
EDACE 929	Field Study: Plan for Success	1

Year 3: Fall

Course #	Course Name	SCH
EDACE 970	Dissertation Development: Starting the Journey	4
EDACE 971	Field Study: Dissertation Development I	1
EDACE 972	Field Study: Dissertation Development II	1

Year 3: Spring

Course #	Course Name	SCH
EDACE 999	Dissertation Research	3
EDACE 991	Internship	3

Year 3: Summer

Course #	Course Name	SCH
EDACE 930	Implementing Leadership Competencies	2
EDACE 931	Field Study (Institute) Leadership Competencies	1
EDACE 999	Dissertation Research	3

Total Number of Semester Credit Hours (including master's transfer) = 90

Year 1: Fall

- EDACE 851 - The Historical and Contemporary Community College **Credits:** 1
- EDACE 852 - Field Study: The Historical and Contemporary Community College **Credits:** 1
  EDACE 852 - Field Study: the Historical and Contemporary Community College **Credits: 1-2** (variable; repeatable)
- EDACE 853 - Access, Equity, and Success **Credits:** 2
- EDACE 854 - Field Study: Access, Equity, and Success **Credits:**

Year 1: Spring

- EDACE 861 - Fostering Desired Culture: Fundamentals & Strategies for Org Development **Credits:** 2
- EDACE 862 - Field Study: Organizational Development **Credits:** 1
- EDACE 882 - Introduction to Educational Research **Credits:** 2
- EDACE 883 - Field Study: Educational Research **Credits:** 1

Year 1: Summer

- EDACE 857 - Effective Leadership and Theory **Credits:** 4
- EDACE 858 - Field Study Effective Leadership **Credits:** 1
- EDACE 859 - Effective Leadership Institute **Credits:** 1
- EDACE 991 - Internship in Adult Learning and Leadership **Credits:** 1-6

Year 2: Fall

- EDACE 855 - Aligning Vision, Planning, and Resources **Credits:** 2
- EDACE 856 - Field Study: Vision, Planning and Resources **Credits:** 1
- EDACE 863 - Creating a Culture of Evidence and Inquiry **Credits:** 2
- EDACE 864 - Field Study Enrollment to Outcomes **Credits:** 1

Year 2: Spring

- EDACE 920 - Educational Value Choices **Credits:** 2
- EDACE 921 - Field Study Ed Value Choices: Access, Equity, and Success **Credits:** 1
- EDACE 922 - Policy Formation and Public Process **Credits:** 2
- EDACE 923 - Field Study Policy and Public Process **Credits:** 1
- EDACE 924 - Effective Governance and Leadership **Credits:** 2
- EDACE 925 - Field Study Governance and Leadership **Credits:** 1

Year 2: Summer

- EDACE 926 - Leadership for Transformation **Credits:** 2
- EDACE 927 - Field Study Leadership for Transformation **Credits:** 1
- EDACE 928 - Designing a Comprehensive Plan for Success **Credits:** 2
- EDACE 929 - Field Study Plan for Success **Credits:** 1

Year 3: Fall

- EDACE 970 - Dissertation Development **Credits:** 4
- EDACE 971 - Field Study Dissertation Development I **Credits:** 1
- EDACE 972 - Field Study: Dissertation Development II **Credits:** 1

Year 3: Spring

- EDACE 991 - Internship in Adult Learning and Leadership **Credits:** 1-6
- EDACE 999 - Doctoral Research **Credits:** 1-18

Year 3: Summer

- EDACE 930 - Implementing Leadership Competencies **Credits:** 2
- EDACE 931 - Field Study (Institute) Leadership Competencies **Credits:** 1
- EDACE 999 - Doctoral Research **Credits:** 1-18

Educational Leadership (Ed.D.)

Offered by the Educational Leadership graduate program, the Doctor of Education in educational leadership is a professional degree program principally for preparing skilled practitioners. Students who do not already hold a district-level (superintendent) endorsement may tailor course work in their emphasis area to meet that license requirement. Contact the Educational Leadership program for current district license requirements.

The student's Ed.D. program is directed by a minimum of five members of the university graduate faculty, including a major professor with substantial expertise in the area of emphasis, two other faculty members with strengths in the area of emphasis, one faculty member outside the student's specialization, and one faculty member, appointed by the dean of the Graduate School, from another curriculum within the College of Education who serves as the chair of the examination committee for the oral defense of the dissertation.

Each student's program of study is individualized with the approval of the major professor and the supervisory committee to optimize the student's interests, expertise, and goals.

Doctoral Degree Requirements (90 credit hours)

The Doctor of Education (Ed.D.) in Educational Leadership requires a minimum of 90 post-baccalaureate, graduate credit hours. With the approval of the supervisory committee, up to 30 graduate hours earned as part of the master's degree may be used to satisfy the degree requirements. All courses are three credit hours unless otherwise noted.

Prerequisite: EDCEP 816 Research Methods in Education (or other approved course) (waived if in MS degree)

Foundations (15 credit hours)

- EDLEA 801 - Ethical Dimensions of Educational Leadership **Credits:** 3
- EDLEA 810 - Historical and Philosophical Analysis of Leadership in Education **Credits:** 3
- EDLEA 828 - Scholarly Orientation to Graduate Studies **Credits:** 3
- EDLEA 845 - Leadership for Diverse Populations **Credits:** 3
- EDLEA 928 - Organizational Leadership in Education **Credits:** 3

Research Courses (15 credit hours)

- EDCEP 817 - Statistical Methods in Education **Credits:** 3
  (or other approved course)
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- Advanced research methods concentration **Credits:** (9)

Area of Emphasis (42 credit hours)

- Transfer from master's degree **Credits:** (30 max)
- Electives **Credits:** (12 or as approved)

Clinical Experience (minimum 6 credits)

- EDLEA 991 - Doctoral Internship in Educational Leadership **Credits:** 1-12

Dissertation Research (12 credit hours)

- EDLEA 999 - Research in Educational Leadership **Credits:** 1-18

Requirements for KSU/WU Collaborative Program Only (94 credit hours)

First-level Priority Admissions—School District Leadership (52 credit hours)

- EDLEA 801 - Ethical Dimensions of Educational Leadership **Credits:** 3
- EDLEA 810 - Historical and Philosophical Analysis of Leadership in Education **Credits:** 3
- EDLEA 845 - Leadership for Diverse Populations **Credits:** 3

- EDLEA 986 - Advanced Seminars in Educational Leadership **Credits:** 1-18
  (or other approved course)
- EDCEP 816 - Research Methods in Education **Credits:** 3
  (or other approved course)
- EDCEP 817 - Statistical Methods in Education **Credits:** 3
  (or other approved course)
- EDLEA 991 - Doctoral Internship in Educational Leadership **Credits:** 1-12
- EDLEA 999 - Research in Educational Leadership **Credits:** 1-18
- Students are required to take 6 credit hours as approved by their supervisory committee.

WU Collaborative Transfer (12-18 credit hours)

EA 595 Practicum in Education Administration **Credits:** 3
EA 596 Human Resource Management **Credits:** 3
EA 597 School Planning and Facilities **Credits:** 3
EA 598 The District Leader **Credits:** 3

OR

Second-level Priority Admission—Other Leadership Designations
EA xxx Appropriate courses as committee-approved **Credits:** 12-18

Transfer Credit

Students with a masters degree may transfer up to 30 hrs as approved by the supervisory committee.

Doctor of Philosophy

Adult Learning and Leadership (Ph.D.)

Offered through the Educational Leadership graduate program, the Doctor of Philosophy degree in Adult Learning and Leadership is a minimum 90-credit hour, post baccalaureate program designed to prepare scholars who are committed to a career with responsibilities and requirements associated with college/university faculty membership and/or interest in the development of knowledge, theory, and research.

With the approval of the supervisory committee, up to 30 graduate hours earned as part of the Master's degree may be used to satisfy the degree requirements.

A. Required Academic Core Courses (15 credit hours)

Students without a master's degree in adult education must take these courses in addition to the 90 credit hours in the doctoral degree, as determined by the supervisory committee.

- EDACE 780 - Introduction to Adult Learning and Leadership **Credits:** 3
- EDACE 790 - Characteristics of the Adult Learner **Credits:** 3
- EDACE 818 - Critical and Social Issues in Adult Learning **Credits:** 3
- EDACE 830 - Program Planning in Adult Learning and Leadership **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3
  or equivalent research methods course

B. Required Doctoral Courses (minimum of 12 hours from the following list or equivalent)

- EDACE 880 - Significant Literature of Adult Learning **Credits:** 3
- EDACE 916 - Foundations of Adult Learning and Leadership **Credits:** 3
- EDACE 937 - Organization and Administration of Adult Learning and Leadership **Credits:** 3
- EDACE 986 - Advanced Seminars in Adult Learning and Leadership **Credits:** 1-18

  or other courses approved by the supervisory committee

C. Required Research Courses (15 credit hours minimum)

- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- EDLEA 938 - Advanced Data Analysis in Qualitative Methods **Credits:** 3
- EDLEA 948 - Data Representation and Writing in Qualitative Research **Credits:** 3
- EDACE 980 - The Dissertation Process **Credits:** 3

  or quantitative/ qualitative research courses taken from other disciplines at K-State and approved by the supervisory committee.

D. Elective Courses (Select electives appropriate to the area of emphasis that satisfy the minimum 90 credit hours for the program.)

EDACE prefix, additional quantitative/qualitative research courses or other disciplines at K-State and approved by the supervisory committee.

E. Experiential and Individualized Courses (0-6 credit hours)

- EDACE 733 - Practicum in Adult Learning and Leadership **Credits:** 1-6
- EDACE 775 - Readings in Adult Learning and Leadership **Credits:** 1-3
- EDACE 795 - Problems in Adult Learning and Leadership **Credits:** 1-18
- EDACE 991 - Internship in Adult Learning and Leadership **Credits:** 1-6

F. Doctoral Research (12 credit hours minimum)

- EDACE 999 - Doctoral Research **Credits:** 1-18

Preliminary Examination

The requirement for the preliminary examination is satisfactory completion of all segments of a monitored written examination of at least 12 hours over all areas of the program of study.

Master of Science

Adult Learning and Leadership (M.S.)

The Master of Science in Adult Learning and Leadership is offered through the Educational Leadership graduate program.

Master's degree requirements (33 credit hours)

Core courses (15 credit hours)

- EDACE 780 - Introduction to Adult Learning and Leadership **Credits:** 3
- EDACE 790 - Characteristics of the Adult Learner **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3
  or approved equivalent
- EDACE 818 - Critical and Social Issues in Adult Learning **Credits:** 3
- EDACE 830 - Program Planning in Adult Learning and Leadership **Credits:** 3

Elective courses (18 credit hours)

Students select 18 hours approved by the student's supervisory committee that can include:

- EDACE 750 - Women, Education, Leadership, and Work **Credits:** 3
- EDACE 786 - Topics in Adult Learning and Leadership **Credits:** 1-3
- EDACE 815 - Introduction to Community Educational Development **Credits:** 3
- EDACE 816 - Foundations of Social Justice Education: Research, Theory, and Practice **Credits:** 3
- EDACE 825 - Theory and Practice of Continuing Education **Credits:** 3
- EDACE 850 - Self-Directed Learning **Credits:** 3
- EDACE 860 - Innovative Higher Education Programs for Adults **Credits:** 3
- EDACE 865 - Principles of Workplace Learning **Credits:** 3
- EDACE 875 - Program Evaluation in Adult Learning and Leadership **Credits:** 3
- EDACE 817 - Reflective Practice in Social Justice Education **Credits:** 3
- EDACE 886 - Seminars in Adult Learning and Leadership **Credits:** 1-18
- EDACE 937 - Organization and Administration of Adult Learning and Leadership **Credits:** 3

  Individualized Courses (may be used as electives)
  (Students may take no more than 6 hours of individualized coursework as electives. Practicum coursework cannot exceed 3 credit hours.)
- EDACE 733 - Practicum in Adult Learning and Leadership **Credits:** 1-6
- EDACE 775 - Readings in Adult Learning and Leadership **Credits:** 1-3
- EDACE 795 - Problems in Adult Learning and Leadership **Credits:** 1-18

Note

Program will accept 12 hours transfer from the U.S. Army Command and General Staff College (CGSC) for students attending CGSC.

Educational Leadership (M.S.)

Master's degree requirements (30-36 credits)

The Master of Science degree in Educational Leadership may be either a 30-credit hour non-license degree program or a 36-credit hour professional degree program.

The 30-credit hour non-license degree program is designed for students who intend to assume significant leadership roles in P-12 school settings not requiring professional leadership licensure. A program of study shall consist of a minimum 30 credit hours as prescribed by the supervisory committee.

The 36-hour degree program is designed to satisfy P-12 school-level leadership license requirements. Students who desire a Kansas building-level (principal) license should select this degree program. Students should contact the Department of Educational Leadership for specific license requirements.

Graduate Certificate

Adult Learning Graduate Certificate

Contact: Royce Ann Collins
E-mail: racollin@k-state.edu

This 15-credit hour, online graduate certificate offered by the Department of Educational Leadership emphasizes how adult learning principles and instructional methods can be used to strengthen skills of trainers and educators who provide educational opportunities for adult learners. This program will assist any working professional who would like to expand their skills in the areas of adult curriculum design, learning theories and methods of teaching, and program evaluation.

Students seeking this certificate must submit a Graduate School application indicating the field of study will be the Adult Learning graduate certificate program. This is a separate application from the one for admission into a master's degree. In addition to the Graduate School application, applicants need to submit the following:

- An official transcript for the bachelor's degree and for any subsequent undergraduate and graduate coursework.
- A statement of objectives explaining the goals and purposes for seeking this graduate certificate.

Certificate Requirements

- EDACE 765 - Adult Learners and Integrating Technology into Curriculum **Credits:** 3
- EDACE 785 - Designing Classroom Instruction and Curriculum for Adult Learners **Credits:** 3
- EDACE 790 - Characteristics of the Adult Learner **Credits:** 3
- EDACE 847 - Adult Learning and Motivation **Credits:** 3
- EDACE 875 - Program Evaluation in Adult Learning and Leadership **Credits:** 3 (or approved course)

Leadership Dynamics for Adult Learners Graduate Certificate

Contact: Royce Ann Collins and Judy Favor
E-mail: racollin@k-state.edu or jfavor@k-state.edu

This 15-credit hour graduate certificate, offered by the Department of Educational Leadership, emphasizes relationship skills, leadership, and communication based on adult learning theories and principles.

Students seeking this certificate must submit a Graduate School application indicating the field of study will be the Leadership Dynamics for Adult Learners graduate certificate program. This is a separate application from the one for admission into a master's degree. In addition to the Graduate School application, applicants need to submit the following:

- An official transcript for the bachelor's degree and for any subsequent undergraduate and graduate coursework.
- A statement of objectives explaining the goals and purposes for seeking this graduate certificate.

Complete all 15 credit hours:

Required courses

- EDACE 832 - Interpersonal and Intrapersonal Dynamics in Adult Learning and Leadership **Credits:** 3
- EDACE 835 - Developing Teams and Adult Leaders **Credits:** 3
- EDACE 839 - Experiential Learning and Leadership Dynamics **Credits:** 3 (prerequisites EDACE 832, EDACE 835, and one of the courses below)
  Electives - select 2 of the following courses:
- EDACE 834 - Leading Adults in a Globalized and Diverse World **Credits:** 3
- EDACE 836 - Group Dynamics in Adult Learning and Leadership **Credits:** 3
- EDACE 837 - Quality Programs and Staff Management in Adult Learning and Leadership **Credits:** 3
- EDACE 886 - Seminars in Adult Learning and Leadership **Credits:** 1-18

Qualitative Research

This 18-credit hour graduate certificate is offered by the Department of Educational Leadership in collaboration with other departments within the College of Education. This certificate was created in response to the demand for trained qualitative researchers at the national and international
levels. The need for trained qualitative researchers reflect an interdisciplinary demand, such as those who can work in academia, public health, non-profit sector, business and marketing, amongst others.

This program is suitable for anyone who wants to use qualitative inquiry in their professional spaces. This would include people who want to conduct qualitative inquiry in their scholarly, or scholarly practitioner projects. Students will be introduced to learning qualitative methods from a broad social
science perspective so they understand how qualitative research has been taken up in education and other fields. This experience will allow students to make connection between different parts of the inquiry process, thereby developing a stronger understanding of how to conceptualize, execute, and report projects conducted through qualitative inquiry.

Core Classes- (9)

- EDLEA 838 - Qualitative Research in Education **Credits:** 3 or equivalent

- EDLEA 938 - Advanced Data Analysis in Qualitative Methods **Credits:** 3 or equivalent
- EDLEA 948 - Data Representation and Writing in Qualitative Research **Credits:** 3 or equivalent

Electives- (6-9)

- EDLEA 828 - Scholarly Orientation to Graduate Studies **Credits:** 3 or equivalent
  Can only be used if students choose to write a research interest paper that explores a research interest via qualitative inquiry.
- EDLEA 958 - Case Study in Qualitative Research **Credits:** 3 or equivalent
- EDLEA 848 - Understanding Theoretical Frameworks **Credits:** 3 or equivalent
- EDLEA 968 - Discourse Analysis **Credits:** 3 or equivalent
- EDLEA 988 - Differentiated Research **Credits:** 3 or equivalent
- EDLEA 978 - Qualitative Data Management and Analysis Using Nvivo **Credits:** 3 or equivalent
- EDLEA 938 - Advanced Data Analysis in Qualitative Methods **Credits:** 3 or equivalent
- EDLEA 929 - Narrative and Arts-Based Inquiry in Qualitative Research **Credits:** 3 or equivalent
- EDCI 760 - Action Research in Education **Credits:** 3 or equivalent
- EDCI 920 - Narrative Inquiry in Education **Credits:** 3 or equivalent
  Outside Electives
- THTRE 862 - Workshop in Playwriting **Credits:** 3 or equivalent
- THTRE 880 - Master's Project **Credits:** 3 or equivalent
  Project in Ethnodrama
- FSHS 809 - Qualitative Research Methods in Family Science **Credits:** 3 or equivalent
- HDFS 808 - Topics in Applied Family Science **Credits:** 1 or equivalent

Applied Project (0-3)

Applied project could constitute a completion of a dissertation using qualitative methods. Students who wish to use their completed dissertation using qualitative methods could use a maximum of 3 credit hours to complete this requirement. Certificates will be granted only after the completion of a dissertation.

Students who wish to submit a publishable paper to a refereed journal based on an empirical study, could use 3 credit hours earned from EDLEA 988 – Advanced Seminar/Differentiated Research (Offered every Fall, first offering Fall 2015. Pre-requisite EDLEA 838). Instructor: Kakali Bhattacharya.

Other ways of submitting a publishable paper to a refereed journal could include, but not limited to, preparing the manuscript as a result of specific coursework, or preparing the manuscript as an independent study with a faculty member, or preparing the manuscript, outside of coursework through the student's own initiative.

Social Justice Education Graduate Certificate

The purpose of this 15-credit hour program, offered through the College of Education, is to prepare individuals to integrate theoretical and pedagogical aspects of social justice education in formal and informal educational settings at local, national, and international levels.

Students applying to the K-State Graduate Certificate Program in Social Justice Education (SJE) must be admitted to the K-State Graduate School. A student with a bachelor's degree or in the final year of completing the degree is

expected to have a cumulative grade point average of at least 3.0 from an accredited institution to be admitted to the certificate program.

The 15-credit SJE certificate program focuses on the integration of foundational, theoretical, and practical aspects of social justice in educational settings, with social justice education theory-to-practice as central to the program. The certificate is based on the concept that social justice education is an ongoing, contextual process that impacts inequitable social, economic, and political systems through critical examination and intentional advocacy.

Required courses (6 credits)

- EDACE 816 - Foundations of Social Justice Education: Research, Theory, and Practice **Credits:** 3
- EDACE 817 - Reflective Practice in Social Justice Education **Credits:** 3

College of Education elective courses (6 - 9 credits) from these and possibly other courses

- EDACE 750 - Women, Education, Leadership, and Work **Credits:** 3
- EDACE 818 - Critical and Social Issues in Adult Learning **Credits:** 3
- EDACE 822 - International Adult Education and Literacy **Credits:** 3
- EDACE 830 - Program Planning in Adult Learning and Leadership **Credits:** 3
- EDCEP 851 - Multicultural Aspects of Academic Advising **Credits:** 3
- EDCI 721 - Learning Strategies and Study Skills **Credits:** 3
- EDCI 740 - Culture and Language in Classroom Practice **Credits:** 3
- EDCI 755 - Multicultural Issues in Teaching **Credits:** 3
- EDCI 910 - Multicultural Curriculum Programming **Credits:** 3
- EDLEA 801 - Ethical Dimensions of Educational Leadership **Credits:** 3
- EDLEA 834 - Strategies for Educational Change **Credits:** 3
- EDLEA 845 - Leadership for Diverse Populations **Credits:** 3

Electives from other colleges (0 – 3 credits)

Courses approved for program on a case-by-case basis. Examples are:

- GWSS 605 - Social Change Field-Experience **Credits:** 3
- PSYCH 556 - Multicultural Psychology **Credits:** 3
- PSYCH 563 - Gender Issues in the Workplace **Credits:** 3
- ANTH 613 - Gender, Power, and International Development **Credits:** 3
- ANTH 615 - Race and Culture **Credits:** 3
- SOCWK 580 - Women's Perspectives on Peace and War **Credits:** 2-3
- SOCIO 541 - Wealth, Power, and Privilege **Credits:** 3
- SOCIO 635 - Sociology of Human Trafficking **Credits:** 3
- SOCIO 851 - Sociology of Development **Credits:** 3
- GERON 777 - Public Policy: Economic and Social Impacts on Older Adults **Credits:** 3
- CNRES 752 - Culture and Conflict **Credits:** 3
- CNRES 761 - International Conflict & Trauma **Credits:** 3

Mary Lynn and Warren Staley School of Leadership Studies

Leadership in Academic Advising (Ph.D.)

Offered through the Special Education, Counseling, and Student Affairs graduate program, the PhD in Counseling and Student Development with specialization in Leadership in Academic Advising requires a minimum of 90 hours post baccalaureate. The doctoral program prepares professionals for roles in leadership, research, and teaching focused on academic advising in higher education.

Doctoral degree requirements

A designated core of 6 hours of graduate credit is required. These courses may be part of a master's degree or must be completed in addition to the doctoral course work. These courses include the following:

- EDCEP 816 - Research Methods in Education **Credits:** 3
- EDCEP 851 - Multicultural Aspects of Academic Advising **Credits:** 3
  Or
- EDCEP 830 - Diversity in Higher Education. **Credits:** 3

1. Professional Courses (18 credit hours)

- EDCEP 923 - Higher Education Law **Credits:** 3
- EDCEP 925 - Higher Education Finance **Credits:** 3
- EDCEP 926 - Enrollment Management in Higher Education **Credits:** 3
- EDCEP 927 - Higher Education Administration **Credits:** 3
- EDCEP 948 - Advanced Student Development Theory in College Student Affairs **Credits:** 3
- EDLEA 828 - Scholarly Orientation to Graduate Studies **Credits:** 3

2. Academic Advising Professional Courses (9 credit hours)

- EDCEP 930 - Approaches to Academic Advising: Linking Theory, Research, and Practice **Credits:** 3
- EDCEP 932 - Ethical Issues and Practice in Academic Advising **Credits:** 3
- EDCEP 937 - Administration of Academic Advising **Credits:** 3

3. Research Courses (15 credit hours)

- EDLEA 988 - Differentiated Research **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
- EDCEP 934 - Research in Academic Advising **Credits:** 3

4. Dissertation Research (18 credit hours)

Preliminary examination. Candidates much successfully complete an examination of areas of the program of study.

- EDCEP 999 - Doctoral Research **Credits:** 1-18

Special Education, Counseling, and Student Affairs

369 Bluemont Hall
785-532-5541
Fax: 532-7304
secsa@k-state.edu
http://coe.ksu.edu/secsa/

Department Head:

Christy Craft, Interim

Directors of Graduate Studies:

Christy Craft (Academic Advising, Counseling & Student Development)
Warren J. White (Special Education)

Graduate Faculty:

Alex Becnel, Ph.D. University of Holy Cross
*Doris Wright Carroll, Ph.D., University of Nebraska - Lincoln
*Christy Craft, Ph.D., University of Arizona
*Mary Guindon, Ph.D., University of Virginia
Sheryl Hodge, Ph.D., University of Missouri - Kansas City
Samantha Holloway, Ph.D., Kansas State University
*Judith Hughey, Ed.D., University of Missouri
*Kenneth F. Hughey, Ph.D., University of Missouri
*Marilyn Kaff, Ph.D., University of Kansas
Elizabeth Knackendoffel, Ph.D., University of Kansas
Jessica Lane, Ph.D., Kansas State University
Sarina Maneotis, Ph.D., Pennsylvania State University
Craig McGill, Ed.D., Florida International University
Charlie L. Nutt, Ed.D., Georgia Southern University
Camilla Roberts, Ph.D., Kansas State University
*Lisa Rubin, Ph.D., University of Nevada - Las Vegas
*James Teagarden, Ed.D., Kansas State University
*Wendy Troxel, Ed.D., University of Alabama - Birmingham
*Warren J. White, Ph.D., University of Kansas
Dan Wilcox, Ph.D., Michigan State University
*Yang (Lydia) Yang, Ph.D., Florida International University

*Denotes graduate faculty who are certified to serve as the major professor for doctoral students.

Adjunct Faculty:

Thomas Cioppa, Ph.D., U.S. Naval Postgraduate School
Richard Robbins, Ph.D., University of Nevada - Reno

Graduate Faculty Associates:

Stephanie Bannister, Ph.D., Kansas State University
Sean Bridgen, Ed.D., Indiana University of Pennsylvania
Darrin Carr, Ph.D., Florida State University
Rebeca Chow, Ph.D., Kansas State University
Kevin Cook, Ph.D., Kansas State University
Jill Gerloff, Ed.D., Texas Christian University
Johnella Holmes, Ph.D., Kansas State University
Kerri Keller, Ph.D., Kansas State University
Thomas Lane, Ph.D., Kansas State University
Donna Menke, Ph.D., Kansas State University
Terry Musser, Ph.D., Pennsylvania State University
Bin Ning, Ph.D., University of Toledo
Bryan Samuel, Ph.D., University of Nebraska
Sara Sanders, Ed.D., Kansas State University

Emeritus Faculty:

Stephen Benton, Fred Bradley, William Cashin, Peggy Dettmer, Michael Holen, Herbert Kaiser, Margery Neely, Robert Newhouse, Fred Newton, Robert Ohlsen, Tom Parish, John Steffen, Linda Thurston, Mary Kay Zabel, Robert Zabel

Admission

For admission requirements, please see the College of Education catalog page.

Doctor of Education

Special Education (Ed.D.)

The Special Education Ed.D. program, offered through Special Education, Counseling, and Student Affairs, is directed by a minimum of five members of the university graduate faculty, including a major professor with substantial expertise in the area of emphasis, two other faculty with strengths in the area of emphasis, one faculty member outside the student's specialization, and one faculty member, appointed by the Dean of the Graduate School, from another department within the College of Education who serves as the chair of the examination committee for the oral defense of the dissertation.

Each student's program of study is individualized with the approval of the major professor and the supervisory committee to optimize the student's interests, expertise, and professional goals.

Doctoral degree requirements

Credit hour requirements

A minimum of 90 semester hours beyond the baccalaureate degree. Up to 30 relevant graduate hours earned as part of a master's degree may be used to satisfy this requirement.

Foundations (12 credit hours)

Required courses in foundations include these areas: historical and philosophical analysis of educational ideas and practice; techniques and interpretation of educational research; social science explanations of educating a diverse society; and psychological bases of educational thought and practice. Each of these courses or their equivalent must be completed:

- EDLEA 810 - Historical and Philosophical Analysis of Leadership in Education **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3
- EDCI 910 - Multicultural Curriculum Programming **Credits:** 3

Research courses (6 credit hours)

Research courses are required which concern methodology consistent with that required for the dissertation.

Clinical experience (12 credit hours)

The clinical experience is designed to enhance one's professional development by providing field-based exposure to the process of administration and supervision of special education programs and personnel. The objectives, activities, and outcomes for this clinical experience/internship are commonly determined by the major professor (advisor), in consultation with the student advisory committee.

Area of emphasis (48 credit hours minimum)

Preliminary examination requirement

Satisfactory completion of all segments of a monitored, written examination of at least 12 hours over all areas of the program of study, 3 of which must be over the foundation courses.

Dissertation research (12 credit hours)

Completion of a dissertation which treats an important topic of professional education practice using a systematic methodology consistent with accepted research paradigms; the dissertation must be successfully defended in a public, oral defense.

Doctor of Philosophy Emphasis Area(s)

Counselor Education and Supervision (Ph.D.)

The Special Education, Counseling, and Student Affairs graduate program offers a Doctor of Philosophy in Counseling and Student Development with an emphasis in Counselor Education and Supervision. The program requires a minimum of 96 hours post baccalaureate. Training extends beyond that found in the entry-level, basic master's program. The doctoral program addresses the professional leadership roles in counselor education, supervision, advanced counseling practice, and research competencies. The program is accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP).

Professional courses (21-24 credit hours)

- EDCEP 924 - Theories of Vocational Counseling **Credits:** 3
- EDCEP 955 - Legal and Ethical Issues in Counseling **Credits:** 3
- EDCEP 958 - Advanced Group Counseling **Credits:** 3
- EDCEP 967 - Appraisal and Psychopathology **Credits:** 3
- EDCEP 985 - Advanced Counseling Theory **Credits:** 3
- EDCEP 987 - Counseling Supervision Practicum **Credits:** 3
- EDCEP 821 - Fundamentals of Program Evaluation **Credits:** 3

Choose one of the following

- EDCEP 999 - Research: Supervised Teaching Laboratory **Credits:** (3)
  or
- EDCI 943 - Principles of College Teaching **Credits:** 3

Cognate area (6 credit hours)

Students will develop an area of focus constructed of courses outside of the department planned with concurrence of the committee.

Practicum/Internship (9 credit hours)

- EDCEP 977 - Advanced Counseling Practicum **Credits:** 3
- EDCEP 991 - Internship in Counseling and Educational Psychology **Credits:** 1-18

Research courses (15 credit hours)

- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- EDLEA 938 - Advanced Data Analysis in Qualitative Methods **Credits:** 3
  or
  another advanced qualitative course approved by program committee
- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
- Elective (3)- A quantitative or qualitative course approved by program committee
  or
- EDLEA 828 - Scholarly Orientation to Graduate Studies **Credits:** 3

Research (12-15 credit hours)

- EDCEP 999 - Research **Credits:** (12-15)

Leadership in Academic Advising (Ph.D.)

Offered through the Special Education, Counseling, and Student Affairs graduate program, the PhD in Counseling and Student Development with specialization in Leadership in Academic Advising requires a minimum of 90 hours post baccalaureate. The doctoral program prepares professionals for roles in leadership, research, and teaching focused on academic advising in higher education.

Doctoral degree requirements

A designated core of 6 hours of graduate credit is required. These courses may be part of a master's degree or must be completed in addition to the doctoral course work. These courses include the following:

- EDCEP 816 - Research Methods in Education **Credits:** 3
- EDCEP 851 - Multicultural Aspects of Academic Advising **Credits:** 3
  Or
- EDCEP 830 - Diversity in Higher Education. **Credits:** 3

1. Professional Courses (18 credit hours)

- EDCEP 923 - Higher Education Law **Credits:** 3
- EDCEP 925 - Higher Education Finance **Credits:** 3
- EDCEP 926 - Enrollment Management in Higher Education **Credits:** 3
- EDCEP 927 - Higher Education Administration **Credits:** 3
- EDCEP 948 - Advanced Student Development Theory in College Student Affairs **Credits:** 3
- EDLEA 828 - Scholarly Orientation to Graduate Studies **Credits:** 3

2. Academic Advising Professional Courses (9 credit hours)

- EDCEP 930 - Approaches to Academic Advising: Linking Theory, Research, and Practice **Credits:** 3
- EDCEP 932 - Ethical Issues and Practice in Academic Advising **Credits:** 3
- EDCEP 937 - Administration of Academic Advising **Credits:** 3

3. Research Courses (15 credit hours)

- EDLEA 988 - Differentiated Research **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
- EDCEP 934 - Research in Academic Advising **Credits:** 3

4. Dissertation Research (18 credit hours)

Preliminary examination. Candidates much successfully complete an examination of areas of the program of study.

- EDCEP 999 - Doctoral Research **Credits:** 1-18

Student Affairs in Higher Education (Ph.D.)

Offered through the Special Education, Counseling, and Student Affairs graduate program, the Ph.D. in Counseling and Student Development with specialization in Student Affairs in Higher Education requires a minimum of 90 hours of post baccalaureate.

Doctoral degree requirements

A designated core of 15 hours of graduate credit, typically a part of the master's degree in college student personnel work, is required. These courses may be part of a master's degree or must be completed in addition to the doctoral course work. These courses include the following:

- EDCEP 812 - History and Philosophy of Higher Education **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3
- EDCEP 818 - Principles of Student Affairs Administration **Credits:** 3
- EDCEP 838 - Student Development Theory **Credits:** 3
- EDCEP 830 - Diversity in Higher Education. **Credits:** 3

1. Professional courses (18 credit hours)

- EDCEP 923 - Higher Education Law **Credits:** 3
- EDCEP 925 - Higher Education Finance **Credits:** 3

- EDCEP 926 - Enrollment Management in Higher Education **Credits:** 3
- EDCEP 927 - Higher Education Administration **Credits:** 3
- EDCEP 948 - Advanced Student Development Theory in College Student Affairs **Credits:** 3
- EDLEA 828 - Scholarly Orientation to Graduate Studies **Credits:** 3

2. Outside area/specialization (9 credit hours)

This specialization is developed in consultation with the major professor and must be approved by the student's program of study committee.

3. Research courses (15 credit hours)

- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- EDLEA 938 - Advanced Data Analysis in Qualitative Methods **Credits:** 3 or another advanced qualitative course approved by program committee
- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
  Elective (3)- A quantitative or qualitative course approved by program committee

4. Dissertation research (18 credit hours)

Preliminary examination. Candidates must successfully complete completion of all segments of a monitored, written examination of at least 12 hours over all areas of the program of study.

- EDCEP 999 - Doctoral Research **Credits:** 1-18

Master of Science

Academic Advising (M.S.)

The Master of Science in Academic Advising is offered through the Special Education, Counseling, and Student Affairs graduate program for advising professionals and future professional advisors seeking to enhance their knowledge and ability to work more effectively with postsecondary students in their academic and career planning. All courses are offered online, which serves graduate students in Kansas and students both across and outside the country.

The program's conceptual framework emphasizes development of "highly skilled and educated" professional advisors who through their work prepare undergraduates for their future careers. Curricular experiences include interpersonal relations; needs and characteristics of specific groups of students; research methods; learning principles; advising strategies; college student development; career development and multicultural aspects of advising. Students complete 27 hours of core courses and also select one of two 3-credit hour restricted electives.

For more information on Academic Advising go to global.k-state.edu/education/academic-advising/.

Master's degree requirements

Core requirements (27 credit hours)

- EDCEP 816 - Research Methods in Education **Credits:** 3
- EDCEP 829 - Learning Principles **Credits:** 3
- EDCEP 835 - Foundations of Academic Advising **Credits:** 3
- EDCEP 836 - Interpersonal Relations for Academic Advising **Credits:** 3
- EDCEP 838 - Student Development Theory **Credits:** 3
- EDCEP 851 - Multicultural Aspects of Academic Advising **Credits:** 3
- EDCEP 854 - College Student Athletes **Credits:** 3
- EDCEP 863 - Trends in Career Development **Credits:** 3
- EDSP 853 - College Students with Disabilities **Credits:** 3

Restricted Elective (3 hours)

- EDCEP 812 - History and Philosophy of Higher Education **Credits:** 3
- EDCEP 839 - Assessment of Academic Advising **Credits:** 3
- EDCEP 864 - Current Issues in Intercollegiate Athletics **Credits:** 3

Special Education (M.S.)

Kansas State University prepares special education teachers at the graduate level in a cross categorical program with two areas of specialization: high incidence special education and low incidence special education. These programs have been approved for special education endorsement by the Kansas State Department of Education.

Students pursuing a master's degree in special education are required to complete requirements for full endorsement in at least one area of specialization. However, when feasible, it is advisable to plan programs leading to endorsement in more than one specialization area. A minimum of 30 hours of academic credit comprising an appropriate program of study must be approved early in the student's program by the student's graduate committee and the Graduate School. The minimum requirements presented on the following pages are helpful guidelines but students must consult their

assigned advisors to plan an appropriate program of study.

Click here to view the Special Education, Counseling, and Student Affairs graduate program page.

Kansas Endorsement Requirements

Each area of specialization has a separate course sequence designed by the College of Education and approved by the Kansas State Board of Education (KSBE) and the National Council for the Accreditation of Teacher Education (NCATE). The special education endorsement can be granted to a person who holds a valid Kansas teaching license.

Special education endorsement can be met without completion of the master's degree. However, most students choose to complete the master's degree while working toward endorsement. Completing the master's degree is recommended by the special education faculty. Students who intend to complete a master's degree should apply for admission to the master's program before completing nine hours of graduate coursework.

Full Endorsement

Full endorsement is granted to the applicant by the State Department of Education upon completion of the required sequence of courses.

Provisional Endorsement

Provisional endorsement is possible in the High Incidence area.

For provisional endorsement, a candidate must complete a specified sequence of courses, including a practicum. Provisional endorsement is for a two (2) year period, and may be renewed for an additional two year period. At the time of renewal, the candidate must have completed 50% of the courses remaining for full endorsement The entire sequence of courses for full endorsement must be completed within four years.

Courses Required for Provisional Endorsement in Special Education

- EDSP 742 - Interventions: Emotional and Behavioral Disorders **Credits:** 3
- EDSP 743 - Interventions: Academic Disabilities **Credits:** 3
- EDSP 785 - Practicum I **Credits:** 3

Practicum and Provisional Endorsement

1. You must be admitted to the M.S. Program in Special Education prior to the semester you request your first practicum, unless you are completing your first practicum as part of either the undergraduate Quickstart or Step Ahead programs.
2. You must contact the professor in charge of practicum during the semester prior to the semester you are requesting practicum.
3. If you are considering provisional endorsement, EDSP 710, 742, and 743 must be taken prior to your first practicum.
4. It is expected that your first practicum will not take place in your own classroom. However, in the case of a person working on a "waiver" this requirement may be waived with additional supervision requirements to be set by the instructor of the practicum.
5. You must complete EDSP 830 before registering for a second practicum. (EDCEP 715 is a prerequisite for EDSP 830)
6. You will be required to maintain a comprehensive portfolio that provides evidence of your competence in meeting the requirements of both practica.

Endorsement Policies as Kansas State University

- At least half of the credits required for special education endorsement must be earned at Kansas State University, including at least one major area course and one practicum, before the College of Education may recommend for special education endorsement.
- Teachers are endorsed in special education at the level at which they hold regular teaching certificates. Individuals who hold K-12 certificates in content areas such as music, art, or physical education will need to make up deficiencies in elementary education if they wish to be certified K-12 in special education. Teachers fully certified at the elementary level in special education may add secondary-level certification by completing the secondary-level sequence, including a practicum at that level.
- Teachers are responsible for initiating their own endorsement (Licensing Officer, 013 Bluemont Hall, 785-532-5524).
- Provisional endorsement is not granted until the applicant is employed in a special education position.

Limitations

To be recommended for endorsement, the student must have a 3.0 GPA overall in graduate work and must not receive a grade lower than a B in the 12 hours of core courses (EDSP 710, EDSP 742, EDSP 743, AND EDSP 785). The above program is subject to change depending on actions taken by the Kansas State Board of Education.

Program Requirements

High Incidence Disabilities: Elementary or Secondary

Prerequisites

Eligible for licensure in elementary or secondary education, and one of the following courses:

- EDSP 323 - Exceptional Student in the Secondary School (2)
- EDSP 324 - Exceptional Child in the Regular Classroom (3)

Required Courses

- EDSP 711 - Characteristics of Exceptionalities **Credits:** 3
- EDSP 742 - Interventions: Emotional and Behavioral Disorders **Credits:** 3
- EDSP 743 - Interventions: Academic Disabilities **Credits:** 3
- EDSP 745 - The Consulting Process in Special Education **Credits:** 3
- EDSP 777 - Social Emotional Learning and Behavior Management Strategies **Credits:** 3
- EDSP 778 - Technology for Special Education **Credits:** 3
- EDSP 785 - Practicum I **Credits:** 3
- EDSP 800 - Practicum II **Credits:** 3
- EDSP 830 - Assessment in Special Education **Credits:** 3
- EDSP 848 - Transitions in Special Education **Credits:** 3

Electives

- EDSP 844 - Special Education in Secondary Schools **Credits:** 2

(Required for adding secondary level endorsement to elementary level endorsement and for all secondary special education endorsements. Offered in spring semesters of odd-numbered years.)

Low Incidence Special Education: Elementary or Secondary

All courses required for High Incidence endorsement and:

- EDSP 841 - Interventions: Low Incidence Special Education **Credits:** 3
- EDSP 849 - Interventions: Autism Spectrum Disorders **Credits:** 3
- EDSP 885 - Practicum in Education of Individuals with Low Incidence Special Education Needs **Credits:** 1-6
  *Note: EDSP 885 must be taken for 3 credit hours

Additional Requirements for a Master's Degree

The above program leads to endorsement in special education. Students wishing to complete the master's degree must complete at least 30 hours of graduate level credit and successfully present their teaching portfolio. Committee members will recommend additional course work based on individual student need. This course work will include but not be limited to: EDSP 886 Seminar: Special Education or EDCEP 816 Research Design and Treatment of Data.

Master of Science Emphasis Area(s)

College Student Development (M.S.)

The Special Education, Counseling, and Student Affairs graduate program offers a Master of Science degree in Counseling and Student Development with an emphasis in College Student Development. This emphasis is designed to prepare the student for work in a college setting at one or many different student affairs agencies and to assist the student to meet the professional entry-level and advancement requirements in the field. A minimum of 39 graduate credit hours are required in the program.

Students complete 24 hours of core courses and also select one of three options. The advising option is most appropriate for those intending primarily to provide developmental advising within a college or university. The administration option is more appropriate for those intending to work in student affairs in higher education or manage student services. The student services in intercollegiate athletics option is appropriate for those who wish to pursue a career working with college student athletes.

Master's degree requirements

Core requirements (24 credit hours)

- EDCEP 812 - History and Philosophy of Higher Education **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3
- EDCEP 818 - Principles of Student Affairs Administration **Credits:** 3
- EDCEP 823 - Counseling Theory **Credits:** 3
- EDCEP 829 - Learning Principles **Credits:** 3
- EDCEP 838 - Student Development Theory **Credits:** 3
- EDCEP 858 - Group Processes **Credits:** 3
- EDCEP 863 - Trends in Career Development **Credits:** 3

Options (Select one)

A. Advising option (15 credit hours)

- EDCEP 835 - Foundations of Academic Advising **Credits:** 3
- EDCEP 851 - Multicultural Aspects of Academic Advising **Credits:** 3
- EDCEP 836 - Interpersonal Relations for Academic Advising **Credits:** 3
- EDCEP 885 - Practicum in Higher Education **Credits:** 3
  (6 hours required over two semesters)

B. Administration option (15 credit hours)

- EDCEP 821 - Fundamentals of Program Evaluation **Credits:** 3
- EDCEP 830 - Diversity in Higher Education. **Credits:** 3
- EDCEP 831 - Current Issues in Higher Education **Credits:** 3
- EDCEP 885 - Practicum in Higher Education **Credits:** 3
  (6 hours required - two semesters)

C. Student services in intercollegiate athletics option (15 credit hours)

- An elective approved by graduate committee **Credits:** (3)
- EDCEP 854 - College Student Athletes **Credits:** 3
- EDCEP 864 - Current Issues in Intercollegiate Athletics **Credits:** 3
- EDCEP 885 - Practicum in Higher Education **Credits:** 3
  (6 hours required over two semesters)

School Counseling (M.S.)

The Special Education, Counseling, and Student Affairs graduate program offers a Master of Science degree in Counseling and Student Development with an emphasis in School Counseling. The 48 hour program is accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP).

The program's conceptual framework emphasizes development of knowledgeable, caring, ethical decision-makers within the context of groups and institutions, client development and learning, guidance and counseling of students leading to theory-driven and research-guided practice in school counseling. Curricular experiences include human growth and development, appraisal, research and program evaluation, professional orientation, and foundations.

Master's degree requirements

1. Core requirements (27 credit hours)

- EDCEP 810 - Mental Health in Schools **Credits:** 3
- EDCEP 822 - Counseling Adolescents **Credits:** 3
- EDCEP 823 - Counseling Theory **Credits:** 3
- EDCEP 852 - Career Development for School Counselors **Credits:** 3
- EDCEP 856 - Counseling Children **Credits:** 3

- EDCEP 857 - Counseling Program Management **Credits:** 3
- EDCEP 871 - Leadership, Advocacy, and Consultation for Counselors **Credits:** 3
- EDCEP 824 - Development Across the Lifespan for School Counselors **Credits:** 3
- EDCEP 951 - Multicultural Counseling **Credits:** 3

2. Research and appraisal requirements (9 credit hours)

- EDCEP 715 - Principles of Assessment **Credits:** 3
- EDCEP 815 - Using Tests in Counseling **Credits:** 3
- EDCEP 816 - Research Methods in Education **Credits:** 3

3. Clinical requirements (12 credit hours)

- EDCEP 858 - Group Processes **Credits:** 3
- EDCEP 877 - Practicum in Counseling **Credits:** 3
- EDCEP 887 - Counseling Internship **Credits:** 1-3
  Note: 6 total credit hours required for EDCEP 887

Notes

The internship will consist of 600 clock hours under weekly supervision of a licensed school counselor and faculty professor. The student will attend class for group supervision and provide 240 clock hours of direct service in the school setting. Included activities are individual counseling, group work, developmental classroom guidance, and consultation.

Internship arrangements are made by the coordinating faculty member when required coursework has been completed and only after submission and approval of a pre-enrollment application, available in 369 Bluemont Hall. Both the coordinating faculty member and the student's committee must approve enrollment.

Graduate Certificate

Academic Advising Graduate Certificate

Contact: Kenneth F. Hughey
E-mail: khughey@ksu.edu
Home Page: https://coe.k-state.edu/academics/certificates/academic-advising.html

This certificate is offered through the Special Education, Counseling, and Student Affairs graduate program and is available through distance education only. Professionals who are entering the field of academic advising from teaching positions or other academic and student services areas often wish to expand their knowledge about college student personnel services, including learning theory, student development theory, multicultural issues, career development, and academic advising. Even advisors with terminal degrees or graduate degrees in other areas can benefit from some graduate work in this area. Therefore, the Department of Special Education, Counseling, and Student Affairs, in collaboration with the National Academic Advising Association (NACADA), developed a graduate certificate in academic advising. The 15-credit hour program is consistent with standards and guidelines for academic advising specified by the Council for the Advancement of Standards (CAS) in Student Services. The courses within the certificate program contribute to the student's understanding and practice of these standards and guidelines, including the areas of mission, program, leadership, organization and management, human resources, financial resources,

facilities and equipment, legal responsibilities, equal opportunity and access, campus and community relations, diversity, ethics, and assessment. The courses are delivered exclusively in an on-line format.

Students seeking this certificate must submit a Graduate School application indicating the field of study will be the Academic Advising graduate certificate program. This is a separate application from the one for admission into a master's degree. In addition to the Graduate School application, applicants need to submit the following:

- An official transcript for the bachelor's degree and for any subsequent undergraduate and graduate coursework.
- A statement of objectives explaining the goals and purposes for seeking this graduate certificate.
- A resume.

Certificate requirements

- EDCEP 829 - Learning Principles **Credits:** 3
- EDCEP 835 - Foundations of Academic Advising **Credits:** 3
- EDCEP 838 - Student Development Theory **Credits:** 3
- EDCEP 851 - Multicultural Aspects of Academic Advising **Credits:** 3
- EDCEP 863 - Trends in Career Development **Credits:** 3

Teaching Students With Autism Spectrum Disorders Graduate Certificate

Contact: Marilyn Kaff
E-mail: mkaff@ksu.edu

Offered through the Special Education, Counseling, and Student Affairs graduate program, the central goal of the certificate program in autism is to provide special education teachers with understanding and skills to provide special education programs for students with autism. Specifically, students will learn the characteristics and causes of autism, identification and assessment procedures, effective educational interventions, program delivery and transition approaches. In addition, students will participate in an advanced practicum under the supervision of a university supervisor and qualified cooperating teacher.

The autism certificate program extends the training of graduate students who have either already completed a M.S. degree in special education or who are currently enrolled in the M.S. program in special education at KSU and wish to add the autism certificate.

Students seeking this certificate must submit a Graduate School application indicating the field of study will be the Teaching Students with Autism Spectrum Disorders graduate certificate program. This is a separate application from the one for admission into a master's degree. In addition to the Graduate School application, applicants need to submit the following:

- An official transcript for the bachelor's degree and for any subsequent undergraduate and graduate coursework.

Requires Courses (12 credit hours)

- EDSP 841 - Interventions: Low Incidence Special Education **Credits:** 3
- EDSP 849 - Interventions: Autism Spectrum Disorders **Credits:** 3
- EDSP 885 - Practicum in Education of Individuals with Low Incidence Special Education Needs **Credits:** 1-6
  *Note: EDSP 885 must be taken for 3 credit hours

- EDSP 889 - Advanced Practicum: Autism Spectrum Disorders **Credits:** 1-6
  *Note: EDSP 889 must be taken for 3 credit hours

College of Engineering

Carl R. Ice College of Engineering

1046 Rathbone Hall
785-532-5590
Fax: 785-532-7810
http://www.engg.ksu.edu/

The College of Engineering offers doctoral programs leading to the Ph.D. degree in engineering in the following areas: Biological and Agricultural Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, Mechanical Engineering, and Nuclear Engineering. A doctoral program leading to the Ph.D. in Computer Sciences is also offered.

Programs leading to the M.S. degree in all of the above areas are offered. In addition, programs are offered for the M.S. in Operations Research, M.S. in Architectural Engineering, the Master of Software Engineering, and the Master of Engineering Management degrees.

Entering graduate students must meet the entrance requirements of the Graduate School and must have completed the B.S. degree in a field of engineering, computing and information science, or a closely related area of science.

Dean:
Darren Dawson

Associate Deans:
Gary Clark
Ronaldo Maghirang

Concurrent Bachelors in Mechanical Engineering and Masters of Business Administration

MBA Admission Requirements

A student can apply to the graduate school and be admitted to the MBA program upon earning a >= 3.000 GPA in at least 80 credit hours of their undergraduate degree.

Freshman Year

Fall semester (16 credit hours)

- CHM 210 - Chemistry I **Credits:** 4
- ECON 110 – Principles of Macroeconomics **Credits:** 3
- ENGL 100 - Expository Writing I **Credits:** 3
- MATH 220 - Analytic Geometry and Calculus I **Credits:** 4
- ME 101 - Introduction to Mechanical Engineering **Credits:** 2

Spring semester (16 credit hours)

- COMM 105 - Public Speaking IA **Credits:** 2
- ECON 120 - Principles of Microeconomics **Credits:** 3
- MATH 221 - Analytic Geometry and Calculus II **Credits:** 4
- ME 212 - Engineering Graphics **Credits:** 2
- PHYS 213 - Engineering Physics I **Credits:** 5

Sophomore Year

Fall semester (16 credit hours)

- CE 333 - Statics **Credits:** 3
- CHE 354 - Basic Concepts in Materials Science and Engineering **Credits:** 1
- CHE 355 - Fundamentals of Mechanical Properties **Credits:** 1
- IMSE 250 - Introduction to Manufacturing Processes and Systems **Credits:** 2
- MATH 222 - Analytic Geometry and Calculus III **Credits:** 4
- PHYS 214 - Engineering Physics II **Credits:** 5

Spring semester (16 credit hours)

- CE 533 - Mechanics of Materials **Credits:** 3
- MATH 340 - Elementary Differential Equations **Credits:** 4
- MATH 551 - Applied Matrix Theory **Credits:** 3
- ME 512 - Dynamics **Credits:** 3
- ME 513 - Thermodynamics I **Credits:** 3

Junior Year

Fall semester (16 credit hours)

- ECE 519 - Electric Circuits and Control **Credits:** 4
- ME 400 - Computer Applications in Mechanical Engineering **Credits:** 3
- ME 533 - Machine Design I **Credits:** 3
- ME 571 - Fluid Mechanics **Credits:** 3
- NE 495 - Elements of Nuclear Engineering **Credits:** 3

Spring semester (16 credit hours)

- *b - Technical elective **Credits:** 3
- ENGL 415 - Written Communication for Engineers **Credits:** 3
- ME 535 - Measurement and Instrumentation Laboratory **Credits:** 3
- ME 570 - Control of Mechanical Systems I **Credits:** 4
- NE 612 - Principles of Radiation Detection **Credits:** 3
- ECON 815 - Economic Analysis for Businesses **Credits:** 3

Senior Year

Fall semester (15 credit hours)

- *b - Technical elective **Credits:** 3
- *b - Technical elective **Credits:** 3
- ME 573 - Heat Transfer **Credits:** 3
- ACCTG 810 - Foundations of Accounting **Credits:** 3
- MANGT 830 - Information Technology Strategy and Application **Credits:** 3

Spring semester (15 credit hours)

- *a - Humanities/social science elective **Credits:** 3
- ME 574 - Interdisciplinary Industrial Design Projects I **Credits:** 3
- FINAN 815 - Foundations of Finance **Credits:** 3
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3

Fifth Year

Fall semester (15 credit hours)

- *a - Humanities/social science elective **Credits:** 3
- ME 575 - Interdisciplinary Industrial Design Projects II **Credits:** 3
- MANGT 880 - Business Strategy **Credits:** 3
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- *h - MBA Concentration elective **Credits:** 3

Spring semester (12 credit hours)

- *b - Technical elective **Credits:** 3
- MANGT 860 – Managing Triple Bottom Business **Credits:** 3
- *h – MBA Concentration Elective **Credits:** 3
- *i – Culminating Experience **Credits:** 3

Notes

*a - A total of 6 credits of humanities and social science electives are required. Three of these credits can come from 300-level or above AERO or MSCI courses for students who successfully complete the ROTC program. These are to be selected from the College of Engineering Humanities and Social Science Electives Course List. Students should select these courses such that the requirements of the K-State 8 general education program also are met, thus one of these courses must cover 2 K-State 8 tags not covered by required courses.

*b - Technical Electives: Three technical electives are to be chosen from MNE courses with at least one course 600-level or above. Another technical elective is to be chosen from 200-level or above College of Engineering (including MNE) classes. The remaining technical electives credits are to be chosen from 200-level or above College of

Engineering, Math, Chemistry, Physics, Biology, IAPD 456, INDD 325, INDD 350, INDD 500 or Business Administration classes, 400-level or above Statistics classes, or a maximum of 3 credit hours from 300-level or above AERO or MSCI courses for students who successfully complete the ROTC program. Other classes that strengthen a student's program of study will be considered and require advisor and department head approval.

*c - Nuclear Engineering Option: NE 612 will replace ME 535 in the curriculum. The three remaining Nuclear Engineering option courses fulfill the requirement of the three MNE technical electives.

*d - ME 535 and NE 612 may both be taken and one of them applied as a Tech Elective. NE 612 must be taken for the NE Option.

*e - Currently admitted students will only be allowed to transfer in one ME/NE numbered course as required by the curriculum; however, ME 533, ME 574, ME 575 and ME 573 must be taken within the MNE department.

*f - Currently admitted students will be allowed to transfer one of the three required MNE technical electives with the exception of the >=600 level MNE technical elective.

*g - To graduate with a Bachelors in Mechanical Engineering, students must have a >= 2.200 GPA in all ME/NE classes >= 400 level taken for undergraduate credit at Kansas State University. Course grades that have been removed by the K-State Retake policy will not apply to this GPA calculation.

*h – Classes from within the students chosen MBA Concentration Area, must be taken for graduate credit.

*i – Either GNBA 897 or 890 (Internship or Capstone Class)

Total hours required: 153

Engineering (Ph.D)

The College of Engineering offers doctoral programs leading to the Ph.D. degree in engineering in the following areas: Biological and Agricultural Engineering, Chemical Engineering, Civil Engineering, Computing and Information Sciences, Electrical and Computer Engineering, Industrial and Manufacturing Systems Engineering, and Mechanical and Nuclear Engineering.

Architectural Engineering and Construction Science

GE Johnson Department of Architectural Engineering and Construction Science

240 Seaton Hall
785-532-5964
Fax: 785-532-3556
arecns@k-state.edu
http://www.ksu.edu/are-cns/

Department Head:

Ray Buyle, Interim

Director of Graduate Studies:

Kimberly Kramer

Graduate Faculty:

Raymond Buyle, M.S., Kansas State University
Shannon Casebeer, M.C.M., North Dakota State University
James F. Goddard, M.S., University of Florida
Fred Hasler, P.E., LEED A.P., M.S., Kansas State University
Julia Keen, P.E., HBDP, Ph.D., Kansas State University
Kimberly W. Kramer, P.E., S.E., M.S., University of Texas - Arlington
Kyle Larson, Ph.D., Kansas State University
Katie Loughmiller, M.S., North Dakota State University
Donald James Phillippi, S.E., AIA, Ph.D., University of California - San Diego
Jongchul Song, Ph.D., University of Texas - Austin
Raphael A. Yunk, P.E., LEED A.P., M.S., Kansas State University
Bill Zhang, Ph.D., S.E., Civil Engineering, Lehigh University

Graduate Faculty Associates

Christopher Ahren, M.S., Kansas State University
Paul Karr, M.S., Kansas State University
Derek Clements, M.S., Kansas State University
Steven Moser, M.S., University of Colorado

The Department

The Department of Architectural Engineering and Construction Science and Management offers courses of study leading to the master of science degree. The undergraduate degree is ABET accreditation (Accreditation Board for Engineering and Technology, Inc.).

The department consists of 17 full-time faculty members. A master of science degree in architectural engineering with specialization in structural engineering, lighting/electrical, and heating and air conditioning for buildings. The research interests of the staff cover major areas of modern building systems design: seismic analysis of buildings, slender wall design, vibration analysis, lighting/electrical, heating and air conditioning, plumbing, cold-formed steel design, green building design, energy analysis, energy auditing, acceptance testing, and indoor air quality. Several faculty members direct research and utilize this research in the enhancement of both graduate and undergraduate teaching. The objective of the program is to provide advanced studies in engineering, analysis and design of all the disciplines in building systems. The department has excellent facilities and access to the most recent computer software technology.

Concurrent

Concurrent B.S./M.S. in Architectural Engineering

The Architectural Engineering undergraduate degree program (B.S.) is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Bachelor's degree requirements

Freshman Fall Semester (16 Credit Hours)

- ARE 020 - Architectural Engineering Seminar Credits: (0)
- ARE 100 - Architectural Engineering Orientation Credits: (2)
- CHM 210 - Chemistry I Credits: (4)
- CNS 110 - History of Building and Construction Credits: (3)
- ECON 110 - Principles of Macroeconomics Credits: (3)
- MATH 220 - Analytic Geometry and Calculus I Credits: (4)

Freshman Spring Semester (14 Credit Hours)

- ARE 020 - Architectural Engineering Seminar Credits: (0)
- CNS 210 - Graphic Communication I Credits: (1)
- CNS 220 - Construction Materials Credits: (2)
- COMM 105 - Public Speaking IA Credits: (2)
- MATH 221 - Analytic Geometry and Calculus II Credits: (4)
- PHYS 213 - Engineering Physics I Credits: (5)

Sophomore Fall Semester (18 Credit Hours)

- ARE 020 - Architectural Engineering Seminar Credits: (0)
- ARE 295 - Introduction to Building Systems Credits: (3)
- CE 333 - Statics Credits: (3)
- ENGL 200 - Expository Writing II Credits: (3)
- MATH 222 - Analytic Geometry and Calculus III Credits: (4)
- PHYS 214 - Engineering Physics II Credits: (5)

Sophomore Spring Semester (17 Credit Hours)

- ARE 020 - Architectural Engineering Seminar Credits: (0)
- CNS 321 - Graphic Communications 2 Credits: (3)
- MATH 340 - Elementary Differential Equations Credits: (4)
- ***Science Elective Credits: (3)
- CE 533 - Mechanics of Materials **Credits:** 3
- CE 534 - Mechanics of Materials Laboratory **Credits:** 1
- ME 513 - Thermodynamics I **Credits:** 3

Junior Fall Semester (15 Credit Hours)

- ARE 020 - Architectural Engineering Seminar Credits: (0)
- ARE 460 - ARE Professional Practice Credits: (3)
- ARE 551 - Electrical Systems I **Credits:** 3
- ARE 552 - Mechanical Systems I **Credits:** 3
- ARE 553 - Structural Systems I **Credits:** 3
- CE 537 - Introduction to Structural Analysis **Credits:** 3

Junior Spring Semester (17 Credit Hours)

- ARE 020 - Architectural Engineering Seminar Credits: (0)
- ARE 421 - Plan Reading and Systems Communications Credits: (3)
- ART 180 - 2-Dimensional Drawing Credits: (3)

OR

- ART 190 - Drawing 1 Credits: (3)

OR

- ART 200 - 3-Dimensional Design Credits (3)
- ARE 521 - Computer Aided Architectural Engineering **Credits:** 2
- ARE 561 - Electrical Systems II **Credits:** 3
- ARE 562 - Mechanical Systems II **Credits:** 3
- ARE 563 - Structural Systems II **Credits:** 3

Senior Fall Semester (15 Credit Hours)

- ARE 020 - Architectural Engineering Seminar Credits: (0)
- ENGL 415 - Written Communication for Engineers Credits: (3)
- **Complementary Elective Credits: (3)
- **Complementary Elective Credits: (3)
- **Complementary/****Engineering Elective Credits: (3)
- ARE 571 - Systems Integration & Design **Credits:** 3

Senior Spring Semester (16 Credit Hours)

- ARE 020 - Architectural Engineering Seminar Credits: (0)
- **Complementary Elective Credits: (3)
- ****Engineering Elective Credits: (3)
- ****Engineering Elective Credits: (3)
- *K-State 8 Humanities or Social Science Elective Credits: (3)
- ARE 671 - ARE Capstone **Credits:** 4

Total Credit Hours Required for Graduation for BS (128)

Notes

IMPORTANT NOTES: Students who first enroll in Summer 2011 or later must meet the requirements of the K-State 8 General Education Program.

*Humanities and Social Science (H/SS) Electives are to be selected from the official College of Engineering H/SS list.

**Complementary Electives are to be selected from the current approved department list.

***Science Electives are to be selected from the current approved department list.

****Engineering Electives are to be selected from the current approved department list.

Combined BS-MS Requirements

Effective Fall 2011

The Master of Science in Architectural Engineering is offered through the Architectural Engineering and Construction Science graduate program. The minimum requirement for course work is 30 semester hours of graduate credit with options as specified in this catalog and required undergraduate work in an engineering program accredited by the Accreditation Board for Engineering and Technology (ABET) and subject to the approval of the department. Depending on the selected degree options a student has a significant range of elective courses from which to choose with the approval of the student's graduate committee. The program is structured to permit the student, by diligent work, to complete the M.S. requirement in one calendar year. Substitution for one or more of the specified courses may be made if the department judges that equivalent study has been successfully completed.

A combination B.S. and M.S. degree program is offered to undergraduates in Architectural Engineering (ARE) at Kansas State University. This professional M.S. degree challenges top students in Architectural Engineering with research experiences, faculty mentoring and advanced course work. The program allows the student an opportunity to specialize in an emphasis area of systems engineering applied to building design and analysis.

The combined B.S./M.S. program builds on the broad-base, generalist emphasis of the B.S. ARE program and allows top students to specialize with additional research experiences, faculty mentoring and advanced course work. Students and faculty are matched by interest and capability to determine an emphasis area, program of study, and graduate committee. Current emphasis areas include: mechanical systems, electrical power distribution, illumination and building structural design.

This program allows Architectural Engineering students meeting the following requirements to be admitted to the graduate school:

- Completed 135 or more credit hours of the Architectural Engineering Curriculum.
- Obtained a cumulative grade point average of 3.25 or higher in the Architectural Engineering Curriculum and in the two years prior to entry into the combined MS/BS program.
- Accepted by the Department of Architectural Engineering Graduate Faculty.
- Met all entrance requirements of the graduate school with the exception of completing a B.S. degree (1.B. of the graduate handbook).

This program allows accepted students to:

- Reduce their undergraduate program by 15 credit hours and replace these hours with 15 credits towards the requirements of the M.S. degree.
- All of the requirements of the graduate school will be met or exceeded.
- The undergraduate program will be reduced by 3 credits of free electives and 12 credits of complementary electives.

Total Credit Hours Required for Graduation for BS-MS (173)

Bachelor of Science in Architectural Engineering credit hours (of which the 15 credit hours would be graduate credit hours) + 15 semester hours of additional graduate credits.

Master of Science

Architectural Engineering (M.S.)

The Master of Science in Architectural Engineering is offered through the Architectural Engineering and Construction Science graduate program. The minimum requirement for course work is 30 semester hours of graduate credit with options as specified in this catalog and required undergraduate work in an engineering program accredited by the Accreditation Board for Engineering and Technology (ABET) and subject to the approval of the department.

Depending on the selected degree options a student has a significant range of elective courses from which to choose with the approval of the student's graduate committee. The program is structured to permit the student, by diligent work, to complete the M.S. requirement in one calendar year. Substitution for one or more of the specified courses may be made if the department judges that equivalent study has been successfully completed.

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- Obtained a cumulative grade point average of 3.25 or higher in the Architectural Engineering Curriculum and in the two years prior to entry into the combined MS/BS program.
- Accepted by the Department of Architectural Engineering Graduate Faculty.
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Biological and Agricultural Engineering

1016 Seaton Hall
785-532-5580
Fax: 785-532-5825
zhangn@ksu.edu
http://www.bae.ksu.edu/

Department Head:

Joseph P. Harner

Director of graduate studies:

Naiqian Zhang

Graduate faculty:

*Jonathan Aguilar, Ph.D., Kansas State University
*Paul R. Armstrong, (Adjunct) Ph.D., Michigan State University
*Mark E. Casada, Ph.D., North Carolina State University

*Gary A. Clark, Ph.D., Texas A & M University
*Daniel Flippo, Ph.D., University of Oklahoma
Joseph P. Harner III, Ph.D., Virginia Polytechnic Institute and State University
*Stacy Lewis Hutchinson, Ph.D., Kansas State University
Freddie R. Lamm, Ph.D., Kansas State University
*Zifei Liu, Ph.D., North Carolina State University
*Trisha L. Moore, Ph.D., North Carolina State University
*Vahid Rahmani, Ph.D., Kansas State University
*Ajay Sharda, Ph.D., Auburn University
*Vaishali Sharda, Ph.D., Auburn University
*Aleksey Y. Sheshukov, Ph.D., Kazan State University, Russia
John W. Slocombe, Ph.D., Iowa State University
*Donghai Wang, Ph.D., Texas A & M University
*Lisa Wilken, Ph.D., Texas A&M University
*Naiqian Zhang, Ph.D., Virginia Polytechnic Institute and State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Program description

The Department of Biological and Agricultural Engineering offers courses of study leading to the Master of Science in biological and agricultural engineering, and the Doctor of Philosophy in engineering.

The department consists of 15 graduate faculty members, about 15 graduate students, and one adjunct graduate faculty members. Master of Science students may specialize in (1) environmental engineering, (2) food and feed process engineering, (3) information and electrical technology, (4) machinery systems, (5) natural resource engineering, and (6) structure and environment. Minimum degree requirements are 30 semester hours of graduate credit, including a Master's thesis of 6 semester hours based upon original research or a master's report of 2 semester hours of research or problem work. A generalized Doctoral program is offered by the College of Engineering through each department. The traditional areas of specialization are integrated into the following five interdisciplinary areas: (1) energy utilization, (2) informational systems, (3) materials engineering, (4) systems engineering, and (5) bio-environmental engineering. Award of a doctorate requires successful completion of the equivalent of at least three full years of full-time study beyond the baccalaureate as well as completion of a major research study reported in a doctoral dissertation.

For information about the Ph.D. program, refer to the Engineering section of this catalog.

Research facilities

The department is located in Seaton Hall. The department possesses 15 well-equipped instructional and research laboratories, including the computer laboratory, and laboratories for instrument and control, physical properties, image processing, thermal food processing, grain wet processing, air quality and control, water quality and control, hydrology, engine testing, machinery systems, and biomass energy systems. Field studies may be carried out at experiment fields near Topeka and St. John and at Research Extension Centers near Garden City and Colby. Opportunities also exist for research in the U.S. Grain Marketing and Production Research Center and the Wind Erosion Research Unit, USDA-ARS, both located in Manhattan.

Financial support

Students are admitted into the Biological and Agricultural Engineering graduate program either with an assistantship that pays a stipend from University funds or with their own source of financial support. A limited number of assistantships providing teaching and research experiences are available. Graduate assistant appointments are usually at

four-tenths time. Fees are assessed at the same rate as university employees for graduate teaching assistants and graduate research assistants.

Concurrent

Concurrent B.S./M.S. in Biological and Agricultural Engineering

The Department of Biological and Agricultural Engineering (BAE) of Kansas State University (KSU) offers courses of study leading to a (B.S./M.S.) in engineering. A student that successfully completes this program will receive both a B.S. BSE and an M.S. BAE degree from the Biological and Agricultural Engineering Department (BAE). This program has thesis and report formats.

Admission Requirements:

A student must petition Kansas State University's Graduate School to be admitted into this program. The following requirements must be met before an individual can be admitted into this program.

- The student must be seeking a B.S. BSE degree from the Department of Biological and Agricultural Engineering (BAE).
- The student must have completed at least 80 credit hours of his/her undergraduate degree.
- The student's cumulative undergraduate GPA must be at least 3.25.
- The student must have a member of KSU's Graduate Faculty in the BAE department agree to be his/her major professor (this professor can be changed in accordance to KSU's policies.)
- The student must be accepted to this program before receiving his/her B.S. BSE degree.

Program Formats and Guidelines:

Since there is some overlap between undergraduate and graduate study, some graduate courses will satisfy the degree requirements for the undergraduate degree. A maximum of 9 graduate credit hours from the M.S. BAE degree can be counted toward the B.S. BSE degree. Some additional conditions are:

- The student must complete 30 graduate credit hours with a graduate GPA of at least 3.0.
- The student must complete all B.S. BSE undergraduate requirements with the exception that up to 9 credit hours taken for graduate credit can also count toward his/her undergraduate degree requirements.
- At least 18 of the graduate credit hours on the Graduate Program of Study must be in classes at the 700 level or above.
- Once a student applies for this program, he/she must be continuously enrolled to complete this program. If a student is not enrolled for a fall or spring semester, this student loses the ability to count graduate credit hours toward his/her undergraduate degree.
- A student pursuing a thesis format must complete at least 6 credit hours of Masters Thesis (BAE 899).
- A student pursuing a report format must complete 2 credit hours of Masters Report (BAE 898).

Once an individual is admitted to the concurrent B.S. BSE/M.S. BAE degree program, the student should consult the graduate handbook for policies and procedures for graduate degrees, which include: supervisory committee, final examination, thesis defense, etc. The student's supervisory committee must approve the program of study, which is a statement of that student's graduation requirements.

Once a student has completed all of the graduation requirements, he/she will graduate with both a B.S. BSE and an M.S. BAE degree in the same semester. In the event that a student begins this program, but does not wish to finish the

M.S. BAE degree requirements, he/she must change the nine credit hours of his/her graduate classes to undergraduate credit and then he/she will receive a B.S. BSE degree. Once the student has completed the required 128 credit hours, the BAE Graduate Committee will evaluate whether or not the student will be allowed to continue the concurrent B.S. BSE/M.S. BAE program based upon KSU Graduate School policies. If the committee doesn't allow the student to continue with the program, then, upon completion of the B.S. BSE requirements, the student will graduate with a B.S. BSE degree. In either of these two cases, the student loses the ability to count courses toward both his/her undergraduate and graduate degree requirements.

Additional Procedures:

Each semester a student in this program must enroll in either BAE 815 (Graduate Seminar) or BAE 020 (Engineering Assembly). For at least one year, the student must be enrolled in BAE 815.

Program Format and Minimum Requirements*

An entering student must be pursuing a B.S. BSE and have at least a cumulative 3.25 GPA. The student must enroll in this program after completing 80 undergraduate credit hours, but before his/her B.S. degree is awarded.

The format for this program are as follows:*

	Thesis	Report
BAE Courses (excluding Seminar)	9	9
Other Courses and Electives	13	17
Thesis or Report	6	2
BAE 815 (Graduate Seminar	2	2
TOTAL GRADUATE CREDITS	30	30

Other Policies:

*Actual degree requirements will be summarized on an approved plan of study. Some general guidelines include:

- The student must complete all of the B.S. BSE undergraduate requirements with the exception that up to 9 credit hours taken for graduate credit can also be counted toward his/her undergraduate degree requirements.
- The student must complete at least 30 graduate credit hours.
- At least 18 hours of graduate courses must be at or above the 700 level.
- Graduate courses in the BAE department must be at or above the 600 level.
- Graduate courses outside the department must be at or above the 500 level.
- Continuous enrollment required.
- Each semester a student must enroll in either BAE 020 or BAE 815 and complete at least 2 semester hours of BAE 815 for credit.

Doctor of Philosophy

Biological and Agricultural Engineering (Ph.D.)

The Department of Biological and Agricultural Engineering (BAE) of Kansas State University (KSU) offers courses of study leading to the Doctor of Philosophy (Ph.D.) in engineering. Ph.D. students may specialize in (1) environmental engineering, (2) bioprocessing engineering, (3) information and electrical technology, (4) machinery systems, (5) natural resource engineering, and (6) structure and environment.

Degree Requirements

The minimum requirements for a Ph.D. degree are 90 credit hours beyond the bachelor's degree, including a Ph.D. dissertation of at least 30 semester hours based upon major, original research. Students who hold an M.S. degree may request transfer of up to 30 credit hours of that degree toward a Ph.D. degree. Award of a doctorate requires successful completion of the equivalent of at least three full years of full-time study beyond the baccalaureate.

Master of Science

Biological and Agricultural Engineering (M.S.)

Return to: Biological and Agricultural Engineering

Master's degree requirements

Admission to a Master of Science program in Biological and Agricultural Engineering requires a degree of Bachelor of Science in agricultural engineering or its equivalent and meeting all requirements for admission to the Graduate School. Graduates from other engineering curricula or a strong physical/biological science curriculum may be admitted provisionally with undergraduate deficiencies specified.

An application for admission to a graduate program in Biological and Agricultural Engineering should be made six months prior to the start of the term in which enrollment is desired. Additional information on graduate programs and on application for admission to the Graduate School of Kansas State University may be obtained by writing the department.

A TOEFL score of 550 or higher is required of those students whose native language is not English. The TOEFL score must reflect results of a TOEFL test that was taken within two years prior to the application. Students meeting all requirements for admission except for the TOEFL score may be admitted to the Graduate School on a provisional status. They may enroll upon scoring 550 or higher on a subsequent TOEFL or after successfully completing the English Language Program at Kansas State University.

The minimum requirements for an M.S. degree are 30 semester hours of graduate credit, including a Master's thesis of 6 semester hours based upon original research or a master's report of 2 semester hours of research or problem work.

Chemical Engineering

Tim Taylor Department of Chemical Engineering

1701A Platt St
1005 Durland Hall

785-532-5584
Fax: 785-532-7372
che@k-state.edu
www.che.ksu.edu

Department Head:

Jennifer L. Anthony, Interim

Director of graduate studies:

John R. Schlup

Graduate faculty:

Richard G. Akins, Emeritus, Ph.D., Northwestern University
*Placidus Amama, Ph.D., Yokohama National University
*Jennifer L. Anthony, Ph.D., University of Notre Dame
Sigifredo Castro Diaz, Ph.D., Kansas State University
Yachao Chen, Ph.D., Colorado School of Mines
*Chuancheng Duan, Ph.D., Colorado School of Mines
*James H. Edgar, Ph.D., University of Florida
*Larry E. Erickson, Emeritus, Ph.D., Kansas State University
Larry A. Glasgow, Emeritus, Ph.D., University of Missouri
*Ryan Hansen, Ph.D., University of Colorado
*Urara Hasegawa, Tokyo Medical and Dental University
Benjamin G. Kyle, Emeritus, Ph.D., University of Florida
*Bin Liu, Ph.D., Colorado School of Mines
John C. Matthews, Emeritus, D.Sc., Washington University
*Won Min Park, Ph.D., Georgia Institute of Technology
*Davood B. Pourkargar, Ph.D., Pennsylvania State University
*John R. Schlup, Ph.D., California Institute of Technology
Md Helal Uddin, Ph.D., University of Nevada - Reno

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Adjunct:

Keith L. Hohn, Ph.D., University of Minnesota
Peter Pfromm, Ph.D., University of Texas at Austin

Program description

The department offers M.S. and Ph.D. programs in chemical engineering and in interdisciplinary areas of bio-based materials science and engineering, food science, environmental engineering, and materials science.

Areas of study and research emphasize sustainable energy, nanotechnology, reaction engineering, materials science and transport phenomena. Specific areas include biomaterials science, biomass conversion, biochemical engineering, biological interfaces, biosensing, bionanotechnology, protein engineering, catalytic conversion of light hydrocarbons, chemical vapor deposition of electronic materials, environmental pollution control, heterogeneous catalysis, polymer science, semiconductor crystal growth, short-contact time reactors, surface science, molecular modeling, and high performance computing.

For more information about the Ph.D. program, see the Engineering section of this catalog

Research facilities

The Department of Chemical Engineering has modern, well-equipped research laboratories for studying transport phenomena, materials science and engineering, chemical reaction engineering and biochemical engineering. Specialized instrumental capabilities include, Fourier-transform infrared spectrometry, catalyst preparation equipment, tubular gas reactors, gas and liquid chromatography, mass spectrometry, polymer characterization equipment such as dynamic mechanical analysis, gas adsorption analysis, chemical vapor deposition reactors, ultra-high temperature furnaces, epifluorescent microscopy, patterned illumination system, x-ray diffractometer, x-ray photoelectron spectroscopy, high performance computing cluster, energy storage, heterogeneous catalysis , automated fluorescence microscopes for live-cell microscopy, microfluidic device fabrication facilities, cell culturing facilities, confocal laser scanning fluorescence microscope, dynamic/static light scattering, size exclusion chromatography, microplate reader, free radical analyzer DNA/protein electrophoresis, and more.

Admission procedures

Highly motivated students interested in earning an advanced graduate degree and the research activities of the department are encouraged to apply. All applicants must submit a completed application form, official copies of their undergraduate transcripts, 3 letters of recommendations, official GRE scores and TOEFL scores if they did not earn their BS degree from an ABET-accredited institution.

Financial support

Graduate research assistantships and fellowships are available to qualified students. The base stipend begins at $29,500 plus tuition and fees. Supplemental grants and fellowships are also available to outstanding candidates. Sponsored research work can be used toward thesis credit.

Doctor of Philosophy

Chemical Engineering (Ph.D.)

For more information about the Ph.D. program, see the Chemical Engineering section of this catalog.

Doctoral degree requirements

The Ph.D. degree requires 90 credit hours. This is divided among major course work, minor subjects, and research work. Students enrolled in 12 hours per semester during the regular semesters and 3 hours during the summer term would achieve this total in just over 3 years. A diversified and flexible choice of minor subjects and a good selection of research topics are available. Qualified students may bypass the master's degree and work directly toward the Ph.D. degree.

Requirements specific to the Department of Chemical Engineering (please see below) are as follows:

- Satisfactory completion of specified coursework.
- Satisfactory performance in a qualifying examination covering the field of Chemical Engineering.
- Submission of a written thesis proposal and satisfactory oral defense of this proposal.
- Submission of an acceptable dissertation, and satisfactory oral defense of this dissertation.
- Presentation of research results at a departmental seminar.

Required Courses

Ph.D. students are expected to be well grounded in the fundamentals of Chemical Engineering and must successfully complete the following courses (or their equivalents).

- CHE 735 - Chemical Engineering Analysis I **Credits:** 3
- CHE 815 - Advanced Chemical Engineering Thermodynamics **Credits:** 3
- CHE 822 - Advanced Chemical Reaction Engineering **Credits:** 3
- CHE 862 - Advanced Transport Phenomena I **Credits:** 3
- CHE 875 - Graduate Seminar in Chemical Engineering **Credits:** 1

Elective Requirements (18 hours)

Elective Graduate Courses - all students are required to demonstrate a mastery of some body of knowledge in their research field by completing elective courses. At least fifteen hours of work is required in addition to those listed above.

No more than 6 hours of course work at the 500-level are permitted.

Thesis Hours

A Ph.D. must include at least 30 hours of research credits. All students on stipends must be enrolled 9 hours per semester. Students receive research credit for those hours not taken as coursework. Thus, reaching this minimum is not difficult.

Master of Science

Chemical Engineering (M.S.)

A M.S. degree in Chemical Engineering requires 30 credit hours, and can be earned with either the thesis or report options. In the thesis option, 24 hours of course work and 6 hours of thesis are required. The thesis is based on directed research performed by the student. In the report option, 28 hours of course work and 2 hours of report are required. The report is based on a literature review or design project performed by the student.

Master's degree requirements

Required Curriculum

M.S. students are expected to be well grounded in the fundamentals of Chemical Engineering and must successfully complete the following courses (or their equivalents).

- CHE 735 - Chemical Engineering Analysis I **Credits:** 3
- CHE 815 - Advanced Chemical Engineering Thermodynamics **Credits:** 3
- CHE 822 - Advanced Chemical Reaction Engineering **Credits:** 3
- CHE 862 - Advanced Transport Phenomena I **Credits:** 3
- CHE 875 - Graduate Seminar in Chemical Engineering **Credits:** 1

  Elective Graduate Courses - all students are required to demonstrate a mastery of some body of knowledge in their research field by completing elective courses. At least nine hours of work is required in addition to those listed above.

Graduate Certificate

Air Quality Graduate Certificate

Contact: M.H. Hosni
E-mail: hosni@ksu.edu

Contact: Ronaldo Maghirang
E-mail: rmaghir@ksu.edu

This certificate is offered through the Chemical Engineering graduate program.

Educational objectives

The educational objectives of the air quality certificate program are as follows:

1. To prepare graduates for careers related to air quality
2. To encourage interdisciplinary educational experiences in air quality
3. To enhance the educational experiences of participating graduate students

Administration

The air quality program administrative office is the Institute for Environmental Research in Seaton Hall. This office will administer the air quality certificate program.

Students working toward advanced degrees should submit a proposed list of courses to be used to meet certification requirements to the director of the air quality program. Where these courses are included in a program of study for an advanced degree, they should be approved by the student's supervisory committee and the coordinator of the air quality certificate program. A copy of the approved program should be distributed to the student, major professor, and the graduate school. A file is maintained for each student who is in the certificate program by the administrative office in the Institute for Environmental Research. Where some courses for the certificate program are not included in the advanced degree program of study, the course list should be approved by the major professor and the coordinator of the air quality certificate program. For example, the student may decide to complete the certificate program after the advanced degree program of study is already filed and nearly completed.

The air quality graduate education committee will review the air quality certificate program periodically, and they will have the authority to approve modifications to the approved list of courses.

Air Quality Faculty

Faculty who wish to participate in the air quality program are welcome to do this. Those not presently listed may submit a request to the director to be added to the list.

Coordination

The air quality certificate program is coordinated by Mo Hosni, Institute for Environmental Research, Seaton Hall, and Ronaldo Maghirang, Associate Dean of Engineering, Rathbone Hall. All correspondence should be sent to the administrative office in the Institute for Environmental Research. Mo Hosni is the coordinator who officially approves course lists for the certificate program.

Certification requirements

The course requirements for the certificate program in air quality are as follows:

1. For the Ph.D. degree, 15 credit hours are required including two credits of Air Quality Seminar, at least one course which includes safety and health/toxicology, at least one course which includes air quality measurement and characterization, and at least one course which includes air quality management and control. To fulfill the interdisciplinary objectives of the program, the course list should include courses from at least three academic departments.
2. For the M.S. degree, 12 credit hours are required including one credit of Air Quality Seminar and courses from at least two of the three areas required for the Ph.D. The course list should include courses from at least three different departments.

It is expected that special topics courses in air quality will be approved for the certificate program by the air quality graduate education committee upon request following the procedure described below.

Air Quality Courses

Courses in Safety and Health/Toxicology

- DMP 650 - Fundamentals of Public Health and Food Safety **Credits:** 3
- AP 845 - Toxicology **Credits:** 2
- AP 830 - Toxins in the Biological System **Credits:** 2
- DMP 806 - Environmental Toxicology **Credits:** 2
- AP 831 - Current Topics in Toxicology **Credits:** 2
- FDSCI 915 - Food Toxicology **Credits:** 2
- IMSE 610 - Occupational Safety Engineering **Credits:** 3
- GENAG 711 - Occupational and Agricultural Health **Credits:** 3

Courses in Measurement and Characterization

- ASI 864 - Analytical Techniques-Immunoassays **Credits:** 1
- BAE 811 - Advances in Particle Technology **Credits:** 3
- CHM 566 - Instrumental Methods of Analysis **Credits:** 3
- FDSCI 713 - Rapid Methods and Automation in Microbiology **Credits:** 2
- GEOG 608 - Geographic Information Systems II **Credits:** 3
- GEOG 711 - Topics in Remote Sensing **Credits:** 3

Courses in Management and Control

- BAE 651 - Air Pollution Engineering **Credits:** 3
- FDSCI 791 - Advanced Application of HACCP Principles **Credits:** 3
- ME 622 - Indoor Environmental Engineering **Credits:** 3
- ME 721 - Thermal Systems Design **Credits:** 3
- ME 722 - Human Thermal Engineering **Credits:** 3

Supporting Courses

- AGRON 746 - Environmental Soil Physics **Credits:** 3
- AGRON 900 - Micrometeorology **Credits:** 3
- ASI 720 - Anaerobic Bacteriology **Credits:** 2
- BIOL 604 - Biology of the Fungi **Credits:** 3
- BIOL 687 - Microbial Ecology **Credits:** 3
- BIOL 805 - Advanced Mycology **Credits:** 3
- CE 967 - Physicochemical Processes **Credits:** 3
- CHE 682 - Surface Phenomena **Credits:** 3
- CHE 750 - Air Quality Seminar **Credits:** 1
- CHE 862 - Advanced Transport Phenomena I **Credits:** 3
- CHE 910 - Selected Topics in Transport Phenomena **Credits:** 3
- CHM 856 - Chemical Kinetics **Credits:** 3
- CHM 937 - Applications of Surface Science to Chemistry **Credits:** 3
- ENTOM 620 - Insecticides: Properties and Laws **Credits:** 2
- FDSCI 695 - Quality Assurance of Food Products **Credits:** 3
- GEOG 735 - Topics in Climatology **Credits:** 3
- GEOG 761 - Human Impact on the Environment **Credits:** 3
- GEOG 890 - Advanced Spatial Analysis Techniques **Credits:** 3
- GEOL 712 - Advanced Geochemistry **Credits:** 3
- ME 720 - Intermediate Fluid Mechanics **Credits:** 3
- ME 831 - Boundary Layer Theory **Credits:** 3
- PHYS 651 - Introduction to Optics **Credits:** 4
- PHYS 652 - Applied Optics and Optical Measurement **Credits:** 3

Civil Engineering

2118 Fiedler Hall
785-532-5862
Fax: 785-532-7717
gradce@ksu.edu
http://www.ce.ksu.edu

Department Head:

Mustaque Hossain

Director of graduate studies:

Stacey Kulesza

Graduate faculty:

*Husain M. Aziz, Ph.D., Purdue University
*Sunanda Dissanayake, Ph.D., University of South Florida
*Eric Fitzsimmons, Ph.D., Iowa State University
Krishna Ghimire, Ph.D., University of Kansas
*Mustaque Hossain, Ph.D., Arizona State University
*Jeongdae Im, Ph.D., University of Michigan

*Christopher Jones, Ph.D., Texas A&M University
Weston Koehn, Ph.D., Kansas State University
*Stacey Kulesza, Ph.D., Texas A&M University
*Landon Marston, Ph.D., University of Illinois - Urbana-Champaign
*Alexander P. Mathews, Ph.D., University of Michigan
*Hani G. Melhem, Ph.D., University of Pittsburgh
Parth Panchmatia, Ph.D., Purdue University
*Prathap Parameswaran, Ph.D., Arizona State Univeristy
*Dunja Peric, Ph.D., University of Colorado, Boulder
*Robert J. Peterman, Ph.D., Purdue University
*Hayder A. Rasheed, Ph.D., The University of Texas - Austin
Scott Schiff, Ph.D., University of Illinois - Urbana-Champaign

*Denotes graduate faculty that is certified to serve as the major professor for doctoral students.

Graduate Faculty Associate:

Program description

The Department of Civil Engineering at Kansas State University offers comprehensive programs leading to the degrees of master of science and doctor of philosophy in civil engineering. Specializations include environmental engineering, geotechnical engineering, structural engineering, transportation engineering, and water resources engineering. An active research program is conducted in each of these areas, and it is the goal of the department to maintain a close association between graduate study, research, teaching, and engineering practice.

Research facilities

The Department of Civil Engineering has several laboratories which can be used to perform a wide variety of graduate research projects. These include laboratories in the areas of environmental engineering, hydraulic engineering, materials testing, geotechnical engineering, structural engineering, and water resources engineering.

The department also has the Civil Infrastructure Systems Laboratory (CISL) which includes a full-scale Accelerated Pavement Testing facility.

In addition, the department has modern computing facilities including a number of personal computers and workstations.

Financial support

The department offers several graduate research and teaching assistantships. These positions are generally 0.4 or 0.5 time appointments and the stipends vary accordingly. In addition, a number of graduate research assistantships are supported through externally funded research projects obtained by individual faculty members. Student fees are assessed at the in-state level for graduate students who receive research or teaching assistantships.

Career opportunities

Graduate study in civil engineering will provide students with training for a wide variety of academic, technological, and public service careers. Students completing the master of science degree program typically find employment related to their chosen discipline in either private consulting firms or governmental agencies. Students completing the doctor of philosophy degree program can also expect to find employment in academic positions, or in government and private research laboratories.

Areas of emphasis

Environmental and water resources engineering: Mathews, Parameswaran, Starrett, Steward
Structural analysis and design: Melhem, Peterman, Rasheed
Geotechnical engineering: Peric, Tucker
Transportation and materials engineering: Dissanayake, Fitzsimmons, Hossain, Riding, Stokes

Concurrent

Concurrent B.S./M.S. in Civil Engineering

The civil engineering department offers a concurrent B.S./M.S. degree program in which high-performing students can earn bachelor's and master's degrees with limited overlap of coursework. Students can choose between completing research with thesis or coursework only option.

Admission Requirements

To qualify for the program, undergraduate students must have a cumulative GPA of at least 3.25 after completing 80 hours towards the B.S.C.E. degree. Typically, it takes students an additional year to complete the concurrent B.S./M.S. degree. Students must have a CE faculty member, who is also appointed to the KSU Graduate Faculty, agree to serve as their major professor. In accordance with Graduate School policies, students can request a change in major advisor after acceptance into the concurrent B.S./M.S. degree program.

Graduation Requirements

Students pursuing a research with thesis option MS degree can use 6 credit hours of approved 600 or above level courses and 3 credit hours of independent study (literature review and proposal of their research topic) to count towards both degrees. Students pursuing a coursework only option MS degree can use 6 credit hours of approved 600 or above level courses to count towards both degrees. Students must satisfy all other requirements established for non-concurrent CE MS students. Students can receive their BS degree upon completion of all requirements established for non-concurrent BS students.

Special Requirements

The Graduate School requires that all graduate courses be taken for graduate credit during the semester of enrollment. The Graduate School will not change an undergraduate course to a graduate course after grades are assigned. If the student has deferred admission, then the student must submit special enrollment request to enroll or change current course(s) to the graduate level credit.

- Students must complete 30 graduate credit hours with a graduate GPA of at least 3.0.
- Students must complete all B.S.C.E. degree requirements with the exception that up to 6 credit hours of approved 600 or above level classes taken for graduate credit can also count toward their B.S. degree

requirements and, for those students in the research with thesis option an additional 3 credit hours of independent study can also count toward their B.S. degree requirements.

Required Courses

Freshman Year - Fall Semester

- CE 015 - Engineering Assembly **Credits:** 0
- CE 101 - Intro. Civil Engineering **Credits:** 1
- CE 202 - Civil Engineering Graphics **Credits:** 3
- CHM 210 - Chemistry I **Credits:** 4
- ECON 110 - Prin. Macroeconomics **Credits:** 3
- ENGL 100 - Expository Writing I * **Credits:** 3
- MATH 220 - Anal. Geom. & Calc. I **Credits:** 4

TOTAL: 18 credit hours

Freshman Year - Spring Semester

- CE 015 - Engineering Assembly **Credits:** 0
- CE 212 - Elementary Surveying **Credits:** 3
- CHM 230 - Chemistry II **Credits:** 4
- GEOL 100 - Earth in Action **Credits:** 3
- MATH 221 - Anal. Geom. & Calc. II **Credits:** 4
- H & SS / K-State 8 ** **Credits:** 3

TOTAL: 17 credit hours

Sophomore Year - Fall Semester

- CE 015 - Engineering Assembly **Credits:** 0
- CIS 209 - C Computer Programming **Credits:** 3
- COMM 105 - Public Speaking IA **Credits:** 2
- MATH 222 - Anal. Geom. & Calc. III **Credits:** 4
- PHYS 213 - Engineering Physics I **Credits:** 5
- H & SS / K-State 8 ** **Credits:** 3

TOTAL: 17 credit hours

Sophomore Year - Spring Semester

- CE 015 - Engineering Assembly **Credits:** 0
- CE 333 - Statics **Credits:** 3
- MATH 340 - Elem. Differential Equations **Credits:** 4
- PHYS 214 - Engineering Physics II **Credits:** 5
- STAT 510 - Introductory Probability and Statistics I **Credits:** 3

TOTAL: 15 credit hours

Junior Year - Fall Semester

- CE 015 - Engineering Assembly **Credits:** 0
- CE 533 - Mechanics of Materials **Credits:** 3
- CE 534 - Mechanics of Materials Laboratory **Credits:** 1
- ME 512 - Dynamics **Credits:** 3
- ME 513 - Thermodynamics I **Credits:** 3
- ENGL 415 - Written Comm. for Engineers * **Credits:** 3
- H & SS / K-State 8 ** **Credits:** 3

TOTAL: 16 credit hours

Junior Year - Spring Semester

- CE 015 - Engineering Assembly **Credits:** 0
- CE 411 - Route Location and Design **Credits:** 3
- CE 522 - Soil Mechanics I **Credits:** 3
- CE 537 - Introduction to Structural Analysis **Credits:** 3
- CE 563 - Environmental Engineering Fundamentals **Credits:** 3
- ME 571 - Fluid Mechanics **Credits:** 3

TOTAL: 15 credit hours

Senior Year - Fall Semester

- CE 015 - Engineering Assembly **Credits:** 0
- CE 550 - Water Resources Engineering **Credits:** 3
- CE Design Electives **** **Credits:** 6
- CE Track Electives *** **Credits:** 6

TOTAL: 15 credit hours

Senior Year - Spring Semester

- CE 015 - Engineering Assembly **Credits:** 0
- CE 585 - Civil Engineering Project **Credits:** 3
- CE Design Electives **** **Credits:** 6
- Track Electives *** **Credits:** 6

TOTAL: 15 credit hours

Notes:

* Students must complete the appropriate prerequisite courses for ENGL 415, but may only apply 3 hours of ENGL 415 prerequisite credits towards their degree requirements.

** General education humanities and general education social sciences electives are to be selected from general education courses / K-State 8 that are also on the engineering humanities and social sciences elective list and need not be taken in the order listed in the curriculum.

*** Track Electives are to be selected in consultation with the student's academic advisor to satisfy the requirements of the Track the student has chosen. One course from either the Engineering Materials area or the Circuits, Fields and Electronics Engineering Science area is required in the General Track. Students in the concurrent B.S./M.S. degree program and pursing a coursework-only M.S. degree can apply 6 hours of graduate coursework and use these hours to

satisfy both undergraduate track electives requirements and M.S. coursework requirements. Students in the concurrent B.S./M.S. degree program and pursing a research-oriented M.S. degree can apply 6 hours of graduate coursework and 3 hours of independent study related to a research project and use these hours to satisfy both undergraduate track electives requirements and M.S. coursework requirements.

**** CE Design Electives are to be selected from the list approved by the department to satisfy Track requirements.

Doctor of Philosophy

Civil Engineering (Ph.D.)

Doctoral degree requirements

The general requirements for admission to the Civil Engineering graduate program include the receipt of a bachelor of science degree from an accredited civil engineering department and evidence that the applicant has the ability to do satisfactory graduate work. However, students not possessing a degree in civil engineering may be admitted if their undergraduate work is closely related to a specific discipline within the civil engineering program and they complete a core program of undergraduate civil engineering course work.

Students admitted for work toward a master of science degree can select a program of study requiring the completion of a master's thesis or a master's report within their area of interest. Students admitted for work toward a doctor of philosophy degree are required to develop an original research program, and complete a doctoral dissertation under the guidance of faculty members from the College of Engineering.

For information about the Ph.D. program, see the Engineering section of this catalog.

Master of Science

Civil Engineering (M.S.)

Master's degree requirements

The general requirements for admission to the Civil Engineering graduate program include the receipt of a bachelor of science degree from an accredited civil engineering department and evidence that the applicant has the ability to do satisfactory graduate work. However, students not possessing a degree in civil engineering may be admitted if their undergraduate work is closely related to a specific discipline within the civil engineering program and they complete a core program of undergraduate civil engineering course work.

Students admitted for work toward a master of science degree can select a program of study requiring the completion of a master's thesis or a master's report within their area of interest. Distance students can complete a course-work only option.

K-State CE's MS requires (i) 24 hours of coursework and 6 hours of thesis; or (ii) 28 hours of coursework and 2 hours of project; or (iii) for distance students - 30 hours of coursework and a final exam. The MS degree can be completed in one of the following areas of specialization:

- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering

- Water Resources Engineering

Students admitted for work toward a doctor of philosophy degree are required to develop an original research program, and complete a doctoral dissertation under the guidance of faculty members from the College of Engineering. For information about the Ph.D. program, see the Engineering section of this catalog.

Graduate Certificate

Geoenvironmental Graduate Certificate

Contact: Mustaque Hossain
E-mail: mustak@ksu.edu

The purpose of the geoenvironmental certificate program is to:

- Prepare graduates for careers related to geoenvironmental engineering;
- Promote interdisciplinary educational experiences in geoenvironmental engineering and;
- Enhance interactions among faculty and students in the allied science and engineering disciplines related to geoenvironmental engineering.

Consistent with the other certificate programs established by the Graduate School, this certificate program requires 12 credit hours of coursework. It includes nine credit hours from three required courses and three credit hours of elective chosen from a list of approved courses. The geoenvironmental certificate program is administered and coordinated in the Department of Civil Engineering.

Required Courses:

- CE 625 - Principles of Geoenvironmental Engineering **Credits:** 3
- CE 654 - Design of Groundwater Flow Systems **Credits:** 3
- CE 768 - Geoenvironmental Engineering Design **Credits:** 3

One Elective Course Chosen From:

- AGRON 605 - Soil and Environmental Chemistry **Credits:** 3
- AGRON 746 - Environmental Soil Physics **Credits:** 3
- AGRON 816 - Soil Physics **Credits:** 3
- AGRON 855 - Soil Organic Chemistry **Credits:** 3
- AGRON 905 - Advanced Soil Chemistry **Credits:** 3
- AGRON 916 - Advanced Soil Physics **Credits:** 3
- CE 723 - Designing with Geosynthetics **Credits:** 3
- CE 725 - Seepage in Permeable Materials **Credits:** 3
- CE 762 - Water Treatment Processes **Credits:** 3
- CE 766 - Wastewater Engineering: Biological Processes **Credits:** 3
- CE 807 - Applied Geostatistics **Credits:** 2
- CE 823 - Engineering Properties of Cohesive Soils **Credits:** 3
- CE 825 - Environmental Geotechnology **Credits:** 3
- CE 828 - Advanced Seepage and Settlement Analysis in Soils **Credits:** 3
- CE 854 - Analysis of Groundwater Flow **Credits:** 3
- CE 861 - Environmental Engineering Chemistry **Credits:** 3

- CE 930 - Advanced Topics in Geotechnical Engineering **Credits:** 1-18
- CE 970 - Advanced Topics in Environmental and Water Resources Engineering **Credits:** 1-18
- CHE 650 - Hazardous Waste Engineering Seminar **Credits:** 1
- CHE 682 - Surface Phenomena **Credits:** 3
- CHE 715 - Biochemical Engineering **Credits:** 3
- CHE 805 - Selected Topics in Biochemical Engineering **Credits:** 3
- CHE 862 - Advanced Transport Phenomena I **Credits:** 3
- GEOL 611 - Hydrogeology **Credits:** 3
- GEOL 712 - Advanced Geochemistry **Credits:** 3

Transportation Engineering Graduate Certificate

Contact: Mustaque Hossain
Email: mustak@ksu.edu
Home Page: http://global.k-state.edu/engineering/transportation/

The provision of a safe, efficient and environmentally sound transportation system is critical to the physical, environmental and economic health of the nation. A pool of highly qualified transportation professionals is required to plan, design, operate and maintain our nation's transportation infrastructure, facilities, and services. There is a need for educational programs designed for transportation professionals who want to expand their knowledge and skills through a program of graduate study that is less extensive, and different from, a traditional master's program. Offered through the Civil Engineering graduate program, the transportation engineering certificate program will provide transportation professionals with the opportunity to pursue a focused collection of courses that, when completed, allows the student to receive recognition of their continued effort in the area of transportation engineering, or to cumulate credit hours toward their master's degree.

Certificate Requirements:

The Graduate Certificate in Transportation Engineering requires the completion of 12 credit hours of course work as described below.

Core Courses:

All students must complete two of the following Core Courses (6 credit hours):

- CE 774 - Pavement Design **Credits:** 3
- CE 775 - Traffic Engineering **Credits:** 3
- CE 786 - Land Development for Civil Engineers and Planners **Credits:** 3

Elective Courses:

In addition to the Core Courses, students must complete a minimum of 6 additional credit hours of electives from the remaining core course and the following approved list of courses.

- CE 680 - Economics of Design and Construction **Credits:** 3
- CE 741 - Civil Engineering Materials II **Credits:** 3
- CE 771 - Travel Demand Modeling **Credits:** 3
- CE 777 - Portland Cement Concrete Pavements **Credits:** 3

- CE 816 - Selected Topics in Civil Engineering / Adv. Finite Element Modeling of Structures **Credits:** 1-18
- CE 872 - Transportation Safety **Credits:** 3
- CE 874 - Sustainable Transportation Asset Management **Credits:** 3
- CE 875 - Traffic Flow Theory **Credits:** 3
- Other Graduate level course work (maximum of 3 credit hours) in Engineering Management or Statistics as approved by the Program Director.

Other Requirements:

In addition to the course work requirements described above, students are further required to demonstrate advanced knowledge and competency in the area of transportation engineering by completing one of the following:

1. A research paper prepared as part of the requirements of one of the Core or Elective Courses described above. To satisfy this requirement, the research paper must have received a minimum letter grade of "B."
2. Presentation of the results of a transportation engineering related study or project to the faculty of the Transportation Engineering Certificate Program. To satisfy this requirement, the study or project must have been completed under the supervision of the candidate for the Graduate Certificate in Transportation Engineering.

The required evidence of advanced knowledge and competency should be presented to the Program Coordinator prior to the beginning of the candidate's final semester of course work.

Computer Science

Department of Computer Science
2184 Engineering Hall
785-532-6350
Fax: 785-532-7353
cisoffic@ksu.edu
http://www.cis.ksu.edu/

Department Head:

Scott DeLoach

Director of graduate studies:

Mitchell Neilsen

Graduate faculty:

*George Amariucai, Ph.D., Louisiana State University
*Torben Amtoft, Ph.D., University of Aarhus
*Daniel Andresen, Ph.D., U. of California, Santa Barbara
Myron Calhoun, (Emeritus) Ph.D., Arizona State University
*Cornelia Caragea, Ph.D., Iowa State University
*Doina Caragea, Ph.D., Iowa State University
*Patrice Chalin, Ph.D., Concordia University
*Scott A. DeLoach, Ph.D., Air Force Institute of Technology
*David Gustafson, Emeritus, Ph.D., University of Wisconsin-Madison

*William Hankley, (Emeritus) Ph.D., Ohio State University
*John Hatcliff, Ph.D., Kansas State University
*Pascal Hitzler, Ph.D., University of College Cork, Ireland
*Rodney Howell, Ph.D., University of Texas-Austin
*William Hsu, Ph.D., University of Illinois at Urbana-Champaign
*Masaaki Mizuno, Ph.D., Iowa State University
*Arslan Munir, Ph.D., University of Florida
*Mitchell Neilsen, Ph.D., Kansas State University
*Xinming (Simon) Ou, Ph.D., Priceton University
*Pavithra Prabhakar, Ph.D., University of Illinois
*Vekatesh-Prasad Ranganath, Ph.D., Kansas State University
*Robby, Ph.D., Kansas State University
*David Schmidt, Emeritus, Ph.D., Kansas State University
*Lior Shamir, Ph.D., Michigan Technology University
*Elizabeth Unger, (Emeritus) Ph.D., University of Kansas
Maarten Van Swaay, (Emeritus) Ph.D., Princeton
*Eugene Vasserman, Ph.D., University of Minnesota
*Virgil Wallentine, Emeritus, Ph.D., Iowa State University
*Joshua Weese, Ph.D., Kansas State University
*Maria Zamfir-Bleyberg, (Emeritus) Ph.D., University of California-Los Angeles

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

As of Spring 2014, the department consists of 16 graduate faculty members, 43 M.S students, 8 M.S.E. students, and 36 PhD students.

Current faculty research projects are funded by the National Science Foundation, Office of Naval Research, U.S. Air Force, Lockheed Martin Corporation, Rockwell Collins, U.S. Department of Agriculture, U.S. Department of Energy, and DARPA.

Objectives

The department is committed to excellence in scholarly activities and research; interdepartmental and interuniversity collaborative projects are particularly emphasized. Key research areas include programming languages, high assurance software, distributed and embedded systems, cybersecurity, computation science, bioinformatics, databases, software engineering, agent-oriented software systems, and robotics.

Research groups

Programming languages research in the department concentrates upon techniques and tools for designing, analyzing, and implementing programming languages. Specific topics include abstract interpretation, algebraic semantics, compiler synthesis from denotational semantics definitions, full abstraction, lambda definability, type theory, probabilistic semantics, concurrency theory, and model checking.

High assurance software research in the department focuses on developing techniques for designing and implementing software that are able to establish with high levels of assurance that the resulting systems satisfy their requirements and are free from unanticipated faults. Automated tool frameworks for software modeling, software architecture, and component integration techniques for large scale systems of systems are being developed.

Research in distributed and embedded systems is focusing on developing theory and tools for sensor network, parallel and grid computing, and distributed, cooperative robotics. Specific topics include tools to automate the design, analysis

and deployment of sensor systems, tools for solving computational intensive scientific problems via parallel computing, and to effectively utilize the available computation, storage and network resources in a cluster of machines, and frameworks to control large numbers of heterogeneous, semi-autonomous robots in dynamic, uncertain environments in order to cooperatively perform a task.

Computational Science and Informatics research in the department involves the application of artificial intelligence heuristics, algorithms, data structures, and database concepts and processes to specific domains. For example, in bioinformatics – the study of how biological data is stored, retrieved, and analyzed to solve a specific biological research problem, computer scientists use data mining techniques and algorithms to find patterns in biological data that enable scientists to derive structure and relate structure to the function of a specific gene. Research is being performed by several interdisciplinary teams of domain specialists and informatics exports from Computer Science.

Cybersecurity research in the department is addressing fundamental issues in integrity, confidentiality and availability of data/systems resources, and practical issues in network and system security defense. Methodologies are being developed to provide high assurance through development of tractable static analyses that cope with real-world information policies, complementing and leveraging the explicit access controls on which current systems rely. Active research programs are going on in enterprise-network security management and defense, including attack graph-based security analysis, intrusion detection, and security metrics.

The department's software engineering research encompasses measures, specification, testing and analysis of sequential and concurrent software systems. Software measures research applies measurement theory to the development of practical software measures and specification methodologies. Software specification research uses formal approaches for describing the intended behavior of complex systems. Testing and analysis research involves development and evaluation of approaches for validation and verification of software. Research that spans these areas is ongoing and ranges from theoretical developments, through construction of toolsets that enable application of research results, to empirical evaluation of software engineering techniques.

The robotics laboratory supports research into software engineering approaches to building robust autonomous robotics software, including multi-agent solutions. Teams from the lab have placed first, second, and third in the annual AAAI Robotics competitions.

The agent-oriented software engineering research group is developing widely recognized foundations and engineering tools that support construction of systems organized as collections of independent and autonomous "agents", and is demonstrating the effectiveness of these techniques in domains of robotics and sensor networks.

Database research in the department focuses on basic theoretical and practical issues in mainstream database systems, as well as on issues lying at the border of databases and knowledge and data engineering (KDE). Topics include database and knowledge base design, database security and integrity, static and dynamic integrity constraints, extensible database management systems, temporal and active databases, data warehousing, online analytical processing (OLAP), data cleansing, data mining, knowledge discovery in databases (KDD), and information visualization.

The department's artificial intelligence (AI) research focuses on knowledge representation for reasoning and planning under uncertainty, machine learning for knowledge discovery and data mining, intelligent information retrieval, web and clickstream mining, expert systems, and intelligent control systems, also known as real-time intelligent systems. Methodologies range over inductive, analytical, and multistrategy learning and include research programs in artificial neural networks, genetic and evolutionary computation, and probabilistic learning and inference. Application areas include decision support; human-computer intelligent interaction (HCII); industrial, commercial and defense automation; autonomous robotics; and multi-agent systems.

Research facilities

The department maintains a large network of servers and workstations connected to Internet and Internet2. The servers include Sun servers running Solaris, Windows based PC servers, and a Beowulf cluster system consisting of 35 nodes totalling 210 processors running Linux. The department also has an 80 processor NCR Teradata database server with 1.6 terabytes of online storage. The workstations include systems running Solaris and PCs running Windows and Linux. Many software packages are available including CASE tools, embedded system and robotics system development environments, and database systems.

Additional campus-wide computer facilities are provided by the university's Computing and Network Services organization and the college of Engineering, including Sun servers and PC based workstations throughout campus.

Admission

The primary admission requirement for the M.S.E. program is a baccalaureate degree in computer science, computer engineering, or a related engineering or science area, with a grade point average of 3.0 or above (junior/senior years). Applicants with degrees in other areas must have mathematical maturity as demonstrated by courses in logic or discrete mathematics, plus courses in programming, data structures, and algorithms, and either a course or experience in software engineering.

In addition to the requirements for admission to the M.S.E. program, an M.S. applicant's background must include mainstream computing science, namely object-oriented and nonprocedural programming languages, architecture, operating systems, database systems, and computing-related mathematics. An applicant must take the GRE receiving minimum scores of 400 Verbal, 650 Quantitative, and 600 Analytical. The advanced exam in computer science is recommended. International students must take the TOEFL exam and receive a minimum score of 575 (paper based), or 233 (computer based). International students who want to be considered for a graduate teaching assistant (GTA) position must take the TSE exam and receive a minimum score of 50.

In addition to the requirements for admission to the M.S. program, an applicant for the Ph.D. program must have a master's degree in computing science or a bachelor's degree plus strong, advanced computing knowledge. Solid preparation in theoretical computer science and advanced knowledge in one or more applications areas (compiling, operating systems, database systems, etc.) are also required.

Concurrent

Concurrent B.S in Computer Science and Master of Business Administration

Freshman Fall Semester (15-16 credit hours)

- CIS 115 Introduction to Computing Science **Credits:** 3
- CIS 015 Undergraduate Seminar **Credits:** 0

- COMM 105 Public Speaking IA **Credits**: 2
  Or
- COMM 106 Public Speaking I **Credits:** 3

- ECON 110 Principles of Macroeconomics **Credit:** 3
- ENGL 100 Expository Writing I **Credits:** 3
- MATH 220 Analytic Geometry and Calculus I **Credits:** 4

Freshman Spring semester (15 credit hours)

- Math/science elective with laboratory (first of five) **Credits:** 4
- CIS 200 Programming Fundamentals **Credits:** 4
- ECE 241 Introduction to Computer Engineering **Credits:** 3
- MATH 221 Analytic Geometry and Calculus II **Credits:** 4

Sophomore Fall semester (13 credit hours)

- Math/science elective with laboratory (first of five) **Credits:** 4
- CIS 300 Data and Program Structures **Credits:** 3
- CIS 301 Logical Foundations of Programming **Credits:** 3
- ENGL 200 Expository Writing II **Credits:** 3

Sophomore Spring semester (16 credit hours)

- Math/science elective (third of five) **Credits:** 3
- Communication elective **Credits:** 3
- ECON 120 Principles of Microeconomics **Credits:** 3
- CIS 308 - C Language Laboratory **Credits:** 1
- CIS 400 – Object-Oriented Design, Implementation, and Testing **Credits:** 3
- MATH 510 Discrete Mathematics **Credits:** 3

Junior Fall semester (15 credit hours)

- Humanities/social science elective (first and second of three) **Credits:** 6
- CIS 501 Software Architecture and Design **Credits:** 3
- CIS 415 Ethics and Conduct for Computing Professional **Credits:** 3
- CIS 560 Database System Concepts **Credits:** 3

Junior Spring semester (15 credit hours)

- Technical elective (first of five) **Credits:** 3
- CIS 450 Computer Architecture and Operations **Credits:** 3
- CIS 575 Introduction to Algorithm Analysis **Credits:** 3

- ENGL 415 Written Communication for Engineers
  Or
  ENGL 516 Written Communication for the Sciences **Credits:** 3

- STAT 510 Introductory Probability and Statistics I **Credits:** 3

Senior Fall semester (15-16 credit hours)

- Technical electives (second of five) **Credits:** 3
- MANGT 820 Managing Organizational Behavior **Credits:** 3
- ACCTG 810 Foundations of Accounting **Credits:** 3
- Math/science elective (fourth of five) **Credits:** 3

- Unrestricted elective **Credits:** 3-4

Senior Spring semester (12 credit hours)

- MANGT 810 Operations and Supply Chain Management **Credits:** 3
- MKTG 810 Marketing Concepts and Research **Credits:** 3
- FINAN 815 Foundations of Finance **Credits:** 3
- ECON 815 Economic Analysis for Business **Credits:** 3

Fifth Fall semester (15 credit hours)

- CIS 505 – Introduction to Programming Languages **Credits:** 3
- Humanities/social science elective (third of three) **Credits:** 3
- MANGT 880 Business Strategy **Credits:** 3
- Technical electives (third and fourth of five) **Credits:** 6

Fifth Spring semester (15 credit hours)

- Technical elective (fifth of five) **Credits:** 3
- MANGT 860 Managing the Triple Bottom Line Business **Credits:** 3

- GENBA 890 Business Capstone
  Or
  GENBA 897 MBA Internship **Credits:** 3

- Unrestricted elective **Credits:** 3
- Math/science elective (fifth of five) **Credits:** 3

Notes:

A grade of C or better is required for all graded courses listed by specific course number above.

All students new to the CS department must complete CIS 015.

Math/science electives must be taken for undergraduate credit and have departmental approval.

Humanities/social science electives must be taken for undergraduate credit from the list approved by the College of Engineering.

Communications Elective Credits: (3) The Communications Elective must be chosen from:

- COMM 322 – Interpersonal Communication **Credits:** 3
- COMM 323 – Nonverbal Communication **Credits:** 3
- COMM 326 – Small Group Discussion Methods **Credits:** 3
- MANGT 420 – Principles of Management **Credits:** 3
- THTRE 261 – Fundamentals of Acting **Credits:** 3
- THTRE 265 – Fundamentals of Improvisation I, II **Credits:** 3

Admission to MBA program

A student can apply to the graduate school and be admitted to the MBA program upon earning a >= 3.000 GPA in at least 80 credit hours of their undergraduate degree.

Technical electives must be comprised of the following:

- C or better in either CIS 520-Operating Systems I, CIS 525-Introduction of Network Programming, or CIS 625-Concurrent Software Systems.
- C or better in either CIS 598-Computer Science Project or CIS 642-Software Engineering Project I. Students taking CIS 642 must take it for undergraduate credit and take CIS 643-Software Engineering Project II the following semester as an unrestricted elective.
- Three courses taken for graduate credit from the following list:
    1. CIS 732 Programming Techniques for Data Science and Analytics
    2. MIS 670 Social Media Analytics and Web Mining
    3. At most one of:
        - MIS 665 Business Analytics and Data Mining
        - MKTG 880 Applied Marketing Analytics
        - MKTG 881 Advanced Marketing Analytics

4. Other Data Analytics courses, including special topics courses, approved by both the Department of Computer Science and the College of Business Administration.

NOTE: K-State 8 General Education Requirements

K-State 8 General Requirements

Total hours required for graduation (147 credit hours)

Concurrent B.S./M.S. in Computer Science

The combined B.S./M.S. program in Computer Science provides exceptional undergraduates with the opportunity to obtain both a Bachelor of Science and a Master of Science in Computer Science in a shorter time than typically required to earn a B.S. plus M.S. if both degrees are pursued separately. The program will allow students to pursue two of the current capstone options for the M.S. in Computer Science: a Master's Report or a Master's Thesis. The goal of the program is to produce graduates with a broad, solid grounding in Computer Science to support further study at the doctoral level or to enable the graduate for an advanced position in industry or research laboratory.

Admission Requirements

Students may apply for the concurrent B.S./M.S. program from the second semester of the junior year through the second semester of the senior year (when they have accumulated at least 80 credit hours and before they have graduated with the B.S. degree).

Students must have been admitted to the professional program.

Minimum standards for admission to the concurrent program are a cumulative GPA of 3.00 and a GPA of 3.25 in the Computer Science Core courses. Retention in the program requires maintenance of a 3.00 GPA in both undergraduate and graduate coursework.

Application Process

Before acceptance into the concurrent degree program, the student will select a major professor from the Graduate Faculty in Computer Science. The major professor should agree to supervise the student's graduate program and provide a reference letter, including their plan to supervise, in the Graduate School application. The rest of the application process will be the same as for the traditional M.S. degree except completion of the B.S. degree is not required. The following steps are required:

KSU graduate application form completed online before semester of enrollment. In general, applicants are only considered for fall enrollment. Applicants should complete the K-State Graduate School application process. The applicant's statement of academic objectives must be submitted with the application. Three letters of reference and transcript(s) of all undergraduate work must be submitted with the application.

The graduate program will process the application of the student and forward it to the Graduate School, as currently occurs for students holding a B.S. who apply to the M.S. program. Should the student meet the requirements, provisional admission to the M.S. program will be granted, pending the award of the B.S. degree. The B.S. degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.S. and M.S. degrees may be awarded concurrently.

Program Guidelines

The student will work closely with the major professor to form a supervisory committee and file a program of study by the end of the first full semester following the student's acceptance into the concurrent degree program, or the second semester of the student's junior year, whichever is later. The undergraduate advisor will advise the student in the academic progress toward the B.S. degree, and the major professor will supervise the student's academic progress and preparation for the M.S. degree capstone (report or thesis). A typical M.S. program of study for students in the concurrent program would be identical to that for students in the traditional M.S. program: a report option requiring 30 hours including 2 credit hours of report and 1 credit hour of seminar or a thesis option requiring 30 hours including 6 credit hours of research. An oral presentation is required for each option and original research is required for the thesis option.

A maximum of 9 graduate credit hours will count toward both the B.S. and M.S. degrees. The 9 graduate credit hours counted toward both degrees will be courses among the following once they are provisionally admitted to the M.S. program:

Languages:

- CIS 705 - Programming Languages **Credits:** 3
- CIS 706 - Translator Design I **Credits:** 3
- CIS 771 - Software Specification **Credits:** 3
- CIS 806 - Semantics of Programming Languages **Credits:** 3

Systems:

- CIS 720 - Advanced Operating Systems **Credits:** 3
- CIS 721 - Real-Time Systems **Credits:** 3
- CIS 722 - Operating System Practices **Credits:** 3
- CIS 725 - Advanced Computer Networks **Credits:** 3
- CIS 726 - Advanced World Wide Web Technologies **Credits:** 3

- CIS 750 - Advanced Computer Architecture **Credits:** 3
- CIS 751 - Computer and Information Security **Credits:** 3

Applied CS:

- CIS 655 - Security and Reliability of Computing Systems **Credits:** 3
- CIS 730 - Principles of Artificial Intelligence **Credits:** 3
- CIS 740 - Software Engineering **Credits:** 3
- CIS 744 - Advanced Software Analysis and Design **Credits:** 3
- CIS 761 - Data Base Management Systems **Credits:** 3

Theory:

- CIS 770 - Formal Language Theory **Credits:** 3
- CIS 775 - Analysis of Algorithms **Credits:** 3

Note that CIS 705 can be substituted for CIS 505 to satisfy the programming language course requirement in the B.S. program. Also, CIS 751 can be substituted for CIS 551 in the B.S. program. Students who take CIS 505 or CIS 551 cannot take CIS 705 or CIS 751, respectively, to meet the M.S. program requirements. The graduate-level courses can be taken as either technical electives or unrestricted electives for the B.S. program.

Doctor of Philosophy

Computer Science (Ph.D.)

Doctor of philosophy

The Ph.D. degree in Computer Science is offered through the Computer Science graduate program. Requirements include 90 semester hours of graduate-level credit. All work must be completed within seven years.

General requirements include: Completing the Breadth Requirement and passing the Research Proficiency Exam (Preliminary Examination); successfully presenting a research plan to one's supervisory committee at a research proposal meeting; and completing the research plan, writing a dissertation, and successfully defending the dissertation in an open forum.

General requirements include:

1. Completing the Breadth Requirement
2. Passing the Research Proficiency Exam (RPE)
3. Passing the Preliminary Examination
4. Completing a Proposal Defense
5. Writing a dissertation and successfully defending the dissertation in an open forum.

Course work requirements include:

- 24 hours of course credit at Kansas State University beyond the master's degree level

- 15 hours must be 800 level or above
- One or more courses in theoretical or fundamental topics
- At least 30 hours of Ph.D. research credits.

Breadth Requirement

The Breadth requirement requires demonstrating proficiency in six areas: Implementation, Languages, Systems, Applied CS, Foundations, and Algorithms.

The Breadth requirement must be completed by the end of the fifth semester. If the student fails to complete the Breadth Requirement within the specified time, the student must leave the Ph.D. program.

The student must receive a B or better in each course used to satisfy the Breadth Requirement. In addition, the overall average of all courses used to satisfy the Breadth Requirement must be at least 3.5. Courses taken at KSU as part of B.S. or M.S. or M.S.E. degree or approved courses from institutions with joint PhD program with the CS Department at KSU can be used to satisfy the breadth requirement. A single course cannot be used to satisfy the breadth requirement in more than one area.

In extenuating situations, outside experience or courses transferred from other institutions can be proposed to satisfy Breadth Requirements if approved by the Graduate Studies Committee.

Proficiency in Implementation Area

Proficiency in Implementation area can be demonstrated by completing one course from the following group:

- CIS 641, CIS 690, CIS 706, CIS 722, CIS 736

Proficiency in Languages Area

Proficiency in Languages area can be demonstrated by completing one course from the following group:

- CIS 705, CIS 706, CIS 771, CIS 806

Proficiency in Systems Area

Proficiency in Systems area can be demonstrated by completing one course from the following group:

- CIS 720, CIS 721, CIS 722, CIS 725, CIS 726, CIS 750, CIS 751

Proficiency in Applied CS Area

Proficiency in Applied CS area can be demonstrated by completing one course from the following group:

- CIS 655, CIS 730, CIS 740, CIS 744, CIS 761

Proficiency in Foundations Area

Proficiency in Foundations area can be demonstrated by completing one course from the following group:

- CIS770

Proficiency in Algorithms Area

Proficiency in Algorithms area can be demonstrated by completing one course from the following group:

- CIS775

Research Proficiency Exam

Ph.D. students must pass a Research Proficiency Exam (RPE). The RPE is meant to judge the student's ability to conduct research, and is expected to lead the student into PhD research.

The RPE will be one-semester long, and during this semester, the student must make three public presentations and produce a written report. The gap between the presentations must be approximately four weeks and the last presentation must be before finals week.

Students must have their Program of Study filed with the Graduate School before requesting to schedule the first presentation.

For the RPE exam, the student must also fill out the RPE Form and form an RPE committee consisting of three faculty members from the CS department. Members of the PhD supervisory committee (as listed in the Program of Study form) belonging to the CS department must be included in the RPE committee. However, the Chair of the RPE committee must be a committee member who is not the Major Professor.

The student will start this process by choosing an area in consultation with the Major Professor. The first presentation should include a literature survey of the area, an open problem, and a proposed approach. At the end of the first presentation, the supervisory committee will approve the plan or suggest an alternative problem. The second presentation should present the progress made towards addressing this problem. The third presentation must be accompanied by a written report containing a literature survey, a description of the problem addressed, the technical approach used to solve the problem and the results. At the end of the first and second presentations, the student will be provided feedback on his/her progress and expectations for the next presentation. After the final presentation, the student's work will be judged as "Pass" or "Fail" by the RPE committee. Positive votes from a majority of the RPE committee will constitute a "Pass". The Chair of the RPE committee will record the committee decision on the RPE ballot.

The RPE must be taken by the end of the fifth semester. If the RPE is graded as "Fail", the student will have one more chance to pass the RPE in the following semester. During the second attempt, the RPE committee may choose to give the student a different problem to work on.

Preliminary Examination

The student must request a Preliminary Examination Ballot from the Graduate School within one semester of completing the RPE and Breadth Requirements. The Preliminary Examination Presentation should include a presentation of the plan for the dissertation research and must be approved by the supervisory committee. Upon passing the Preliminary Examination, the student will be admitted to candidacy for the Ph.D. degree by the Graduate School. The Preliminary Examination Presentation may be completed in conjunction with the final RPE Presentation.

Master of Science

Computer Science (M.S.)

Master of science degree

The M.S. degree in Computer Science requires a minimum of 30 credit hours of graduate level course work. The degree program can take one of three forms: a report option requiring 30 hours including 2 credit hours of report and 1 credit hour of seminar; a thesis option requiring 30 hours including 6 credit hours of research; and a non-thesis/report option requiring 33 hours of computer science classes. An oral presentation is required for each option and original research is required for the thesis option.

Course work must include a course from each of the following areas:

The student must receive a grade of B or better for all classes assigned by the Graduate Studies Committee and for each course used to satisfy the following requirements.

Languages:

- CIS 705 - Programming Languages **Credits:** 3
- CIS 706 - Translator Design I **Credits:** 3
- CIS 771 - Software Specification **Credits:** 3
- CIS 806 - Semantics of Programming Languages **Credits:** 3

Systems:

- CIS 720 - Advanced Operating Systems **Credits:** 3
- CIS 721 - Real-Time Systems **Credits:** 3
- CIS 722 - Operating System Practices **Credits:** 3
- CIS 725 - Advanced Computer Networks **Credits:** 3
- CIS 726 - Advanced World Wide Web Technologies **Credits:** 3
- CIS 750 - Advanced Computer Architecture **Credits:** 3
- CIS 751 - Computer and Information Security **Credits:** 3

Applied CS:

- CIS 655 - Security and Reliability of Computing Systems **Credits:** 3
- CIS 730 - Principles of Artificial Intelligence **Credits:** 3
- CIS 740 - Software Engineering **Credits:** 3
- CIS 744 - Advanced Software Analysis and Design **Credits:** 3
- CIS 761 - Data Base Management Systems **Credits:** 3

Theory:

- CIS 770 - Formal Language Theory **Credits:** 3
- CIS 775 - Analysis of Algorithms **Credits:** 3

Implementation:

Every student must successfully complete a significant implementation under the guidance of a faculty member. This will usually be done as a part of CIS 641, CIS 690, CIS 706, CIS 722 or CIS 736. The effort must be certified by a faculty member and the student must request this in writing at the beginning of the course.

Specialization:

Any course numbered CIS 800 or higher except seminar, projects, and research courses. No course may be used to satisfy more than one requirement.

Electrical and Computer Engineering

Mike Wiegers Department of Electrical and Computer Engineering
1701D Platt St
3108 Engineering Hall
785-532-5600
Fax: 785-532-7353
grad@ece.ksu.edu
http://www.ece.ksu.edu

Department Head:

Don Gruenbacher

Director of graduate studies:

Andrew Rys

Graduate faculty:

*Charles Carlson, Ph.D., Kansas State University
*Kenneth H. Carpenter, (Emeritus), Ph.D., Texas Christian University
*D. V. Satish Chandra, Ph.D., Auburn University
*Sanjoy Das, Ph.D., Louisiana State University
*Darren Dawson, Ph.D., Georgia Institute of Technology
*Dwight D. Day, Ph.D., Oklahoma State University
James E. DeVault, (Emeritus) M.S., University of Michigan
*John J. Devore, Ph.D., Kansas State University
*Ruth A. Dyer, Ph.D., University of Kentucky
*Stephen A. Dyer, Ph.D., Kansas State University
*Fariba Fateh, Ph.D., Kansas State University
*Richard R. Gallagher, (Emeritus) Ph.D., Iowa State University
*Don M. Gruenbacher, Ph.D., Kansas State University
*Xiaolong Guo, Ph.D., University of Florida
*William Hageman, Ph.D., University of Central Florida
*Jungkwun Kim, Ph.D., State University of New York at Buffalo
*Sung-O Kim, Ph.D., Inha University
*William B. Kuhn, Ph.D., Virginia Polytechnic and State University
*Kexing Lai, Ph.D., Ohio State University

Donald H. Lenhert, (Emeritus) Ph.D., University of New Mexico
*Ruth Douglas Miller, (Emeritus) Ph.D., University of Rochester
*Behrooz Mirafzal, Ph.D., Marquette University
*Medhat M. Morcos, Ph.D., University of Waterloo
*Balasubramaniam Natarajan, Ph.D., Colorado State University
Alexei Nikitin, Ph.D., University of Kansas
*Anil Pahwa, Ph.D., Texas A & M University
*Punit Prakash, Ph.D., University of Wisconsin, Madison
*Andrew Rys, Ph.D., Texas Tech University
*Caterina Scoglio, Ph.D., University of Rome
*Mohammad Shadmand, Ph.D., Texas A&M University
David L. Soldan, Ph.D., Kansas State University
*David Thompson, Ph.D., University of Michigan
*Steve Warren, Ph.D., The University of Texas at Austin
*Hongyu Wu, Ph.D., Xi'an Jiaotong University
Stanley Young, Ph.D., Kansas State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Graduate Faculty Associate:

Tim Sobering, M.S., Kansas State University

Program description

The Mike Wiegers Department of Electrical and Computer Engineering offers courses and programs leading to master of science and doctor of philosophy degrees. Several areas of specialization are available at the graduate level. Major areas are bioengineering, communications systems, computer engineering, control systems, electromagnetics, instrumentation, power systems, renewable energy signal processing, and solid-state electronics.

At the master's level there are three options: thesis, report, and course work only. All require a minimum of 30 hours of credit. The Ph.D. program requires 60 hours beyond the master's, including original research of sufficient quality and importance to merit publication in a refereed journal.

For information about the Ph.D. program, see the Engineering section of this catalog. (Click here)

Research facilities

The department is located in the engineering complex. This facility has been designed to provide an excellent academic environment. There are numerous well-equipped instructional and research laboratories including the computer laboratories, signal and image processing laboratory, electronics lab, communication circuits laboratory, bioengineering laboratory, energy systems laboratory, and solid-state electronics laboratory.

Extensive computing resources are available to the department. These cover a wide range including: PCs, workstations, and servers. Access to supercomputers is also available.

Financial support

Research and teaching assistantships are available on a competitive basis. Students on half-time assistantships pay in-state fees. Graduate students have either teaching, research, or both responsibilities.

Career opportunities

Graduate study in electrical engineering will prepare engineers to pursue careers in many diverse, high technology areas. These careers can be in government, industry, or academia. Possible areas of employment are communications systems, medical equipment design, computer design and applications, power generation and distribution, automotive systems, manufacturing systems, and so on. Electricity and electronics are so necessary for our quality of life that it is difficult to find an area in which electrical engineers and computer engineers are not employed.

Doctor of Philosophy

Electrical and Computer Engineering (Ph.D.)

Offered through the Electrical and Computer Engineering. Please see the ECE website for detailed information regarding admission.

Doctoral Degree Requirements

Credit Hour Requirements

A total of 90 graduate credit hours of work are required beyond the Bachelor's degree. Up to 30 credit hours from a Master's program can be applied towards the Ph.D. degree. The Doctoral Program of Study should normally follow these guidelines:

1. A minimum of 30 hours of doctoral research credit.
2. A minimum of 15 hours of graded coursework at the 800 level or above.
3. No 500-level courses in Electrical and Computer Engineering may be taken for credit. For coursework beyond the master's degree, no more than 6 credit hours of 500-level courses outside EECE are permitted. For students who bypass the master's degree, no more than 12 credit hours of 500 level courses outside EECE are permitted.
4. Transfer credits are allowed within the conditions specified by the Graduate Handbook.

Graduate Seminar

All on-campus graduate students are required to attend the departmental graduate seminar and will be required to give a seminar presentation on their thesis or report. Their enrollment in the zero credit hour seminar course, EECE 896, is required each semester.

Preliminary Examination

The preliminary examination must be completed at least 7 months before the final oral examination. Once the supervisory committee and the student decide when the examination is to be taken, the student should notify the Graduate School one month before the scheduled date with a completed Preliminary Examination form.

Final Examination and Poster

The request for final examination must be filed in accordance with the requirements of the Graduate School.

A poster that meets department guidelines will also be required.

Master of Science

Electrical and Computer Engineering (M.S.)

Offered through the Electrical and Computer Engineering department. Please see the ECE website for detailed information regarding admission.

Master's Degree Requirements

Graduate Handbook

All students are expected to be familiar with the latest version of the graduate handbook. It covers general requirements, the supervisory committee, the program of study, course requirements, probation and dismissal, residence requirements, thesis and reports, and the final examination. Graduate Handbook is available on the Graduate School web page.

Graduate Seminar

All on-campus graduate students are required to attend the departmental graduate seminar and will be required to give a seminar presentation on their thesis or report. Their enrollment in the zero credit hour seminar course, EECE 896, is required each semester.

Graduate Committee/Program of Study

During the first semester of graduate study the student will choose a major advisor, and then in conjunction with the major advisor, select a graduate committee and develop a tentative plan of study for a graduate program in the EECE Department. The program of study must be completed and forwarded to the Graduate School by the end of the second semester of enrollment.

Choice of Option

All options require at least 18 credit hours on the program of study to be at the 700 level or above. The student, with the concurrence of the major advisor and/or the department head, may select one of the options below leading to the MS degree.

At the option of the major advisor, graduate research assistants may be required to select option (1). For the course work option, identified programs of study for the major areas of specialization should be followed when available.

Thesis Option

30 hours of graduate credit including 6 credit hours of thesis research, EECE 899.

Two Courses are required from the following list:

- ECE 830 - Advanced Systems Theory **Credits:** 3
- ECE 840 - Computer Engineering Methods for Analysis, Simulation, and Design **Credits:** 3
- ECE 841 - Network Theory **Credits:** 3
- ECE 861 - Applied Probability Theory & Random Processes **Credits:** 3

For the Thesis Option, exclusive of thesis research, at least 15 hours must be taken in Electrical and Computer Engineering. The remaining graduate courses should be prudently selected by the student in consultation with the student's supervisory committee. A poster that meets department guidelines will also be required.

Report Option

30 hours of graduate credit including 2 credit hours of report research, EECE 898.

Two Courses are required from the following list:

- ECE 830 - Advanced Systems Theory **Credits:** 3
- ECE 840 - Computer Engineering Methods for Analysis, Simulation, and Design **Credits:** 3
- ECE 841 - Network Theory **Credits:** 3
- ECE 861 - Applied Probability Theory & Random Processes **Credits:** 3

For the Report Option, exclusive of report research, at least 15 hours must be taken in Electrical and Computer Engineering. The remaining graduate courses should be prudently selected by the student in consultation with the student's supervisory committee.

Coursework Option

30 hours of graduate credit.

Two Courses are required from the following list:

- ECE 830 - Advanced Systems Theory **Credits:** 3
- ECE 840 - Computer Engineering Methods for Analysis, Simulation, and Design **Credits:** 3
- ECE 841 - Network Theory **Credits:** 3
- ECE 861 - Applied Probability Theory & Random Processes **Credits:** 3

A minimum of 12 additional hours of graduate level EECE courses are required for all students including 6 hours of laboratory courses. Students entering from an ABET accredited program may have this requirement waived. The remaining 12 hours may be selected from EECE graduate courses or other supporting areas as determined by the student's supervisory committee.

Final Examination

The request for final examination must be filed in accordance with the requirements of the Graduate School.

Industrial and Manufacturing Systems Engineering

2061 Rathbone Hall
785-532-5606

Fax: 785-532-3738
imse@k-state.edu
http://www.imse.ksu.edu/

Department Head:

Bradley A. Kramer

Director of graduate studies:

David Ben-Arieh

Graduate faculty:

*David Ben-Arieh, Ph.D., Purdue University
Deandra Cassone, Ph.D., Kansas State University
*Shing Chang, Ph.D., Ohio State University
*Suprem Das, Ph.D., Purdue University
*Dong Lin, Ph.D., Purdue University
*Todd Easton, Ph.D., Georgia Institute of Technology
*Jessica Heier Stamm, Ph.D., Georgia Institute of Technology
*Bradley A. Kramer, Ph.D., Kansas State University
*Shuting Lei, Ph.D., Purdue University
*Malgorzata Rys, Ph.D., Kansas State University
*Ashesh Sinha, Ph.D., University of Wisconsin-Madison
*Chih-Hang Wu, Ph.D., Penn State University
*Meng(Peter) Zhang, Ph.D., Kansas State University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Academic programs

The department consists of 12 graduate faculty members and more than 50 graduate students. The department performs research in manufacturing systems, operations research and human factors (ergonomics). From previous data over 80% of on-campus Ph.D. students receive assistantships.

The Department of Industrial and Manufacturing Systems Engineering offers the following degrees/options at the graduate level:

- Concurrent B.S./M.S. in Industrial Engineering (BS/MSIE)
- M.S. in Industrial Engineering (MSIE)
- M.S. in Operations Research (MSOR)
- Master of Engineering Management (MEM)
- Ph.D. in Industrial Engineering (PhDIE)

Students that complete a master's degree are able to:

- Solve advanced engineering problems using discipline appropriate math, science, computation and analysis skill
- Synthesize and evaluate information
- Demonstrate advanced knowledge in area of specialization

- Recognize and apply state of the art techniques in the field
- Communicate effectively in both written and oral forms

Besides the above skills, students who complete a Ph.D. can also

- Plan and conduct scholarly activities that make original contributions to the knowledge base in the field of study.

The BS/MSIE degree is only open to students that are currently pursuing a BSIE at KSU. Since there is some overlap between undergraduate and graduate study, some graduate courses will satisfy the degree requirements for the undergraduate degree. A maximum of 9 credit hours from the M.S.I.E. degree can be counted toward the B.S.I.E. degree. A more detailed description can be found in KSU's Undergraduate Catalog.

The MSIE program can be completed with either a thesis or coursework only option. Both options require the completion of 30 graduate credit hours.

The MSOR program can be completed with either a thesis or coursework only option. Both options require the completion of 30 graduate credit hours. The MSOR degree is offered to on-campus and to a limited number of off-campus students through distance learning media.

The MEM degree is a course-work only program that is designed for working professionals. The courses are taken by off-campus students through distance learning media. This program requires the completion of 30 graduate credit hours.

The PhDIE degree requires either 60 hours of graduate credit beyond the M.S. degree or 90 graduate credit hours without an M.S. degree. 9 out of 30 credit hours after M.S. degree will be restricted to pre-specified IMSE courses. A significant original research project documented in the form of an acceptable dissertation is required. The dissertation must be of sufficient quality and importance to merit publication in a refereed journal.

Research emphases

Research in the Department of Industrial and Manufacturing Systems Engineering is conducted in five primary areas.

Ergonomics

Improve how humans work with machines and each other. Develop safe and productive work environments.

Manufacturing systems

Design and improve manufacturing systems with respect to product quality and system productivity.

Operations research

Expand the methodologies available for solving decision problems in engineering, economics, business and social systems. Incorporates applied mathematics and computer technologies into solution methods.

Quality engineering

Control manufacturing cost through manufacturing process improvement. Diagnose quality problems to improve product quality.

Uncertainty representation and reasoning

Improve engineering decision making, which is based on many uncertainties and approximations.

Major research facilities and equipment

The department of engineering has well-equipped laboratories supporting some of its research activities. Additional research is conducted in the field using industrial facilities.

The ergonomics laboratory contains measurement apparatus for assessing stress levels imposed on human workers by various job designs and work environments.

The manufacturing processes laboratory consists of a wide range of manufacturing process equipment that can support research involving basic manufacturing processes. The laboratory includes numerous lathes and milling machines, a foundry with gas-fired and electric induction furnaces, molten salt heat treat facility, gas-flame metal cutting and joining processes, various welding processes, and material properties measurement equipment.

The Cyber Manufacturing laboratory is a modern, well-equipped computer controlled manufacturing system. Equipment included in the lab are 3D printers, Computer Numerically Controlled (CNC) machining centers, robots, programmable logic controllers, a programmable conveyor, and computer workstations for Computer Aided Manufacturing.

The departmental computing laboratories are modern and well equipped. IMSE students have access to these labs 24 hours a day.

Financial support

Financial support for a number of teaching and research assistants is available. However, the requests for this support regularly exceed the funding available. Awards are made on a competitive basis. The awarding of financial assistance is separate and distinct from admission to the graduate program. Many students choose to enroll without financial assistance to pursue the various graduate degrees and options in industrial and manufacturing systems engineering.

Concurrent

Concurrent B.S./M.S. in Industrial Engineering

A student that successfully completes this program will receive both a B.S.I.E. and an M.S.I.E. degree from the Industrial and Manufacturing Systems Engineering (IMSE) department. This program has both a thesis and a coursework only format.

Admission Requirements

A student must petition K-State's Graduate School to be admitted into this program. The following requirements must be met before an individual can be admitted into this program.

- The student must be seeking a B.S.I.E. degree from IMSE.
- The student must have completed at least 80 credit hours of his/her undergraduate degree.
- The student's cumulative undergraduate GPA must be at least 3.25.
- The student must have a member of K-State's Graduate Faculty in the IMSE department agree to be his/her major professor (this professor can be changed in accordance to K-State's policies).

- The student must apply for this program before receiving his/her B.S.I.E. degree.

Program Formats and Guidelines

Since there is some overlap between undergraduate and graduate study, some graduate courses will satisfy the degree requirements for the undergraduate degree. A maximum of 9 credit hours from the M.S.I.E. degree can be counted toward the B.S.I.E. degree. Some additional conditions are:

The student must complete all B.S.I.E. undergraduate requirements with the exception that up to 9 credit hours of IMSE 600 level classes taken for graduate credit can also count toward his/her undergraduate degree requirements.

- The student must complete 30 graduate credit hours with a graduate GPA of at least 3.0.
- The student must complete all B.S.I.E. undergraduate requirements with the exception that up to 9 credit hours of IMSE 600 or 700 level classes taken for graduate credit can also count toward his/her undergraduate degree requirements.
- The student must take IMSE 641 and IMSE 666 at the graduate level. (This satisfies two of the core course requirements of the M.S.I.E. degree)
- Up to 9 credit hours of IMSE 600 level classes taken for graduate credit can also count toward the undergraduate degree requirements (e.g. IMSE 641, IMSE 666, and IMSE 643).
- At least 60% of the graduate credit hours on the Graduate Program of Study must be in classes at the 700 level or above. (Note: a student can take at most 4 graduate classes at the 600 level).
- Once a student applies for this program, he/she must be continuously enrolled to complete this program. If a student is not enrolled for a fall or spring semester, this student loses the ability to count graduate credit hours toward his/her undergraduate degree.
- All students must take core course IMSE 811 and also take IMSE 888 if pursuing a coursework only option.
- No more than one "C" will be allowed in any of the core classes--IMSE 641, 666, 811 and 888 (for coursework only students). This may require repeating some classes.
- At most 6 hours of graduate courses can be taken from a department other than IMSE.
- A student pursuing a thesis format, must complete at least 6 credit hours of Masters Thesis (IMSE 899).

Once an individual is admitted to the concurrent B.S./M.S.I.E. degree program, the student should consult the graduate handbook for policies and procedures for graduate degrees, which include: supervisory committee, final examination, thesis defense, etc. The student's supervisory committee must approve the program of study, which is that student's graduation requirements.

Once a student has completed all of the graduation requirements, he/she will graduate with both a B.S.I.E. and an M.S.I.E. degree in the same semester. In the event that a student begins this program, but does not wish to finish it, he/she must change 9 credit hours of his/her graduate classes to undergraduate credit and then he/she will receive a B.S.I.E. degree. Once the student has completed 127 credit hours, IMSE Graduate Committee will evaluate whether or not the student will be allowed to continue the concurrent B.S./M.S.I.E. program based upon K-State Graduate School policies. If the committee doesn't allow the student to continue with the program, then, upon completion of the B.S.I.E. requirements, the student will graduate with a B.S.I.E. degree. In either of these two cases, the student has lost the ability to count courses toward both his/her undergraduate and graduate degree requirements.

Additional Procedures: For at least one year, the student must be enrolled in IMSE 892- Graduate Seminar. Each semester a student in this program must enroll in either:
IMSE 892 - Graduate Seminar
or
IMSE 015 - Engineering Assembly

For more information about Program Format and Minimum Requirements (effective Fall 2008).

The formats for this program are as follows*

Courses	Thesis credit hours	Course Work Only credit hours
Core Courses	9	12**
Other IMSE Courses and Electives	15	18
Thesis	6	0
IE Seminar	0	0
Total Graduate Credits	30	30

*Actual degree requirements will be summarized on an approved plan of study. Some general guidelines include:

- The student must complete all of the B.S.I.E. undergraduate requirements with the exception that up to 9 credit hours of IMSE 600 level classes taken for graduate credit can also count toward his/her undergraduate degree requirements.
- The student must complete at least 30 graduate hours.
- At least 60 percent of graduate courses must be above the 700 level.
- No more than 6 graduate hours can be taken from an outside department without prior permission.
- Graduate courses in the IMSE department must be above the 600 level.
- Graduate courses outside the department must be above the 500 level.
- Continuous enrollment required.

Each semester a student must enroll in one of the following courses:

- IMSE 015 - Engineering Assembly **Credits:** (0)
- IMSE 892 - Graduate Seminar in Industrial Engineering **Credits:** 0
  (must complete at least 2 semesters of IMSE 892)

A student must complete the following core courses:

- IMSE 641 - Quality Engineering **Credits:** 3 (for graduate credit)
- IMSE 811 - Advanced Production and Inventory Control **Credits:** 3
  and
- IMSE 710 - Transportation Logistics **Credits:** 3
- IMSE 780 - Methods of Operations Research **Credits:** 3
  or two courses from the following:
- IMSE 751 - Normative Theory of Decisions and Games **Credits:** 3
- IMSE 752 - Multiple Criteria Decision Analysis **Credits:** 3
- IMSE 760 - Stochastic Calculus Financial Engineering **Credits:** 3
- IMSE 810 - Industrial Logistics Engineering **Credits:** 3
- IMSE 830 - Applied Fuzzy Set Theory **Credits:** 3
- IMSE 842 - Reliability Theory **Credits:** 3
- IMSE 881 - Linear Programming **Credits:** 3
- IMSE 882 - Network Flows and Graph Theory **Credits:** 3

- IMSE 884 - Integer Programming and Combinatorial Optimization **Credits:** 3
- IMSE 865 - Simulation of Industrial Management Systems **Credits:** 3
- IMSE 866 - Applied Stochastic Processes **Credits:** 3
- IMSE 971 - Industrial Queuing Processes **Credits:** 3
- IMSE 976 - Scheduling Theory **Credits:** 3
- IMSE 982 - Nonlinear Programming **Credits:** 3
- IMSE 991 - Advanced Topics in Decision Theory **Credits:** 3

Doctor of Philosophy

Industrial Engineering (Ph.D.)

To pursue a PhD degree in Industrial and Manufacturing Systems Engineering, the student must have a B.S. degree in engineering, mathematics, or physical science and be versed in several of the basic areas of industrial engineering. GRE scored are required for all students who apply. Admission is based on a vote of the departmental graduate faculty. Decisions concerning financial assistance are the responsibility of the department head.

Doctoral Degree Requirements (90 credit hours)

With an MS Degree

Select One Course from 5 of 6 of the Following Core Areas (15 credit hours):

Optimization

- IMSE 780 - Methods of Operations Research **Credits:** 3
  OR
- IMSE 881 - Linear Programming **Credits:** 3
  OR
- IMSE 882 - Network Flows and Graph Theory **Credits:** 3

Stoch. Proc.

- IMSE 865 - Simulation of Industrial Management Systems **Credits:** 3
  OR
- IMSE 866 - Applied Stochastic Processes **Credits:** 3
  OR
- IMSE 971 - Industrial Queuing Processes **Credits:** 3

Statistics

- IMSE 841 - Advanced Topics in Quality Engineering **Credits:** 3
  OR
- STAT 713 - Applied Linear Statistical Models **Credits:** 3
  OR

- STAT 720 - Design of Experiments **Credits:** 3
  OR
- STAT 722 - Experimental Design for Product Development and Quality Improvement **Credits:** 3

Prod. and Inv.

- IMSE 811 - Advanced Production and Inventory Control **Credits:** 3

Ergo. and Dec. The.

- IMSE 751 - Normative Theory of Decisions and Games **Credits:** 3
  OR
- IMSE 822 - Advanced Engineering Economy **Credits:** 3
  OR
- IMSE 850 - Ergonomics (Human Factors) Engineering **Credits:** 3

Manufacturing

- IMSE 825 - Tribology in Manufacturing **Credits:** 3
  OR
- IMSE 868 - Manufacturing Processes for Semiconductor Materials and Devices **Credits:** 3

Maximum Credit for MS (30 credit hours)

Additional Credit Hours (15 credit hours)

Ph.D. Research (30 credit hours)

Without a MS Degree

Select One Course from 5 of 6 of the Following Core Areas* (15 credit hours):

Optimization

- IMSE 780 - Methods of Operations Research **Credits:** 3
  OR
- IMSE 881 - Linear Programming **Credits:** 3
  OR
- IMSE 882 - Network Flows and Graph Theory **Credits:** 3

Stoch. Proc.

- IMSE 865 - Simulation of Industrial Management Systems **Credits:** 3
  OR
- IMSE 866 - Applied Stochastic Processes **Credits:** 3

OR

- IMSE 971 - Industrial Queuing Processes **Credits:** 3

Statistics

- IMSE 841 - Advanced Topics in Quality Engineering **Credits:** 3
  OR
- STAT 713 - Applied Linear Statistical Models **Credits:** 3
  OR
- STAT 720 - Design of Experiments **Credits:** 3
  OR
- STAT 722 - Experimental Design for Product Development and Quality Improvement **Credits:** 3

Prod. and Inv.

- IMSE 811 - Advanced Production and Inventory Control **Credits:** 3

Ergo. and Dec. The.

- IMSE 751 - Normative Theory of Decisions and Games **Credits:** 3
  OR
- IMSE 822 - Advanced Engineering Economy **Credits:** 3
  OR
- IMSE 850 - Ergonomics (Human Factors) Engineering **Credits:** 3

Manufacturing

- IMSE 825 - Tribology in Manufacturing **Credits:** 3
  OR
- IMSE 868 - Manufacturing Processes for Semiconductor Materials and Devices **Credits:** 3

Additional Graded Courses (24 credit hours)

Additional Credit Hours (21 credit hours)

Ph.D. Research (30 credit hours)

Additional Information

Additional graded courses must be courses that are awarded a letter grade.

Additional credit hours can be graded courses or taken for credit/no credit such as Ph.D. research.

If the Graduate School approves less than 30 hours of credit for a MS, then the remainder of the 30 hours (up to a maximum of 24 hours) must be taken as additional graded courses. These additional hours must be graded courses.

*A student may satisfy a core course requirement by passing an examination. In such a situation, the student may take an additional 3 hours of graduate graded courses in place of a core course.

Actual degree requirements will be summarized on approved Program of Study.

Credits from MS degree other than industrial engineering are determined on a case-by-case basis. If a student receives a 'C' or worse in any core courses, then he/she must retake the course until a satisfactory grade is obtained.

Each semester a student must enroll in IMSE 892 Graduate Seminar (O credit hours).

The student must have at least 15 hours of 800 or above graded courses and no more than 6 credits may be at the 500 level.

Continuous enrollment required.

Master of Engineering Management

Industrial Engineering Master of Management (M.E.M.)

Click here to view the Industrial and Manufacturing Systems Engineering graduate page.

Master's degree requirements

To pursue the MEM degree, the student must meet the KSU Graduate School admissions requirements, have a B.S. degree in engineering, mathematics, or physical science, and have taken at least one course each in calculus and statistics. Students must have at least three years of full-time industrial (work) experience by the time they complete the program.

Master of Engineering Management is an online program only. This program is designed to be a part-time program and typically requires 2 to 4 years to complete.

Students not meeting the above requirements may be considered if they can demonstrate equivalent evidence of an appropriate background. Contact the Department of Industrial and Manufacturing Systems Engineering to discuss.

Core Courses (15 hours)

Select any 5 of the 6. Each is offered only once every three years.

- IMSE 605 - Advanced Industrial Management **Credits:** 3
- IMSE 680 - Quantitative Problem Solving Techniques **Credits:** 3
- IMSE 710 - Transportation Logistics **Credits:** 3
- IMSE 806 - Engineering Project Management **Credits:** 3
- IMSE 811 - Advanced Production and Inventory Control **Credits:** 3
- IMSE 822 - Advanced Engineering Economy **Credits:** 3

Electives (15 hours)

Electives are any course offered by any department other than IMSE. It is suggested that students take courses in Psychology, Business and other Engineering disciplines that will broaden and enhance their management or engineering skills.

Guidelines and Additional Requirements

* Actual degree requirements will be summarized on an approved plan of study. Some general guidelines include:

--At most 6 hours can be transferred from another school, unless prior approval is given

--No more than 6 hours can be taken from an outside department without prior permission

--Courses in the IMSE department must be above the 600 level

--Courses outside the department must be above the 500 level

--No more than 6 hours can be taken at the 500 level

** Students on-campus are required to enroll in the graduate seminar each semester

** Besides the above academic requirements, a graduating student must have at least 3 years of full-time work experience.

Master of Science

Industrial Engineering (M.S.)

Master's program requirements

To pursue the Industrial Engineering M.S. through the Industrial and Manufacturing Systems Engineering graduate program, students must meet the KSU Graduate School admissions requirements, hold a B.S. degree in engineering, mathematics, or physical science and be versed in several of the basic areas of industrial engineering. Non-industrial engineering undergraduates may require 6 semester credit hours of prerequisite courses. GRE scores are required for all students who apply, unless they will have cmpleted an undergraduate degree from an ABET-accredited program.

An entering M.S.I.E. student is expected to have proficiency in computer programming, linear programming and statistics. Students failing to meet these expectations may be required to take some prerequisite courses.

Required Core Courses

To graduate, a student may receive at most one C in all of the core courses (no D's or F's are allowed). This may require some students to retake core courses.

- IMSE 641 - Quality Engineering **Credits:** 3
- IMSE 811 - Advanced Production and Inventory Control **Credits:** 3
  and
- IMSE 780 - Methods of Operations Research **Credits:** 3
  or two courses from the following:
- IMSE 751 - Normative Theory of Decisions and Games **Credits:** 3
- IMSE 752 - Multiple Criteria Decision Analysis **Credits:** 3
- IMSE 760 - Stochastic Calculus Financial Engineering **Credits:** 3
- IMSE 710 - Transportation Logistics **Credits:** 3

- IMSE 810 - Industrial Logistics Engineering **Credits:** 3
- IMSE 830 - Applied Fuzzy Set Theory **Credits:** 3
- IMSE 842 - Reliability Theory **Credits:** 3
- IMSE 865 - Simulation of Industrial Management Systems **Credits:** 3
- IMSE 866 - Applied Stochastic Processes **Credits:** 3
- IMSE 881 - Linear Programming **Credits:** 3
- IMSE 882 - Network Flows and Graph Theory **Credits:** 3
- IMSE 884 - Integer Programming and Combinatorial Optimization **Credits:** 3
- IMSE 971 - Industrial Queuing Processes **Credits:** 3
- IMSE 976 - Scheduling Theory **Credits:** 3
- IMSE 982 - Nonlinear Programming **Credits:** 3
- IMSE 991 - Advanced Topics in Decision Theory **Credits:** 3

Notes

- Actual degree requirements will be summarized on an approved plan of study. Some general guidelines include:

  -- At least 60 percent of classes must be above the 700 level

  -- No more than 6 credit hours can be taken outside the IMSE department without prior permission

  -- Courses in the IMSE department must be above the 600 level

  -- Courses outside the department must be above the 500 level

  -- No more than 6 hours can be taken at the 500 level.

**Students on-campus are required to enroll in the graduate seminar each semester

Master of Operations Research (MSOR) (M.S.)

Master's Degree Requirements

To pursue the Operations Research M.S. through the Industrial and Manufacturing Systems Engineering graduate program, students must meet the KSU Graduate School admissions requirements, have a baccalaureate degree, and have a strong background in applied mathematics including calculus and linear algebra. The student must also have completed 3 semester credits each in introductory statistics (equivalent to K-State's STAT 510) and introductory operations research (equivalent to K-State's IMSE 560 or IMSE 680)*, and have knowledge of computer programming (equivalent to K-State's CIS 200 or CIS 209). Otherwise, appropriate remedial courses will be required. GRE scores are required for all students who apply, unless they will have completed an undergraduate degree from an ABET-accredited program.

*If an entering student has not taken an introductory operations research course, the student should enroll in IMSE 680 – Quantitative Problem Solving Techniques, to gain this knowledge.

The formats for this program are as follows:

	Thesis	Course Work
Operations Research Core Courses	9	9
Additional Operations Research Courses	3	6
Electives	12	15
Thesis	6	0
IE Seminar	0	0
TOTAL GRADUATE CREDITS	**30**	**30**

One core course must be taken in each of the following three areas:

Continuous Optimization:

- IMSE 881 - Linear Programming **Credits:** 3
- IMSE 982 - Nonlinear Programming **Credits:** 3

Discrete Optimization:

- IMSE 882 - Network Flows and Graph Theory **Credits:** 3
- IMSE 884 - Integer Programming and Combinatorial Optimization **Credits:** 3

Stochastic Processes:

- IMSE 842 - Reliability Theory **Credits:** 3
- IMSE 866 - Applied Stochastic Processes **Credits:** 3
- IMSE 865 - Simulation of Industrial Management Systems **Credits:** 3

Additional Operations Research courses include the following courses and any core courses:

- IMSE 643 - Industrial Simulation **Credits:** 3
- IMSE 751 - Normative Theory of Decisions and Games **Credits:** 3
- IMSE 752 - Multiple Criteria Decision Analysis **Credits:** 3
- IMSE 780 - Methods of Operations Research **Credits:** 3
- IMSE 830 - Applied Fuzzy Set Theory **Credits:** 3
- IMSE 976 - Scheduling Theory **Credits:** 3
- IMSE 990 - Advanced Topics in Operations Research **Credits:** 1-6
- IMSE 710 - Transportation Logistics **Credits:** 3
- IMSE 810 - Industrial Logistics Engineering **Credits:** 3
- IMSE 991 - Advanced Topics in Decision Theory **Credits:** 3

Notes:

Actual degree requirements will be summarized on an approved plan of study. Some general guidelines include:

- At least 60 percent of classes must be above 700 level.
- No more than 6 hours can be taken from outside the department without prior permission.
- Courses in IMSE the department must be above the 600 level.
- Courses outside the department must be above the 500 level.
- No more than 6 hours can be taken at the 500 level.
- No course can count as both a core course and an additional operations research course.
- Students on-campus are required to enroll in the graduate seminar each semester.

Mechanical and Nuclear Engineering

Alan Levin Department of Mechanical and Nuclear Engineering

3002 Rathbone Hall
785-532-5610
Fax: 532-7057
grad@mne.ksu.edu
http://www.mne.ksu.edu/graduate

Department Head:

Steve Eckels

Director of Graduate Studies:

Mingjun Wei

Graduate Faculty:

*Amir Bahadori, Ph.D., University of Florida
*B. Terry Beck, Ph.D., Oakland University
*Amy R. Betz, Ph.D., Columbia University
*Hitesh Bindra, Ph.D., University of Illinois
*Liang-Wu Cai, Sc.D., Massachusetts Institute of Technology
*James Chen, Ph.D., George Washington University
*Melanie Derby, Ph.D., Rensselaer Polytechnic Institute
*William L. Dunn, Ph.D., North Carolina State University
Shih-Kang Scott Fan, Ph.D., University of California - Los Angeles
*Steven J. Eckels, Ph.D., Iowa State University
*Donald L. Fenton, Ph.D., P.E., University of Illinois
*Jared Hobeck, Ph.D., University of Michigan
*Mohammad Hosni, Ph.D., Mississippi State University
*Byron W. Jones, Ph.D., P.E., Oklahoma State University

*Kevin B. Lease, Ph.D., University of Iowa
*Zayd Leseman, Ph.D., University of Illinois at Urbana-Champaign
*Douglas S. McGregor, Ph.D., University of Michigan
*Walter McNeil, Ph.D., Kansas State University
*David A. Pacey, Ph.D., P.E., Kansas State University
*Raj Kumar Pal, Ph.D., University of Illinois
*Jeremy Roberts, Ph.D., Massachusetts Institute of Technology
*Dale E. Schinstock, Ph.D., University of Kansas
*J. Kenneth Shultis, Ph.D., University of Michigan
*Gurpreet Singh, Ph.D., University of Colorado at Boulder
*J. Garth Thompson, Emeritus, Ph.D., Purdue University
Scott Thompson, Ph.D., University of Missouri
*Youqi Wang, Ph.D., Shanghai Jiao Tong University
*Mingjun Wei, Ph.D., University of Illinois at Urbana-Champaign
*Warren N. White, Jr., Ph.D., Tulane University
*Xiao Jiang Xin, Ph.D., University of Sheffield, United Kingdom

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

The department

The Mechanical and Nuclear Engineering Department at Kansas State University offers separate graduate programs in Mechanical Engineering and Nuclear Engineering both leading to M.S. and Ph.D. degrees. Our award-winning faculty are engaged in exciting and cutting-edge research projects in state of the art laboratories and research facilities, while our graduate students are excelling inside and outside of the classroom. Research areas and courses include a broad range of both traditional and emerging fields of Mechanical Engineering and Nuclear Engineering. With over $5 million in research funding, almost all graduate students in our department receive graduate research assistantships (GRA). Several of our students receive graduate teaching assistantships (GTA) with 50-100 percent tuition waiver to help teach laboratory sections.

Applicants must have a bachelor's degree from an accredited institution. Although students with bachelor's degrees in Mechanical and/or Nuclear Engineering make up the bulk of our graduate student body, the department welcomes applicants from other fields including other engineering disciplines, mathematics, physics and chemistry. International applicants should also include GRE and TOEFL scores. GRE scores should be no less than 400 verbal (146 revised version), 650 quantitative (151 revised version), and 3.0 on analytical writing. TOEFL scores must be above 600 on the written exam or 250 on the computer exam. The IELTS may substitute for the TOEFL. IELTS scores are valid for two years and should be no less than 7.0.

Programs of study are flexible and tailored to the interests, backgrounds and career goals of each student. Courses from outside the department are often added to programs of study to enhance the student's experience. To see when MNE Graduate courses are offered, please view the MNE Graduate Course Rotation Schedule.

Degree options

Prospective students may apply for a graduate degree in either Mechanical Engineering or Nuclear Engineering. We offer the following degrees:

Mechanical Engineering	**Nuclear Engineering**

Master of Science Degree - The department offers three degree options at the master's level:	Master of Science Degree - The department offers three degree options at the master's level:
Master of Science Degree - Thesis option	Master of Science Degree - Thesis option
Master of Science Degree - Report option	Master of Science Degree - Report option
Master of Science Degree - Coursework option (on-campus and distance)	Master of Science Degree - Coursework option
Doctor of Philosophy Degree	Doctor of Philosophy Degree

Research facilities

In addition to a first-rate curriculum of graduate courses, cutting-edge graduate research projects are supported by state-of-the-art labs and research facilities. Labs and research centers associated with K-State's Mechanical and Nuclear Engineering Department include:

Laboratory facilities

- Applied Computation Laboratory
- Autonomous Vehicle Systems Laboratory
- Composites Laboratory
- Dynamic Systems and Controls Laboratory
- Heat Transfer Laboratory
- Internal Combustion Engines Laboratory
- Laser Diagnostics Laboratory
- Measurements and Instruments Laboratory
- Mechanical Testing and Evaluation Laboratory
- Neutron Activation Analysis Laboratory
- Nonlinear Controls Laboratory
- Radiation Detection Instructional Laboratory
- Radiation Measurement Applications Laboratory
- Refrigeration Laboratory
- Semiconductor Materials Analysis Laboratory
- Tate Neutron Activation Analysis Laboratory
- Wind Tunnel/Fluid Mechanics Laboratory

Research centers

- Environmental Air Quality Program
- Institute for Environmental Research
- National Gas Machinery Laboratory
- Semiconductor Materials and Radiological Technologies Laboratory (S.M.A.R.T.)
- Triga Mark II Nuclear Reactor Facility

Doctor of Philosophy

Mechanical Engineering (Ph.D.)/Nuclear Engineering (Ph.D.)

For information, please go to the Mechanical and Nuclear Engineering graduate program page.

Degree Requirements

The Ph.D. requires at least three years of full-time study beyond the bachelor's degree, equivalent to at least 90 semester hours, including a dissertation representing at least 30 hours of research credit. Students who hold a master's degree may request transfer of up to 30 hours of that degree toward a Ph.D.

The Ph.D. is awarded to candidates who have demonstrated unique ability as scholars and researchers as well as proficiency in communication. The degree also certifies that the candidate has displayed familiarity and understanding of the subject matter in the discipline and possesses the ability to make original contributions to knowledge.

The Doctoral Program of Study must include:

a) a minimum of 15 hours of graded coursework beyond the Master’s degree (all 15 hours MUST be at the 800 level or above, in addition to doctoral research credit hours) for candidates entering the Ph.D. program with a Master’s degree.

OR

a minimum of 30 hours of graded coursework beyond the Bachelor’s degree (including at least 15 hours at the 800 level or above, in addition to doctoral research credit hours) for students who bypass the master's degree.

b) no more than 12 credit hours of 500 level courses are permitted in a doctoral program. No 500-level course taken in the student's department may appear in the program of study.

c) a minimum of 30 hours of doctoral research credit.

d) the PhD candidate must satisfy the 75% attendance requirement (0 credit hour) in at least four semesters of ME800 Graduate Seminar/Research Paper. (refer to ME800 course requirements)

Master of Science

Mechanical Engineering (M.S.)/Nuclear Engineering (M.S.)

Master's degree requirements

The department offers three degree options at the master’s level:

Thesis Option

The Program of Study should include a minimum of 30 credit hours, with the following additional requirements:

Required Curriculum

1. The candidate should earn credit for at least 6 credit hours of Master's Thesis Research (ME 899 or NE 899) culminating in a successfully defended thesis.

2. At least 18 hours, of the required minimum of 30 hours, should be at the 700 level and above, including ME 800 Graduate Seminar/Research Paper, and the thesis/research and the report/problems hours required by the thesis and report options.

3. The MS candidate must satisfy the 75% attendance requirement for on-campus students in at least two semesters of ME 800 (0 credit hours). Graduate Seminar/Research Paper. Refer to ME 800 course requirements.

4. Courses at the 600-level may be included in the Program of Study, but 500-level courses in the student's major area are expected to have been completed as undergraduate prerequisites to graduate study or as undergraduate deficiency courses assigned upon admission. The use of 500-level supporting courses in master's programs is therefore restricted as follows:

   (a) No course in the student's major area may be at the 500 level
   and
   (b) normally no more than 6 credit hours may be at the 500 level

5. A minimum of 18 credit hours of graded coursework (i.e., courses in which a letter grade is assigned)

6. The graded coursework should include at least one 3 credit hour course in engineering mathematics or applied mathematical analysis. Courses that may be used to meet this requirement are:

- MATH 632 - Elementary Partial Differential Equations **Credits:** 3
- MATH 713 - Advanced Applied Matrix Theory **Credits:** 3
- MATH 740 - Calculus of Variation **Credits:** 3
- MATH 745 - Ordinary Differential Equations **Credits:** 3
- MATH 855 - Methods of Applied Mathematics I **Credits:** 3
- MATH 856 - Methods of Applied Mathematics II **Credits:** 3
- MATH 864 - Theory of Ordinary Differential Equations I **Credits:** 3
- MATH 865 - Theory of Ordinary Differential Equations II **Credits:** 3
- ME 760 - Engineering Analysis I **Credits:** 3
- ME 860 - Engineering Analysis II **Credits:** 3
- PHYS 801 - Mathematical Methods of Physics **Credits:** 3
- PHYS 802 - Computational Methods in Physics **Credits:** 4

7. A student obtaining Nuclear Master Degree must take the following core courses.

- NE 620 - Problems in Nuclear Engineering **Credits:** 3
- NE 612 - Principles of Radiation Detection **Credits:** 3
- NE 630 - Nuclear Reactor Theory **Credits:** 3
- NE 690 - Radiation Protection and Shielding **Credits:** 3

Options for Completing 30 Credit Hour Requirement

In addition to the minimum graded coursework requirement (18 credit hours) and the minimum Master's Thesis Research requirement (6 credit hours), the candidate must complete 6 more credit hours to meet the minimum credit requirement of 30 credit hours. This can be done through any combination of the following:

- Up to 2 additional credit hours of Master's Thesis Research (ME899 or NE899)
- Up to 3 credit hours of ME 800 Seminar/Research Paper (refer to ME800 course requirements)
- Up to 3 credit hours of independent study
- Up to 6 credit hours of additional coursework

Bettis Reactor Engineer School (BRES) graduates who enter the Nuclear Master program may transfer up to 4 courses (12 credits) toward fulfillment of degree requirements. The department maintains a list of course equivalencies. Naval Nuclear Power School graduates may be awarded transfer credits for Introduction to Nuclear Engineering (NE 620). Applicants with an undergraduate degree in NE may have this requirement waived.

Report Option

- The Program of Study should include a minimum of 30 credit hours, including 28 credit hours of graded coursework and
  2 credit hours of Master's Report. One credit hour of ME800 Seminar/Research Paper (earned by giving a successful
  seminar presentation) may be included in the 28 credit hours of required coursework.
- In addition, items (2), (3), (4), and (6) from the MS Thesis requirements above apply directly to the MS Report Option Program of Study.
- The MS Report Option must culminate in a successfully defended report.

Coursework Option

- The Program of Study should include a total of 30 credit hours of graded coursework.
- Items (2), (4), and (6) from the MS Thesis requirements above apply directly to the MS Course Work Option Program of Study.
- The MS Course Work Option must culminate in a final oral examination.

Note

Students on self-support can choose whatever option they want. Students supported by research projects or the Department should take the thesis option.

Graduate Certificate

Complex Fluid Flows Graduate Certificate

Contact: Steve Eckels
E-mail: grad@mne.ksu.edu

The Department of Mechanical and Nuclear Engineering offers a graduate certificate in complex fluid flows for students in other disciplines. The intent of this certificate is to conduct research and train graduate students in the general area of modern fluid dynamics. Given the highly complex and difficult problems encountered in this area, this

program strives to blend three important branches of research: fundamental physics, experimental verification, and computational fluid dynamics.

Since more and more employment opportunities at the graduate level require interdisciplinary training, the certificate program in complex fluid flows serves to make our graduate students attractive to future employers in industry and academia. Through the interdisciplinary graduate courses, seminars, and innovative research in complex fluid flows, students receive a much broader exposure to all facets of complex fluid flow research than they could receive within a single department.

General Requirements:

1. Student must complete their MS or Ph.D. degree requirements in Chemical Engineering, Mechanical Engineering, and Nuclear Enginnering, or Physics.
2. Complete three semesters of CFF Seminar: PHYS 708 or CHE 708 (one credit hour). The CFF bi-weekly seminar series has brought distinguished speakers from various national and international organizations to the KSU campus.

Course Options:

3. Complete at least three (MS students) or five (Ph.D. students) of the courses below:

- CHE 862 - Advanced Transport Phenomena I **Credits:** 3
- CHE 867 - Advanced Transport Phenomena II **Credits:** 3
- CHE 910 - Selected Topics in Transport Phenomena **Credits:** 3
- ME 720 - Intermediate Fluid Mechanics **Credits:** 3
- ME 831 - Boundary Layer Theory **Credits:** 3
- PHYS 651 - Introduction to Optics **Credits:** 4
- PHYS 652 - Applied Optics and Optical Measurement **Credits:** 3

Non-technical course

4. Complete the following non-technical course:
   EDLST 212 Introduction to Leadership Concepts (2 credit hours)

College of Health and Human Sciences

119 Justin Hall
785-532-5500
hhs@k-state.edu
https://www.hhs.k-state.edu/

In a world focused on things, we focus first on people.

The mission of K-State's College of Health and Human Sciences is to discover, disseminate and apply knowledge to meet basic human needs and improve the human condition. This knowledge advances professions, human services, public policy, business and industry.

Doctor of Philosophy

Human Ecology (Ph.D.)

The College of Health and Human Sciences offers a Doctor of Philosophy degree in Human Ecology with specializations in:

- Sustainable Fashion Business (Ph.D.)
- Applied Family Sciences
- Hospitality Administration
- Kinesiology
- Life Span Human Development
- Couple and Family Therapy

A Doctor of Philosophy degree in Human Nutrition and a Doctor of Philosophy in Personal Financial Planning are also offered within the College of Health and Human Sciences.

Master of Science

Physician Assistant (MSPAS)

Overview of the MSPAS Program

Kansas State University physician assistant program leads to a Master of Science in Physician Assistant Studies (MSPAS) degree. The program follows the traditional medical model of training, providing in-depth analysis of disease processes, diagnosis and treatment, and prepares students to serve as primary health care providers who practice medicine with physician supervision.

The 27-month physician assistant program will admit 44 students once a year, and is designed to prepare graduates to provide medical care as part of an interprofessional health care team. The curriculum consists of three semesters of classroom training (didactic), followed by four semesters of clinical rotations (clinical). All students enter as a single cohort in the spring semester, complete seven continuous full-time semesters, and graduate in May with a Master of Science in Physician Assistant Studies (MSPAS) degree.

Degree Requirements

The MSPAS requires 108 graduate credit hours, 62 from didactic, and 46 from the clinical year. The program does not offer advanced placement. No credit is granted for prior work experience in the healthcare field. Furthermore, no transfer credits are accepted. The following list of courses are the core requirements of the program.

Didactic Courses (62 Credits)

Spring 1st Year (21)

- PAS 700 - Applied Anatomy & Physiology with Lab **Credits:** 5
- PAS 710 - PA Profession **Credits:** 1
- PAS 720 - Evidence Based Medicine **Credits:** 1
- PAS 740 - Clinical Procedures I **Credits:** 2
- PAS 750 - Physical Diagnosis I **Credits:** 2
- PAS 760 - Diagnostics I - Laboratory **Credits:** 2
- PAS 770 - Applied Pathophysiology I **Credits:** 2
- PAS 780 - Clinical Medicine I **Credits:** 4

- PAS 790 - Pharmacology I **Credits:** 2

Summer 1 (20)

- PAS 721 - Medical Genetics **Credits:** 1
- PAS 731 - Clinical Pediatrics **Credits:** 2
- PAS 741 - Clinical Procedures II **Credits:** 2
- PAS 751 - Physical Diagnosis II **Credits:** 2
- PAS 761 - Diagnostics II - EKG **Credits:** 2
- PAS 771 - Applied Pathophysiology II **Credits:** 2
- PAS 781 - Clinical Medicine II **Credits:** 7
- PAS 791 - Pharmacology II **Credits:** 2

Fall 1 (21)

- PAS 722 - Clinical Geriatrics **Credits:** 2
- PAS 732 - Psychiatry & Behavioral Medicine **Credits:** 2
- PAS 742 - Clinical Procedures III **Credits:** 2
- PAS 752 - Physical Diagnosis III **Credits:** 2
- PAS 762 - Diagnostics III- Radiology **Credits:** 2
- PAS 772 - Applied Pathophysiology III **Credits:** 2
- PAS 782 - Clinical Medicine III **Credits:** 7
- PAS 792 - Pharmacology III **Credits:** 2

Clinical Courses (46 Credits)

CLINICAL ROTATIONS

Spring 2nd Year (12)

- PAS 800 - Family Medicine I - SCPE **Credits:** 4
- PAS 810 - Family Medicine II - SCPE **Credits:** 4
- PAS 820 - Internal Medicine - SCPE **Credits:** 4

Summer 2 (12)

- * PAS 830 - Emergency Medicine - SCPE **Credits:** 4
- * PAS 840 - Pediatric Medicine - SCPE **Credits:** 4
- * PAS 850 - General Surgery - SCPE **Credits:** 4

Fall 2 (12)

- * PAS 860 - Behavioral Medicine - SCPE **Credits:** 4
- * PAS 870 - Women's Health - SCPE **Credits:** 4
- * PAS 890 - Geriatric Medicine - SCPE **Credits:** 4

Spring 3rd Year (10)

- * PAS 891 - Orthopedics - SCPE **Credits:** 4
- PAS 892 - Elective Experience I **Credits:** 4
- PAS 895 - Summative **Credits:** 2

Program Requirements

* Course varies, and may occur in any clinical year semester

Didactic to Clinical Phase. The Progression, Promotion and Professionalism (PPP) committee will recommend promotion from didactic to the clinical phase based on the following requirements:

- Earned a cumulative GPA of 3.0 or greater, with a "C" or better in each course.
- Demonstrated adherence to the University and Program policies, Guidelines for Ethical Conduct for the PA Profession and K-State Student Code of Conduct policy.*
- Participated in all program required events (unless otherwise excused by the appropriate director).
- Completed HIPAA and blood borne pathogen training.
- Provided documentation of health insurance.
- Met all the qualifications for credentialing in the clinical phase to include all required immunizations, TB skin test, passed urine drug screen, passed criminal background/sex offender check, BLS, and ACLS certification.
- Signed the Health Information Release form, allowing the K-State Physician Assistant Program to maintain and release the following information to clinical rotation sites: immunizations, TB screening status, background check, and BLS/ACLS certification.

Clinical to Graduation. The PPP committee will recommend promotion from the clinical phase of training to graduation based on the following requirements:

- Received a "B" or better in every clinical course, and the Summative*.
- Completed all 108 credit hours with a cumulative GPA of 3.0 or greater.
- Demonstrated adherence to K-State University and PA program policies, the Guidelines for Ethical Conduct for the PA Profession and K-State Student Code of Conduct policy.*
- Participated in program-required events.
- Met all K-State graduation requirements.
- Successfully completed the Summative course (PAS 895), by meeting all academic and professional standards.
- Met the K-State PA program Technical Standards.
- *In the event that the student fails a rotation, he/she will be allowed to progress to the Summative (PAS 895), but must return the following semester to retake the failed rotation, resulting in a delay in graduation. Maximum rotation retakes are set at two.

Notes:

1. Students will refer to the Physician Assistant website at https://www.hhs.k-state.edu/pa/, or the Didactic and Clinical Manuals for more details on program policies and procedures.
2. The ability to meet the academic and technical standards for physician assistant students is required https://www.hhs.k-state.edu/pa/admission/.
3. Refer to the PA program's website for further information https://www.hhs.k-state.edu/pa/.
4. PA program semesters do not follow the standard KSU schedule.

Total Credit Hours Required: 108

Applied Human Sciences

301 Justin Hall
785-532-5510
Fax: 785-532-5505
ahsinfo@ksu.edu

https://www.hhs.k-state.edu/ahs/

Department Head:

Sonya Lutter

Graduate Faculty:

Kristin Anders, Ph.D., University of Tennessee
*Jared R. Anderson, Ph.D., University of Minnesota
*Joyce Baptist, Ph.D., Virginia Polytechnic Institute and State University
*Sonya Britt-Lutter, Ph.D., Texas Tech University
*Mary F. DeLuccie, Ph.D., Kansas State University
*Jared A. Durtschi, Ph.D., Florida State University
*Bronwyn S. Fees, Ph.D., Iowa State University
*Anthony Ferraro, Ph.D., Florida State University
Jennifer Francois, Ph.D., Wichita State University
Carrie Fratacelli, M.S., Kansas State University
Jane Garcia, Ph.D., University of South Alabama
Robert G. Garcia, AUD, A.T. Still University
*Briana Goff, Ph.D., Texas Tech University
Melanie Hilgers, M.S, Fort Hays State University
*Elaine M. Johannes, Ph.D., Kansas State University
Emily Johnson, M.A., University of Kansas
Marcie Lechtenberg, Ph.D., Kansas State University
Brett Mallon, Ph.D., University of Manitoba, Canada
*Melinda Markham, Ph.D., University of Missouri - Columbia
Kari Morgan, Ph.D., University of Wisconsin - Madison
*Deborah Norris, Ph.D., University of California - Los Angeles
Jeridy Oetken, SLP.D., Rocky Mountain University of Health Professions
*Kristin Pelczarski, Ph.D., University of Pittsburgh
*Rick J. Scheidt, Ph.D., University of Nebraska
David Thompson, Ph.D., Kansas State University
*Michelle Toews, Ph.D., The Ohio State University
*Glade Topham, Ph.D., Texas Tech University
*Amber Vennum, Ph.D., Florida State University
Bradford Wiles, Ph.D., Virginia Polytechnic Institute and State University
*Erin Yelland, Ph.D., University of Kentucky

*Denotes graduate faculty certified to serve as the major professor for doctoral students.

Graduate Faculty Associates:

Paul Busk, M.S., Kansas State University
Janet Crow, Ph.D., Kansas State University

Marcia Dvorak, Ph.D., University of Kansas
Terrie McCants, M.S., Southeastern University
Chelsea Spencer, Ph.D., Kansas State University

Overview

The department of Applied Human Sciences is a multidisciplinary unit that provides graduate training for M.S. and Ph.D. students. The professional specializations are addressed to broad issues concerning individuals and families, and the courses are taught by a faculty of educators, health specialists and gerontologists, marriage and family therapists, psychologists, speech language pathologists, and audiologists.

Extensive research and professional practice opportunities are provided through multiple centers. The Family Center, Center for Child Development, Speech and Hearing Center, and Riley-Geary Counties Domestic Mediation Services. Opportunities are also available through the university-wide Center on Aging.

The department offers graduate work toward M.S. and Ph.D. degrees in a broad range of the human sciences and human services. The M.S. degree in family studies and human services includes specializations in applied family science, communication sciences and disorders, couple and family therapy, early childhood education, family and community services, life span human development, and youth development. The department offers the following specializations leading to the Ph.D. degree in human ecology: applied family science, couple and family therapy and life span human development. Also available in the department are certificates in conflict resolution and human services administration.

Distance education and certificate programs

The department collaborates with the Great Plains Interactive Distance Education Alliance (GPIDEA) to offer the M.S. degree in family studies and human services in the following specializations: family and community services, and youth development. The inter-institutional M.S. programs draw upon the expertise of graduate faculty from nine universities. The programs are taught fully on-line. Students enrolled in the program through Kansas State University will receive their degrees from Kansas State University. Also available through the GPIDEA is a certificate in youth development.

Concurrent

Concurrent B.S./M.S. in Life Span Human Development

The combined B.S./M.S. program will provide exceptional undergraduates with the opportunity to obtain both a Bachelor of Science in Family Studies and Human Services and a Master of Science in Life Span Human Development in 5 years, a shorter time than typically required to earn a B.S. plus M.S. if both degrees are pursued separately. This program has thesis, report or manuscript formats.

The application process is the same as for the traditional M.S. degree except that completion of the B.S. degree is not required. The following requirements must be met before an individual can be admitted into this program:

- The student must be seeking a B.S. degree from the School of Family Studies and Human Services.
- The student must have completed 45-90 credit hours toward the B.S. degree.
- The student must have completed the following FSHS undergraduate courses: FSHS 110, 310, 375, 506, and 510.
- The student's cumulative undergraduate GPA must be at least 3.0.

Because there is some overlap between undergraduate and graduate study, some graduate courses will satisfy the degree requirements of the undergraduate degree. A maximum of 9 graduate credit hours from the M.S. LSHD degree can be counted toward the B.S. FSHS degree. Some additional conditions are:

- The student must complete 36 graduate credit hours with a graduate GPA of at least 3.0.
- The student must complete all B.S. FSHS undergraduate requirements with the exception that up to 9 credit hours taken for graduate credit can also count toward his/her undergraduate degree requirements.
- At least 30 of the graduate credit hours on the Graduate Program of Study must be in classes at the 700 level or above.
- A student pursuing a thesis format must complete at least 6 credit hours of Masters Thesis (LSHD 899).

Once an individual is admitted to the concurrent B.S. /M.S. degree program, the student should consult the graduate handbook for policies and procedures for graduate degrees, which include: supervisory committee, final examination, thesis defense, etc. The student's supervisory committee must approve the program of study, which is a statement of the student's graduation requirements.

The B.S. degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.S. and M.S. degrees may be awarded concurrently.

Required course work (21 credit hours)

- LSHD 810 - Child Development **Credits:** 3
- LSHD 815 - Infant Behavior and Development **Credits:** 3
- LSHD 820 - Theories of Human Development **Credits:** 3
- LSHD 822 - Transition to Adulthood **Credits:** 3
- LSHD 845 - Adult Development and Aging **Credits:** 3
- FSHS 888 - Research Methods in FSHS I **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
  Or
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
  Or
- SOCIO 825 - Quantitative Methods **Credits:** 3

Additional Courses (7-13 credit hours)

Select from the following:

- HDFS 700 - Problems in Human Development and Family Science **Credits:** 1-6
- HDFS 708 - Topics in Human Development and Family Science **Credits:** 2-3
- HDFS 713 - Adolescents and Their Families: Implications for Youth Professionals **Credits:** 3
- HDFS 723 - Practicum in Youth Development **Credits:** 1-3
- FSHS 824 - Parent-Child Interaction: Theory and Research **Credits:** 3
- HDFS 850 - Family Science **Credits:** 3
- HDFS 852 - Family Theories **Credits:** 3
- FSHS 865 - Human Sexuality **Credits:** 3
- ECED 884 - Practicum in Parent Education **Credits:** 1-18
- FSHS 890 - Application of Research and Statistics in Family Science **Credits:** 3
- LSHD 892 - Practicum in Human Development Research **Credits:** 1-18
- HDFS 893 - Program Evaluation in Human Services **Credits:** 3

- PSYCH 620 - Psychology of Personality **Credits:** 3
- PSYCH 650 - Psychology of Language **Credits:** 3
- PSYCH 953 - Seminar in Personality **Credits:** 1-3
- SOCIO 544 - Social Gerontology: An Introduction to the Sociology of Aging **Credits:** 3
- SOCIO 944 - Seminar in the Sociology of Aging **Credits:** 3
- Other supportive courses

End of Program Requirements

Thesis: an empirical research project (6-8 hours of M.S. Research) or Report (2 hours of M.S. Research) or Manuscript or journal article of acceptable quality.
Oral Examination: focused on the thesis, report, or manuscript.

Doctor of Philosophy Emphasis Area(s)

Applied Family Science (Ph.D.)

The Department of Applied Human Sciences participates in the Ph.D. degree program awarded from the College of Health and Human Sciences with a specialization in Applied Family Science. The PhD program in Applied Family Science provides students with the skills to teach, conduct research, and practice in the field. Graduates will be prepared to conduct high-impact research addressing issues and needs relevant to family and relationship health and well-being. Such research findings inform public policy, program development, and build the evidence base.

Ph.D. Requirements

Requirements: A minimum of 90 credit hours is required. No more than 30 credit hours from a master's degree may be applied.

Required Courses:

- HDFS 801 - Grant Development and Management **Credits:** 3
- HDFS 808 - Topics in Applied Family Science **Credits:** 1
- HDFS 850 - Family Science **Credits:** 3
- HDFS 852 - Family Theories **Credits:** 3
- HDFS 860 - Family Policy **Credits:** 3
- HDFS 871 - Program Development and Administration **Credits:** 3
- HDFS 893 - Program Evaluation in Human Services **Credits:** 3
- FSHS 950 - Theory Construction in Family Science **Credits:** 3
- LSHD 820 - Theories of Human Development **Credits:** 3

Statistics and Research Methods:

Statistics: 9 credits

One of the Following:

- FSHS 806 - Statistical Methods in Family Studies and Human Services I **Credits:** 3
  OR
- EDCEP 817 - Statistical Methods in Education **Credits:** 3
  OR
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
  And one of the following:
- FSHS 906 - Statistical Methods in Family Studies and Human Services II **Credits:** 3
  OR
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
  OR
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
  And one of the following:
- CFT 910 - Topics in Couple and Family Therapy **Credits:** 1-3
  OR
- STAT 730 - Multivariate Statistical Methods **Credits:** 3

Research Methods: 9 credits

- FSHS 809 - Qualitative Research Methods in Family Science **Credits:** 3
- FSHS 888 - Research Methods in FSHS I **Credits:** 3
- FSHS 890 - Application of Research and Statistics in Family Science **Credits:** 3

Professional Development: Minimum 12 credits

- EDCI 943 - Principles of College Teaching **Credits:** 3
  AND
- HDFS 981 - Applied Practicum in Family Science **Credits:** 1-3 (Can be repeated for elective credit)
  AND
- HDFS 982 - College Teaching Practicum in Family Science **Credits:** 1-3 (Can be repeated for elective credit)
  AND
- HDFS 983 - Research Practicum in Family Science **Credits:** 1-3 (Can be repeated for elective credit)
  AND
- HDFS 979 - Advanced Professional Issues in Family Science **Credits:** 3

Electives: 15 credits

These 15 credits of electives should be based on student's professional goals and must be approved by the student's supervisory committee.

Doctoral Research: 19 credits

- FSHS 990 - Dissertation Proposal Seminar **Credits:** 1
- FSHS 999 - PhD Research in Family Studies and Human Services **Credits:** 1-18 (18 hours required)

Couple and Family Therapy (Ph.D.)

No GRE requirement for admission.

The Applied Human Sciences department participates in the Ph.D. degree program awarded from the College of Health and Human Sciences with a specialization in Couple and Family Therapy. The mission of our CFT doctoral program is to educate and mentor family scientist-practitioners with the most advanced, cutting edge research training, for the purpose of developing scholars prepared to make significant contributions in academic and clinical settings. Our goal is to develop distinguished scholars who are highly sought after due to their demonstrated competency as world-class researchers, excellent clinicians, clinical supervisors, and educators. Students pursue programs of study that include course work in human development, family studies, couple and family therapy, statistics, and research methods. The Ph.D. specialization in couple and family therapy is accredited by the Commission on Accreditation for Marriage and Family Therapy Education (COAMFTE).

Program Requirements

This curriculum for the Ph.D. in CFT follows COAMFTE guidelines. It assumes students have completed the requirements for the COAMFTE Master's-Level Standard Curriculum. Where that is not the case, students must complete the equivalent of any deficiencies. Most students complete the program in four years. Students have seven years to complete the program. A minimum of 90 credits is required. No more than 30 credit hours from a master's degree may be applied to fulfill PhD requirements.

Assessment and Treatment in Couple and Family Therapy (3 hours)

- CFT 970 - Specialization and Leadership **Credits:** 3

Family Studies and Human Services (3 hours)

- FSHS 950 - Theory Construction in Family Science **Credits:** 3

Supervision of CFT (12-18 hours)

- CFT 984 - Supervision of Couple and Family Therapy **Credits:** 3
- CFT 986 - Practicum in Supervision in Couple and Family Therapy **Credits:** 1-3
  (9-15 hours required)

Research Methods (28 hours)

- CFT 910 - Topics in Couple and Family Therapy **Credits:** 1-3
  (3 hours required)
- CFT 983 - Advanced Family Research Methods **Credits:** 3
- FSHS 809 - Qualitative Research Methods in Family Science **Credits:** 3
- FSHS 990 - Dissertation Proposal Seminar **Credits:** 1
- FSHS 999 - PhD Research in Family Studies and Human Services **Credits:** 1-18
  (1-15 hours required)
- FSHS 906 - Statistical Methods in Family Studies and Human Services II **Credits:** 3

Supervised Clinical Practice (3-9 hours)

- CFT 985 - PhD Practicum in Couple and Family Therapy **Credits:** 1-3
  (3 hours minimum)

Additional Learning (9 hours)

- Two electives - 9 credit hours
- Take additional electives hours as needed to reach the required 90 credit minimum.

End-of-Program Requirements

- Accumulate 1000 approved clinical hours (including approved transfer hours)
- Successfully defend your dissertation proposal seminar, write the dissertation, and successfully complete your oral defense of the dissertation
  AND
- Successfully complete required CFT portfolio with at least two publications
  OR
- Successfully complete the required CFT portfolio with less than two publications and complete written preliminary examinations and, if necessary, successfully defend them in the oral preliminary examination

Notes

Students interested in this option with questions about program requirements or curriculum should contact:

Dr. Glade Topham
Doctoral Program Admissions Chair
Couple and Family Therapy
School of Family Studies and Human Services
139 Campus Creek Complex
Kansas State University
Manhattan, KS 66506
(785) 532-6245
gtopham@ksu.edu

Students interested in this option with questions about admission should contact:

CFT Graduate Program Admissions Coordinator
School of Family Studies and Human Services
139 Campus Creek Complex
Kansas State University
Manhattan, KS 66506
(785) 532-6984
family@ksu.edu

Life Span Human Development (Ph.D.)

The Applied Human Sciences department participates in the Ph.D. degree program awarded from the College of Health and Human Sciences with a specialization in Life Span Human Development. The Life Span Human Development doctoral program is concerned with the development of individuals across the life cycle, the varying contexts of human

development, and the processes underlying development. This specialization provides students with a strong, substantive foundation, in theory, research, and research techniques in human development. Emphasis is placed on continuous and systematic changes in the development of individuals as they interact with their physical and social environments. Personal and environmental factors which enhance, support, or impede human development are examined. This multidisciplinary program encompasses theory and research in infant, child, and adolescent development; adult development and aging; family studies; and thanatology.

All students plan a program of study with their major professor and graduate committee to fit their individualized career goals. Developmental periods or processes may be emphasized in individual programs of study.

Post-bachelor's degree course requirements

Ph.D. students are to have the following graduate courses or their equivalents in their graduate credit M.S. and/or Ph.D. work:

Life Span Human Development (21 credit hours)

- LSHD 810 - Child Development **Credits:** 3
- LSHD 820 - Theories of Human Development **Credits:** 3
- LSHD 822 - Transition to Adulthood **Credits:** 3
- LSHD 845 - Adult Development and Aging **Credits:** 3
- HDFS 850 - Family Science **Credits:** 3
  OR
- HDFS 852 - Family Theories **Credits:** 3
- FSHS 930 - Human Development Seminar **Credits:** 3 -Human Development Intervention (3)

- FSHS 930: Human Development Seminar- Models of Human Development (3)
  OR
- FSHS 930: Human Development Seminar- Developmental Research Methodologies (3)

Statistics Requirement (6 credit hours)

- PSYCH 802 - Psychological Research Design and Analysis I **Credits:** 3
- PSYCH 805 - Psychological Research Design and Analysis II **Credits:** 3
  OR
- STAT 705 - Regression and Analysis of Variance **Credits:** 3

Research Methods (6 credit hours)

- FSHS 888 - Research Methods in FSHS I **Credits:** 3
- HDFS 893 - Program Evaluation in Human Services **Credits:** 3

Dissertation Proposal Seminar (1 credit hour)

- FSHS 990 - Dissertation Proposal Seminar **Credits:** 1

Dissertation Research (18-30 credit hours)

Ph.D. students are required to have at least 12 hours of 900-level or advanced 800-level courses. At least two FSHS 930 Human Development Seminar courses are required and additional Human Development Seminars, 900-Level courses, or advanced 800-level courses are recommended. If appropriate Human Development Seminars are not offered, then students may substitute other Ph.D. level courses with the consent of their Supervisory Committee.

- FSHS 999 - PhD Research in Family Studies and Human Services **Credits:** 1-18

Supporting Area Courses (0-12 credit hours*)

Depending on the area of focus within the specialization, students will select additional courses with the guidance of their Supervisory Committee.

*To meet the 90 credit minimum for the doctoral degree.

Master of Science

Family Studies and Human Services (M.S.)

The Department of Applied Human Sciences offers a Master of Science degree in Family Studies and Human Services with specializations in communication sciences and disorders, couple and family therapy, early childhood education, applied family science, family and community services, life span human development, and youth development.

Requirements - at least 36 credits are required to complete the Master's degree.

Master of Science Emphasis Area(s)

Applied Family Science (M.S.)

The Department of Applied Human Sciences offers a Master of Science degree in Family Studies and Human Services with a specialization in Applied Family Science. The M.S. program in Applied Family Science trains students in applying research-based knowledge in diverse family contexts. Students will gain the skills needed to develop, implement, evaluate, and administer programs designed to enhance family and relationship health and well-being. Students who choose the thesis option also will develop research skills to investigate family phenomena.

Requirements - at least 36 credits are required to complete the Master's degree in Applied Family Science.

Required Courses

- HDFS 801 - Grant Development and Management **Credits:** 3
- HDFS 808 - Topics in Applied Family Science **Credits:** 1
- HDFS 850 - Family Science **Credits:** 3
- HDFS 852 - Family Theories **Credits:** 3
- HDFS 860 - Family Policy **Credits:** 3
- HDFS 871 - Program Development and Administration **Credits:** 3
- FSHS 888 - Research Methods in FSHS I **Credits:** 3
- HDFS 893 - Program Evaluation in Human Services **Credits:** 3

- HDFS 898 - Professional and Ethical Issues in Applied Family Science **Credits:** 1
- LSHD 820 - Theories of Human Development **Credits:** 3

Electives

These 9 credits of electives should be based on student's professional goals and must be approved by the student's master's committee. They may include thesis hours (HDFS 899 - MS Research in Human Development and Family Science). If a student is completing a thesis, the student should take research coursework aligned with the thesis methodology (e.g., HDFS 890 - Application of Research & Statistics in Human Development and Family Science, a statistics course, or FSHS 809 - Qualitative Research Methods in Family Science). Students completing a report should take HDFS 881 - Practicum in Family and Community Services.

Additional Requirements:

In addition to the course requirements, the following are required:

1. A written document. The student, with committee approval, must complete one of the following types of written document:
    - a master's thesis (requiring 6 hours of FSHS 899)
    - a master's report (requiring 2 hours of FSHS 899)
2. An oral examination by the student's committee with emphasis on the written document

Notes

Students interested in this option with questions about admissions should contact:

Michelle L. Toews, Ph.D.
Professor & Graduate Program Coordinator
Human Development & Family Science

College of Health and Human Sciences
Kansas State University
310 Justin Hall
Manhattan, KS 66506
mltoews@ksu.edu

Communication Sciences and Disorders (M.S.)

The department of Applied Human Sciences offers a Master of Science degree with a specialization in Communication Sciences and Disorders. Communication Sciences and Disorders is an area of professional specialization that developed out of concern for people with speech, language, and hearing disorders. It is part of the department of Applied Human Sciences, a multidisciplinary department in which sociologists and psychologists, speech-language pathologists and audiologists, economists, gerontologists, social workers, and couple and family therapists address the broad social issues affecting the development of individuals and families.

The Master's degree offered in Communication Sciences and Disorders at Kansas State University is focused on speech-language pathology. It is a full-time, two-year program, starting either in the summer/fall or spring semesters. The majority (about 90%) of CSD undergraduate majors complete the program in 6 semesters (includes 2 summers). The exceptions typically relate to students who have deficiencies in their undergraduate curriculum from another program. The objectives of this professional education program are to:

1. Prepare speech-language pathologists to fill diverse roles in the broad area of speech-language pathology and in a variety of professional environments consistent with evidence-based practice;

2. Provide the student with knowledge about the changing role of the speech-language pathologist within our society and with opportunities to learn how research informs that change;

3. Facilitate an interdisciplinary view of disorders of human communication;

4. Provide speech-language pathologists with the coursework and practicum experiences needed to meet national standards for clinical knowledge and skills and to earn the Certificate of Clinical Competence (CCC) awarded by the American Speech-Language-Hearing Association.

Kansas State University is fully accredited by the North Central Accrediting Association. In addition, the Master of Science (M.S.) program in Speech-Language Pathology at Kansas State University is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2200 Research Boulevard #310, Rockville, Maryland 20850, 800-498-2071 or 301-296-5700.

Please review the following website to read more specific information about graduate application procedures and forms for communication sciences & disorders: https://www.hhs.k-state.edu/ahs/academics/graduate/communication-sciences-disorders/

Requirements

For the Master of Science degree, the following requirements must be met:

1. Completion of a minimum of 30 graduate credit hours in academic coursework with additional credits from practica and externships.

2. Completion of two unique externships, typically full-day placements extending throughout the semester at an approved off-campus site.

3. Completion of a minimum of 400 total clinical hours (including 375 direct clinical contact hours).

4. Demonstration of clinical competency as judged by the Program faculty.

Students selecting the non-thesis option must also successfully complete the comprehensive written examination and oral examination if indicated.

Students selecting the thesis option must complete six hours of thesis credit, design, implement, and produce a written thesis on a research topic in accordance with the department of Applied Human Sciences guidelines and successfully defend the thesis in an oral examination.

The graduate curriculum in Communication Sciences and Disorders prepares students with the basic course requirements for certification as a speech-language pathologist by the American Speech-Language-Hearing Association (ASHA), and also prepares students to pass the national examination in speech-language pathology & audiology (NESPA). The pass rate of KSU graduates (first try) is 100% since 2004.

Academic Courses

- CSD 725 - Augmentative and Alternative Communication **Credits:** 2
- CSD 741 - Fluency Disorders **Credits:** 3
- CSD 742 - Language Assessment and Intervention II **Credits:** 3
- CSD 743 - Communication Impairments in Autism Spectrum Disorders **Credits:** 2

- CSD 744 - Aural Rehabilitation **Credits:** 2
- CSD 745 - Neuromotor Speech Disorders **Credits:** 3
- CSD 748 - Cleft Palate **Credits:** 1
- CSD 750 - Voice Disorders **Credits:** 3
- CSD 780 - Instrumental Measurement for Clinical Application **Credits:** 2
- CSD 841 - Acquired Language and Cognitive Disorders **Credits:** 4
- CSD 844 - Dysphagia **Credits:** 3
- CSD 851 - Professional Issues in Speech-Language Pathology **Credits:** 2
  OPTIONAL:
- CSD 897 - Graduate Seminar in Communication Sciences and Disorders **Credits:** 1-3
- HDFS 899 - MS Research in Human Development and Family Science **Credits:** 1-8

Clinical Courses

- CSD 705 - Practicum in Speech-Language Pathology **Credits:** 1-3
- CSD 706 - Practicum in Audiology **Credits:** 1-3
- CSD 847 - Externship in Speech-Language Pathology **Credits:** 3-12

Clinical Experiences

Clinical Hour Requirements

Specific clinical contact hour requirements for the Master's degree are in accordance with the guidelines for certification as a speech-language pathologist by the American Speech-Language-Hearing Association (ASHA). (Some of these requirements may be obtained at the undergraduate level):

1. 25 clock hours of clinical observation (typically completed prior to practicum enrollment).

2. A minimum of 375 hours of practicum, including 325 hours at the graduate level.

3. Assignments are made to provide clinical experiences with individuals across the life span and with as many types of disorders and differences as possible.

Practicum in Speech-Language Pathology & Audiology

All students must complete 25 hours of supervised observation of clinical service for speech, language, swallowing, or hearing impairments. (The requirement of 25 observation hours is typically fulfilled at the undergraduate level.) Following the clinical observation experience and the completion of appropriate coursework, students are assigned clients at the K-State Speech and Hearing Center. Graduate students from other institutions must provide evidence of any clinical contact hours signed by their supervisor(s) at the institution where the hours were obtained. Those supervisors must hold the CCC in the appropriate area.

Students must complete a minimum of 100 clinical clock hours at the K-State Speech and Hearing Center, and the first 25 clock hours of direct clinical experience will always be completed there, even if clinical contact hours were obtained earlier at a different training program. When sufficient clinical experience has been completed and competency levels demonstrated, the student may be assigned to an off-campus practicum site. Students are expected to enroll in at least two credit hours of practicum (CSD 705 or 706) during each semester or term (summer) of enrollment. Students typically complete a minimum of 4 on-campus semesters of practicum prior to externship placements. Clinical contact hours are counted toward the total number required (375) only if the student earns a practicum grade of A or B.

Externship in Speech-Language Pathology

All students are required by the program to complete two externships at off-campus sites and accrue a minimum of 50 clock hours and appropriate clinical competencies at each site. The Clinic Director and program faculty must approve all external placements. For students hoping to obtain certification from any State Department of Education, it is highly recommended that one of the two externships be in a public school setting. Clinical contact hours will be counted toward the total number required (375) only if the student earns a grade of A or B in the externship in which the hours were accrued. During the semesters that students are completing externships, they are expected to enroll for six credit hours (CSD 847) unless otherwise approved by the faculty.

The Clinic Director of the program has negotiated contracts with several area schools, hospitals, and rehabilitation centers. All externship supervisors are licensed speech-language pathologists with their certificate of clinical competence. At many of the extern sites, former graduates of the program supervise current KSU graduate students. Students should expect to travel or relocate to the communities where the approved off-campus sites are located. Graduate students are expected not to hold daytime jobs during their externships. Graduate students do not hold a GTA during their externship.

Master's Comprehensive Examinations

Graduate students have the option of completing the non-thesis or thesis option. The student should declare his or her interest in the thesis option as soon as possible following acceptance into the graduate program. The CSD handbook at the program web site provides specific guidelines for each option.

Notes

Students interested in CSD should contact:

Dr. Jeridy Oetken (jeridy@ksu.edu) or Dr. Jane Garcia (jgarcia@ksu.edu)
Department of Applied Human Sciences
Communication Sciences & Disorders
139 Campus Creek Complex
1405 Campus Creek Road
Kansas State University
Manhattan, KS 66506
(785) 532-6879

Information concerning academic grievances and grievances against faculty can be found on line at: Graduate Student Rights and Grievances Procedures (k-state.edu).

Program complaints or grievances can be forwarded to the Council on Academic Accreditation (CAA) through the American Speech-Language-Hearing Association. Details are available on line at: CAA complaints or grievances.

K-State notice of nondiscrimination policy can be accessed at: Notice of Nondiscrimination | Kansas State University (k-state.edu)

Couple and Family Therapy (M.S.)

No GRE requirements for admission.

The department of Applied Human Sciences offers a Master of Science degree in Family Studies and Human Services with a specialization in couple and family therapy. The couple and family therapy M.S. specialization prepares professionals to conduct and evaluate therapy with couple and family groups. Students pursue programs of study that

include course work in human development, family studies, couple and family therapy, and research methods. The M.S. specialization in couple and family therapy is accredited by the Commission on Accreditation for Marriage and Family Therapy Education.

Requirements

The M.S. degree in Couple and Family Therapy requires 60 semester hours of graduate work. Most students complete the program in three years. Students have up to five years to complete the program.

Theoretical Foundations of Couple and Family Therapy (12 credits)

- CFT 853 - Family Systems in Cultural Context **Credits:** 3
- CFT 864 - Clinical Theory and Practice A **Credits:** 3
- CFT 867 - Pre-Practicum in Couple and Family Therapy **Credits:** 3
- CFT 896 - Clinical Theory and Practice B **Credits:** 3

Assessment and Treatment in Couple and Family Therapy (15 credits)

- CFT 869 - Systematic Treatment of Trauma Violence and Substance Abuse **Credits:** 3
- CFT 870 - Couples and Sex Therapy **Credits:** 3
- CFT 872 - Family Therapy **Credits:** 3
- CFT 879 - Systemic Assessment and Treatment of Psychopathology **Credits:** 3
- CFT 886 - Clinical Intervention with Parents and Children **Credits:** 3

Family Studies and Human Services (6 credits)

- CFT 824 - Parent-Child Interaction: Theory and Research **Credits:** 3
- FSHS 865 - Human Sexuality **Credits:** 3

Ethics and Professional Studies (3 credits)

- CFT 878 - Professional Studies in Family Therapy **Credits:** 3

Research Methodology (6 credits)

- FSHS 888 - Research Methods in FSHS I **Credits:** 3

  and one of the following options:

- FSHS 806 - Statistical Methods in Family Studies and Human Services I **Credits:** 3
- FSHS 809 - Qualitative Research Methods in Family Science **Credits:** 3
- HDFS 893 - Program Evaluation in Human Services **Credits:** 3

Supervised Clinical Practice (12-18 credits)

A minimum of 12 credit hours of Practica (CFT 885); must accumulate 500 client contact hours and 100 hours of supervision.

- CFT 885 - Practicum in Couple and Family Therapy **Credits:** 1-3

Electives (various)

Students who choose to complete the clinical project (See below) are required to complete 3 elective credit hours.

End of Program Requirements (6 credits)

1. Pass a comprehensive written examination on couple and family therapy
2. Complete, with committee approval, one of the following written documents:
    - A Thesis (requiring 6 hours of CFT 899)
    - A Clinical Project (requiring 3 hours of CFT 889 plus 3 elective credit hours)
1. Pass an oral examination with emphasis on the written document

Notes

Students interested in this option with questions about program requirements or curriculum should contact:

Dr. Glade Topham
Master's Program Admissions Chair
Couple and Family Therapy
Department of Applied Human Sciences
139 Campus Creek Complex
Kansas State University
Manhattan, KS 66506
(785) 532-6245
gtopham@ksu.edu

Students interested in this option with questions about admissions should contact:

CFT Graduate Program Admissions Coordinator
Department of Applied Human Sciences
139 Campus Creek Complex
Kansas State University
Manhattan, KS 66506
(785) 532-6984
family@ksu.edu

Early Childhood Education (M.S.)

The Department of Applied Human Sciences department offers a Master of Science degree in Family Studies and Human Services with a specialization in early childhood education. The M.S. program in early childhood education prepares individuals to be master teachers, directors of early childhood programs, and leaders in the development of child care policy. Early childhood education licensure is a pre-requisite for full admission. Students interested in entering the program without prior licensure must complete licensure requirements concurrently with degree requirements.

Requirements

To complete the program, the master's candidate must have:

1. Thirty (30) graduate hours of coursework approved by her/his committee.
2. Experience working with children. The candidate can fulfill this requirement by satisfactory performance as a graduate assistant in one of the FSHS child care centers or with coursework in one of the following:
    - Practicum in Early Childhood Education (FSHS 883)
    - Practicum in Parent Education (FSHS 884)
    - Practicum in Human Development Research (FSHS 892)
    - Research in FSHS (Thesis) (FSHS 899)

    Performance of the graduate assistants in the Stone House Ruth Hoeflin Early Childhood Education Center will be evaluated by the Director of Child Care Programs for consideration by each student's advisory committee.
3. A comprehensive examination *or*
    a written document which may take one of three forms:
    1. Thesis - an empirical study with a comprehensive review of the literature and conforming to specifications set by the university.
    2. An article prepared for submission to a scholarly journal (research or expository).
    3. Report, e.g., curriculum teacher guide, survey, parent handbook, assessment instruments.
4. The candidate must have an oral defense of the document or of the comprehensive examination.

Required Courses

- LSHD 810 - Child Development **Credits:** 3
- LSHD 815 - Infant Behavior and Development **Credits:** 3
- LSHD 820 - Theories of Human Development **Credits:** 3
- ECED 830 - Advanced Program Development **Credits:** 3
- HDFS 850 - Family Science **Credits:** 3
  or
- HDFS 852 - Family Theories **Credits:** 3
  or
- HDFS 670 - Working with Parents **Credits:** 3
- FSHS 888 - Research Methods in FSHS I **Credits:** 3
  or
- EDCEP 816 - Research Methods in Education **Credits:** 3

Recommended Courses

- FSHS 704 - Seminar in Family Studies and Human Services **Credits:** 1-18
- ECED 710 - Child Care: Components and Issues **Credits:** 3
- ECED 728 - Assessment of Young Children **Credits:** 3
- ECED 730 - Early Childhood Program Administration **Credits:** 3
- ECED 740 - Play Facilitation **Credits:** 3
- FSHS 824 - Parent-Child Interaction: Theory and Research **Credits:** 3
- ECED 883 - Practicum in Early Childhood Education **Credits:** 1-18
- ECED 884 - Practicum in Parent Education **Credits:** 1-18
- LSHD 892 - Practicum in Human Development Research **Credits:** 1-18
- HDFS 899 - MS Research in Human Development and Family Science **Credits:** 1-8

- FSHS 809 - Qualitative Research Methods in Family Science **Credits:** 3

Notes

The candidate must select his/her major professor and one other member of his/her committee from the Early Childhood Education area. The committee will be responsible for the development of a course of study with the candidate and for approving a choice of practicum and the preparation of the written report.

The academic performance of the student in the Early Childhood Education specialization will be reviewed by the student's committee after he/she has completed at least twelve (12) hours of graduate study.

Students considering the thesis option should enroll in additional research and/or statistics courses in consultation with their major professor.

Students interested in this option with questions about program requirements or curriculum should contact:

Dr. Mary DeLuccie
Program Chair
Early Childhood Education
Department of Applied Human Sciences
211 Hoeflin Stone House
Kansas State University
Manhattan, KS 66506
(785) 532-3535
deluccie@ksu.edu

Family and Community Services (M.S.)

Offered through the department of Applied Human Sciences, the Master of Science in Family Studies and Human Services, with an emphasis in Family and Community Services, is offered as an inter-institutional online program sponsored by the Great Plains Interactive Distance Education Alliance (GPIDEA). The degree is uniquely concerned with understanding families and the development, evaluation, and management of program services to them in community context. The program is designed to create better online educational opportunities for family and community science professionals such as Extension agents and for spouses in military service families. The M.S. degree in Family and Community Services will prepare graduates for individual and family services professions that are similar to some positions in social work but distinct from counseling positions. The degree does not lead to licensure.

Core Courses (30 credit hours)

- CNRES 750 - Crises Across the Lifespan **Credits:** 3
- HDFS 714 - Program Design, Evaluation, and Implementation **Credits:** 3
- HDFS 719 - Program Administration and Management **Credits:** 3
- HDFS 784 - Foundations and Principles of Family and Community Services **Credits:** 3
- HDFS 785 - Family Dynamics **Credits:** 3
- HDFS 786 - Lifespan Development **Credits:** 3
- HDFS 787 - Resilience in Families **Credits:** 3
- HDFS 791 - Parenting Education **Credits:** 3
- HDFS 825 - Family Resource Management **Credits:** 3
- HDFS 862 - Interpersonal Relationships **Credits:** 3

Elective Courses (6 credit hours)*

*At Kansas State University, a capstone course (PFP 675 or FSHS 881) is required, and students may select one other course from the electives list. For all other participating universities, students may select any two courses from the electives list.

- CNRES 759 - Foundations of Trauma and Traumatic Stress **Credits:** 3
- HDFS 700 - Problems in Human Development and Family Science **Credits:** 1-6
- HDFS 708 - Topics in Human Development and Family Science **Credits:** 2-3
- HDFS 724 - Working with Military Families **Credits:** 3
- HDFS 871 - Program Development and Administration **Credits:** 3
- HDFS 881 - Practicum in Family and Community Services **Credits:** 1-6 *(Kansas State University students, see note above)
- HDFS 899 - MS Research in Human Development and Family Science **Credits:** 1-8
- PFP 675 - Field Study in Family Economics **Credits:** 1-3 *(Kansas State University students, see note above)
- PFP 765 - Military Personal Finance **Credits:** 3

Practica

Practica not required, but the courses below will support capstone experiences as determined by the student and committee.

- HDFS 700 - Problems in Human Development and Family Science **Credits:** 1-6
- HDFS 708 - Topics in Human Development and Family Science **Credits:** 2-3
- HDFS 881 - Practicum in Family and Community Services **Credits:** 1-6
- PFP 675 - Field Study in Family Economics **Credits:** 1-3

Total hours required: 36

Life Span Human Development (M.S.)

The department of Applied Human Sciences offers a Master of Science degree in Family Studies and Human Services with a specialization in life span human development. The life span human development M.S. specialization is concerned with the growth and development of the individual, the varying contexts of human development, and the processes underlying development throughout the life cycle. The continuous and systematic changes in the behavior of individuals, and the processes underlying these developmental changes across the life span, are of primary interest. Consideration is given to the ways in which varying and changing ecological contexts, both large and small, influence human development. In thedepartment of Applied Human Sciences, we are particularly interested in the influences of family context and family relations on the course of development. Further, consistent with the orientations and goals of our applied perspective, this specialization is concerned with identifying factors which may foster and enhance development and optimize growth over the life span. Overall, the life span human development specialization provides students with opportunities to study developmental processes and transitions from conception to death, the many factors influencing the course and direction of development, and implications of these for research, applied programs and social policy.

A minimum of 36 hours of graduate course work is required for this M.S. degree.

Required Courses (21 credit hours)

Human Development:

- LSHD 810 - Child Development **Credits:** 3
- LSHD 815 - Infant Behavior and Development **Credits:** 3
- LSHD 820 - Theories of Human Development **Credits:** 3
- LSHD 822 - Transition to Adulthood **Credits:** 3
- LSHD 845 - Adult Development and Aging **Credits:** 3

Research Methodology:

- FSHS 888 - Research Methods in FSHS I **Credits:** 3

and

- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3

or

- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- SOCIO 825 - Quantitative Methods **Credits:** 3

Context and Processes (7-13 credit hours)

Select from the following:

- HDFS 700 - Problems in Human Development and Family Science **Credits:** 1-6
- HDFS 708 - Topics in Human Development and Family Science **Credits:** 2-3
- HDFS 713 - Adolescents and Their Families: Implications for Youth Professionals **Credits:** 3
- HDFS 723 - Practicum in Youth Development **Credits:** 1-3
- FSHS 824 - Parent-Child Interaction: Theory and Research **Credits:** 3
- HDFS 850 - Family Science **Credits:** 3
- HDFS 852 - Family Theories **Credits:** 3
- FSHS 865 - Human Sexuality **Credits:** 3
- ECED 884 - Practicum in Parent Education **Credits:** 1-18
- FSHS 890 - Application of Research and Statistics in Family Science **Credits:** 3
- LSHD 892 - Practicum in Human Development Research **Credits:** 1-18
- HDFS 893 - Program Evaluation in Human Services **Credits:** 3
- PSYCH 620 - Psychology of Personality **Credits:** 3
- PSYCH 650 - Psychology of Language **Credits:** 3
- PSYCH 953 - Seminar in Personality **Credits:** 1-3
- SOCIO 544 - Social Gerontology: An Introduction to the Sociology of Aging **Credits:** 3
- SOCIO 944 - Seminar in the Sociology of Aging **Credits:** 3

-or-

- Other supportive courses

End of Program Requirements

Thesis: an empirical research project (6-8 hours of M.S. Research) or Report (2 hours of M.S. Research) or Manuscript or journal article of acceptable quality

Oral examination: focused on the thesis, report or manuscript

Notes

Students interested in this option with questions about program requirements or curriculum should contact:

Elaine Johannes, Ph.D.
Human Development and Family Science

College of Health and Human Sciences
318 Justin Halll
Kansas State University
Manhattan, KS 66506
ejohanne@ksu.edu

Youth Development (M.S.)

The Department of Applied Human Sciences offers a Master of Science degree in Family Studies and Human Services with a specialization in youth development. The collaborative, multi-institutional master's degree program in Youth Development draws on the expertise of graduate faculty and graduate courses from seven land-grant universities. Faculty at these institutions share knowledge and expertise in youth development, delivering most instruction over the internet. All institutions are members of the Great Plains Interactive Distance Education Alliance and have a history of success in distance education.

Master's Degree Program Requirements

The graduate program consists of 36 credit hours, including 10 required courses equaling 28 credit hours and 8 elective hours. The courses are offered on a rotating basis, with all courses offered at least once every other year (i.e., fall, spring, and summer).

The eight elective hours will consist of a practicum (1-3 credits), independent study (1-3 credits), or coursework. Practicum and independent study project hours will be coordinated with the major professor.

Required courses

Core courses offered within the program include nine courses (3 credit hours each) and a professional development seminar (1 credit hour):

- HDFS 711 - Foundations of Youth Development **Credits:** 1
- HDFS 712 - Community Youth Development **Credits:** 3
- HDFS 713 - Adolescents and Their Families: Implications for Youth Professionals **Credits:** 3
- HDFS 716 - Topics in Contemporary Youth Issues **Credits:** 1-3
- HDFS 717 - Youth Policy **Credits:** 3
- HDFS 718 - Youth Professionals as Consumers of Research **Credits:** 3
- HDFS 719 - Program Administration and Management **Credits:** 3
- HDFS 720 - Youth Development **Credits:** 3
- HDFS 722 - Youth and Cultural Contexts **Credits:** 3

Notes

Students interested in this option with questions about program requirements or curriculum should contact:

Elaine Johannes, PhD
Human Development and Family Science

College of Health and Human Sciences
318 Justin Hall
Kansas State University
Manhattan, KS 66506
ejohanne@ksu.edu

Graduate Certificate

Conflict Resolution Graduate Certificate

Contact: Brett Mallon
E-mail: mallon@ksu.edu
Home Page: https://www.hhs.k-state.edu/ahs/academics/cr/cert/index.html

Offered through the Applied Human Sciences graduate program, the Graduate Certificate in Conflict Resolution provides students with the fundamentals of conflict resolution and practice. It is intended to meet the needs of those individuals who seek introductory graduate training in conflict resolution. It may also be appropriate for professionals who have already earned a graduate degree in their professional field, but who would benefit from academic study of applications of conflict analysis and resolution in their current profession.

Program Requirements:

To complete the Conflict Resolution Graduate Certificate Program you must complete four, three-credit-hour courses.

- CNRES 751 - Conflict Resolution: Core Skills and Strategies **Credits:** 3
- CNRES 752 - Culture and Conflict **Credits:** 3
- CNRES 753 - Violence Prevention and Intervention **Credits:** 3
- CNRES 754 - Organizational Conflict **Credits:** 3
- CNRES 755 - Family Mediation **Credits:** 3
- CNRES 761 - International Conflict & Trauma **Credits:** 3

Note:

CNRES 751 - Conflict Resolution: Core Skills and Strategies must be the first class enrolled in.

Human Services Administration Graduate Certificate

Contact: Elaine Johannes
E-mail: ejohanne@ksu.edu
Home Page: https://www.hhs.k-state.edu/ahs/academics/afs/hsa.html

Offered through the department of Applied Human Sciences, the Graduate Certificate in Human Services Administration provides students the skills and competencies needed to develop, implement, evaluate, and administer programs designed to enhance family and relationship health and well-being within non-profit or public settings. It is intended to meet the needs of individuals who seek introductory graduate training as well as those who have already

earned a graduate degree, but who would benefit from academic study of human services administration in their current profession.

Course Requirements (12 Credits):

- HDFS 801 - Grant Development and Management **Credits:** 3
- HDFS 860 - Family Policy **Credits:** 3
- HDFS 871 - Program Development and Administration **Credits:** 3
  OR
- HDFS 719 - Program Administration and Management **Credits:** 3
- HDFS 893 - Program Evaluation in Human Services **Credits:** 3
  OR

Youth Development Professional Graduate Certificate

(available through distance education only)

Contact: Elaine Johannes
E-mail: ejohanne@ksu.edu
Home Page: https://www.hhs.k-state.edu/ahs/academics/yd/ydp-certificate/index.html

Offered through the department of Applied Human Sciences graduate program, the objective of the youth development professional certificate is to train graduates to understand and apply conceptual approaches to youth development, to display an understanding of the development and impact of local, regional, state, federal, and global policies on youth as well as to recognize the impact of family and cultural influences on positive youth outcomes.

The certificate requires 12 credit hours chosen from a list of approved courses in addition to a one-hour foundations course.

The program is a collaborative, multi-institution effort with course work delivered online. Faculty from a partnership of seven land-grant universities share knowledge and expertise in youth development. All institutions are members of the Great Plains-Interactive Distance Education Alliance and have a history of success in distance education.

Course Requirements:

- HDFS 711 - Foundations of Youth Development **Credits:** 1

Choose four of the following five courses (12 credits):

- HDFS 712 - Community Youth Development **Credits:** 3
- HDFS 713 - Adolescents and Their Families: Implications for Youth Professionals **Credits:** 3
- HDFS 717 - Youth Policy **Credits:** 3
- HDFS 720 - Youth Development **Credits:** 3
- HDFS 722 - Youth and Cultural Contexts **Credits:** 3

Food, Nutrition, Dietetics, and Health

245 Justin Hall
785-532-5508
fndhgrad@ksu.edu
https://www.k-state.edu/hhs.fndh

Department Head:

Tandalayo Kidd, Ph.D., R.D., L.P.N.

Director of graduate studies:

Weiqun "George" Wang, Ph.D.

Graduate faculty:

*Delores H. Chambers, Ph.D., Kansas State University
*Edgar Chambers IV, Ph.D., Kansas State University
*Jennifer Hanson, Ph.D., Kansas State University
*Mark D. Haub, Ph.D., University of Kansas
Amber Howells, Ph.D., Kansas State University
*Tandalayo Kidd, Ph.D., Kansas State University
*Brian Lindshield, Ph.D., University of Illinois at Urbana-Champaign
*Bernadette Olson, Ed.D., University of South Dakota
*Sandra B. Procter, Ph.D., Kansas State University
*Sara Rosenkranz, Ph.D., Kansas State University
*Richard R. Rosenkranz, Ph.D., Kansas State University
*Kevin Sauer, Ph.D., Kansas State University
*Martin Talavera, Ph.D., Kansas State University
*Ryan Thiele, Ph.D., Oklahoma State University
*John Vardiman, Ph.D., University of Arkansas
*Weiqun "George" Wang, Ph.D., Nanjing Agricultural University
Linda K. Yarrow, Ph.D., Kansas State University

Graduate Faculty Associates:

Shawna Jordan, Ph.D., Kansas State University

*Denotes graduate faculty certified to serve as the major professor for doctoral students.

Programs

The department offers M.S. and Ph.D. degrees in Food, Nutrition, Dietetics and Health. Students may emphasize one of the various nutrition and health sciences, in particular nutritional sciences, nutrition and exercise sciences, dietetics, sensory analysis and consumer behavior, public health nutrition, athletic training, or nutrition education and communication.

The M.S. requires 30-35 credits, including thesis (6-8 credits), report (2 credits), or coursework-only options. The Ph.D. requires 90 credits, including a minimum of 30 credits for the Ph.D. dissertation. No foreign language is required.

Programs of study are developed according to the interests, backgrounds, and career goals of the students. In addition to graduate FNDH courses and the requirement core courses listed above, students often include courses from other departments such as food science institute; grain science and industry; biochemistry; chemistry; anatomy and physiology; kinesiology; psychology; biology; business administration and education; and interdisciplinary GPIDEA courses, etc.

The department participates in the University wide Master of Public Health (MPH) degree program. This is a professional degree requiring 36 hours of course work plus a field experience. Additionally, the department participates in the interdepartmental food science graduate degree program. Students in this program earn a M.S. degree in Food Science.

Research facilities and opportunities

Laboratory facilities

The Department of Food, Nutrition, Dietetics, and Health has approximately 27,000 square feet of laboratory space devoted to research. The department has a 1,500-square-feet animal laboratory that is fully accredited by the American Association for Accreditation of Laboratory Animal Care. In cooperation with the College of Veterinary Medicine, animals housed and maintained in our laboratory receive veterinary care to comply with the federal guidelines. Facilities for basic research are up-to-date.

Center for Sensory Analysis and Consumer Behavior

The Center for Sensory Analysis and Consumer Behavior provides professional sensory panel services to researchers at K-State, industry, and government, and conducts consumer research around the world. Students are encouraged to become involved in projects of the center to gain practical knowledge for conducting sensory tests. The center uses both highly trained/experienced panelists and consumers, depending on the test objectives. Graduate students research projects conducted through the center include a variety of food, beverage and other consumer products such as personal care, toothpaste and fragrances. In addition, workshops and training are provided to the industry on general or customized sensory and consumer science topics.

Clinical Research

The Physical Activity and Nutrition Clinical Research Consortium is a 6,400 square feet joint research facility shared by the Department of Food, Nutrition, Dietetics, and Health and the Department of Kinesiology within the College of Health and Human Sciences. All of the studies use human subjects and the studies utilize community interventions or clinical trials to better understand how physical activity and nutrition affect the health of children and adults. The facility has a dual-energy X-ray absorptiometer, metabolic cart, bioelectrical impedance assessment, exercise equipment, a metabolic kitchen, blood analytical equipment, and space for conducting individual and group interviews.

Career opportunities

Graduate study in the human nutrition program prepares students for various academic, industry, and government positions. Graduates from our program are employed by universities and colleges as teachers and researchers; by government agencies as extension specialists, nutritionists, and nutrition education coordinators; by hospitals, health clinics, and community health organizations; and in industry as directors of food product development and sensory evaluation divisions, senior food scientists, managers of quality assurance and test kitchens, directors of consumer services, and technical representatives.

Concurrent

Concurrent B.S./M.S. in Nutrition, Dietetics, and Sensory Sciences

A student who successfully completes this program will receive both a B.S. and an M.S. degree in Food, Nutrition, Dietetics and Health. Students can obtain M.S. with a thesis, report, or coursework-only option.

Admission Requirements

The following requirements must be met before an individual can be admitted into the concurrent program:

- Student must be currently seeking a B.S. degree in the department of Food, Nutrition, Dietetics, and Health at K-State. A student who has completed a B.S. degree is not eligible for the concurrent program.
- Student must have completed at least 75 credit hours towards the B.S. degree.
- The student's cumulative undergraduate GPA must be at least 3.25 at the time of application.

Other admission requirements include: copies of transcripts; three professional recommendations; and applicant form detailing interest, skills and experiences.

Applications are holistically reviewed to determine recommendations for admission. A faculty member must agree to be an applicant's advisor before a recommendation can be made to the Graduate School that the applicant be admitted. All applications will be considered for institutional or departmental awards and graduate assistantships.

Students are responsible for researching financial aid implications of starting a concurrent degree program.

Prospective students please visit https://www.hhs.k-state.edu/fndh/graduate/requirements.html. International students should check the Graduate School requirements for English proficiency at http://www.k-state.edu/grad/students/international.html.

Application Process

The student will: complete K-State Graduate School application online, and submit application fee following instructions provided; submit a statement of academic objective(s) and preferred primary advisor with the application; submit three letters of recommendation; and submit transcript(s) of all undergraduate work to CollegeNet.

Students are responsible for researching financial aid implications of starting a concurrent degree program.

Program Formats and Guidelines

A maximum of 9 graduate credit hours from the Nutrition, Dietetics, and Sensory Sciences (M.S.) (NDSS) degree will satisfy the requirements for the B.S. degree program in the FNDH department. In consultation with their major professor and undergraduate advisor students must enroll in these courses for graduate credit.

The M.S. program in the FNDH department offers the following options: thesis, report, and coursework-only formats as follows:

Courses	Thesis	Report	Coursework Only
STAT 701, STAT 703 or STAT 705	3	3	3
FNDH 880	1	1	1
FNDH 899	6	0	0

FNDH 898	0	2	0
FNDH 897	0	0	3
Other graduate courses	20	24	23
TOTAL Graduate Credits	30	30	30

Once a student is admitted to the concurrent BS/MS NDSS degree program, the student should consult the graduate school handbook for policies and procedures for M.S. degrees, which include supervisory committee, final examination, and thesis defense, etc. The student will work closely with his/her major professor to form a supervisory committee and file a program of study specifying required courses. The student's supervisory committee must approve the program of study, which is a statement of the student's graduation requirements. The undergraduate advisor will continue to advise the student in academic progress toward the B.S. degree, and the major professor will supervise the student's academic progress (including thesis, report or course-work only option) for the M.S. degree.

Admission to the graduate program is provisional until the student completes the B.S. degree requirements.

The B.S. degree may be awarded at any time following the completion of all undergraduate degree requirements or concurrently with the M.S. degree.

In the event that a student begins this program, but does not finish the M.S. Nutrition, Dietetics, and Sensory Sciences degree requirements, he/she must change the nine credit hours of his/her graduate classes to undergraduate credit to receive the B.S. degree.

Any student who has already graduated with a B.S. in the department of Food, Nutrition, Dietetics and Health at K-State is not eligible for the concurrent B.S./M.S. program. The student must apply for and start in the program before completing the B.S. degree (generally prior to senior year).

Doctor of Philosophy

Food, Nutrition, Dietetics and Health (Ph.D.)

Admission

Students entering the Food, Nutrition, Dietetics and Health graduate program are expected to have a bachelor's degree from an accredited institution. Competitive applicants will have a science background appropriate for our degree programs.

Recommendations concerning an applicant's qualifications and admission are made to the Dean of the Graduate School by the department. The final decision regarding admission of an applicant is made by the Dean of the Graduate School.

Admission to graduate study at Kansas State University is granted on three bases: full standing, provisional, or probational.

Admission in full standing requires a minimum grade point average of 3.0 (B average) in the last 60 hours of undergraduate work in an institution whose requirements for the bachelor's degree are equivalent to those of Kansas State University. Applicants with grade point averages below 3.0 may be considered for probational admission provided there is evidence that the applicant has the ability to do satisfactory graduate work. Provisional admission may be granted to applicants who have subject deficiencies in undergraduate preparation as mentioned above or if there is uncertainty in evaluating the transcript.

Other admission requirements include: copies of transcripts; three professional recommendations; and applicant form detailing interest, skills, and experiences.

Applications are holistically reviewed to determine recommendations for admission.

A faculty member must agree to be an applicant's advisor before a recommendation can be made to the Graduate School that the applicant be admitted. All applications will be considered for institutional or departmental awards and graduate assistantships.

Prospective students please visit https://www.hhs.k-state.edu/fndh/graduate/requirements.html. For international students, please check the Graduate School requirements for English proficiency at http://www.k-state.edu/grad/students/international.html.

A limited number of 0.5 time teaching (GTA) and research (GRA) assistantships are available. In addition, Nina Browning Fellowships, scholarships and others are awarded to outstanding students in various amounts each year.

GTAs are appointed for nine months and GRAs for 9 or 12 months. Graduate assistants may enroll in 12 credit hours per semester and 6 credit hours per summer session. Applications for admission will be considered for both fall and spring semesters and summer session.

Doctoral degree requirements (90 hours)

The Ph.D. requires 90 credits post-baccalaureate, including a minimum of 30 credits for the Ph.D. dissertation. No foreign language is required.

Programs of study are developed according to the interests, backgrounds, and career goals of the students. In addition to graduate human nutrition courses, students often include courses from other departments such as animal sciences and industry; grain science and industry; biochemistry; chemistry; anatomy and physiology; kinesiology; psychology; and biology; from the Colleges of Business Administration and Education; and from interdisciplinary international courses.

Core Requirements (30 hours)

Department Requirement (11 hours)

- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 720 - Design of Experiments **Credits:** 3
- FNDH 880 - Professional Communication in FNDH **Credits:** 1
  (2 credit hours required)
- FNDH 995 - Grantsmanship and Publication **Credits:** 3
  OR
- FNDH 958 - Critical Experiences in Industry Research **Credits:** 3-6

Area of Specialization

Students can work with distinguished graduate faculty and choose to emphasize their study in a particular area, including:

Public Health Physical Activity

Specialization core (9 hours):

- KIN 797 - Topics in Public Health Physical Activity Behavior **Credits:** 3
- KIN 805 - Physical Activity and Human Behavior **Credits:** 3
- KIN 830 - Advanced Public Health Physical Activity **Credits:** 3

- Six credits must come from additional FNDH course work excluding FNDH 999.
- FNDH, KIN and other graduate level courses as suggested by the supervisory committee.

Public Health Nutrition

Specialization core (9 hours):

- FNDH 844 - Nutritional Epidemiology **Credits:** 3

Six (6) FNDH credits from the following:

- FNDH 735 - Advanced Energy Balance **Credits:** 3
- FNDH 800 - Nutrition Education and Communication **Credits:** 3
- FNDH 820 - Functional Foods for Chronic Disease Prevention **Credits:** 3
- FNDH 841 - Consumer Research - Fundamentals **Credits:** 1
- FNDH 911 - Advanced Nutrition Topics: Contemporary Issues **Credits:** 1-3

- FNDH, KIN and other graduate level courses as suggested by the supervisory committee.
- Three credits must come from KIN 600 or above.

Nutritional Sciences

Specialization core (11 hours):

- FNDH 810 - Advanced Macronutrient Metabolism **Credits:** 5
- FNDH 812 - Advanced Micronutrient Metabolism **Credits:** 3
- 3 credit hours of FNDH 700 level or above

- Select from additional graduate level courses in FNDH or other graduate level courses as suggested by the supervisory committee.

Sensory Analysis and Consumer Behavior

Specialization core (10 hours):

- FNDH 833 - Descriptive Sensory Analysis: Methods **Credits:** 1
- FNDH 843 - Consumer Research - Qualitative **Credits:** 1
- FNDH 848 - Consumer Research – Quantitative **Credits:** 1
- FNDH 958 - Critical Experiences in Industry Research **Credits:** 3-6
- Select 4-7 additional hours (not including FNDH 701 or FNDH 841) from the other specialized Descriptive Sensory Analysis and Consumer Behavior courses.

Additional Courses

To fulfill the 30-hour core requirement, the student can select additional graduate level courses in FNDH or other graduate level courses as suggested by the supervisory committee to ensure the minimum course credits are met.

Ph.D. Dissertation (30 hours)

Master of Science

Athletic Training (M.S.)

This curriculum will provide theoretical and clinical application experience in the five professional practice domains of Athletic Training: injury/illness prevention and wellness protection, clinical evaluation and diagnosis, immediate and emergency care, treatment and rehabilitation, and organizational and professional health and well-being.

Graduates will use research, innovative methods, and evidence-based healthcare practices with their clients in secondary schools, colleges and universities, hospitals, clinics, industry, military, and the performing arts.

Admission

Students entering the Food, Nutrition, Dietetics, and Health graduate program are expected to have a bachelor's degree from an accredited institution. Competitive applicants will have a science background appropriate for our degree programs. Recommendations concerning an applicant's qualifications and admission are made to the dean of the Graduate School by the department. The final decision regarding admission of an applicant is made by the dean of the Graduate School.

Admission to graduate study at Kansas State University is granted on three bases: full standing, provisional, or probational. Admission in full standing requires a minimum grade point average of 3.0 (B average) in the last 60 hours of undergraduate work in an institution whose requirements for the bachelor's degree are equivalent to those of Kansas State University. Applicants with grade point averages below 3.0 may be considered for probational admission provided there is evidence that the applicant has the ability to do satisfactory graduate work. Provisional admission may be granted to applicants who have subject deficiencies in undergraduate preparation as mentioned above or if there is uncertainty in evaluating the transcript.

Other admission requirements include: copies of transcripts; three professional recommendations; and applicant form detailing interest, skills and experiences.

Applications are holistically reviewed to determine recommendations for admission. A faculty member must agree to be an applicant's advisor before a recommendation can be made to the Graduate School that the applicant be admitted. All applications will be considered for institutional or departmental awards and graduate assistantships.

Prospective students please visit https://www.hhs.k-state.edu/academics/graduate.html. For international students, please check the Graduate School requirements for English proficiency at https://www.k-state.edu/grad/students/international.html.

Required Courses (57-63 hours)

- FNDH 610 - Clinical Applications of Human Anatomy **Credits:** 3
- FNDH 652 - Emergency Management in Athletic Training **Credits:** 3
- FNDH 655 - Clinical Applications of Neurological Function **Credits:** 3
- FNDH 710 - Foundations of Patient Management **Credits:** 2
- FNDH 775 - Research in Health Sciences **Credits:** 3

- FNDH 799 - Foundations of Therapeutic Interventions **Credits:** 3
- FNDH 802 - Clinical Therapeutic Interventions I- Functional Therapeutic Interventions **Credits:** 3
- FNDH 803 - Clinical Therapeutic Interventions II- Extremity Interventions **Credits:** 3
- FNDH 804 - Clinical Therapeutic Interventions III- Pharmacology, Nutrition, and Behavior Modification **Credits:** 2
- FNDH 821 - Clinical Evaluation I-Core Evaluation **Credits:** 3
- FNDH 822 - Clinical Evaluation II-Extremities **Credits:** 3
- FNDH 823 - Clinical Evaluation III- General Medical Conditions **Credits:** 3
- FNDH 858 - Durable Medical Equipment and Casting **Credits:** 2
- FNDH 880 - Professional Communication in FNDH **Credits:** 1
- FNDH 883 - Athletic Training Practicum I **Credits:** 1
- FNDH 884 - Athletic Training Practicum II **Credits:** 1
- FNDH 885 - Athletic Training Practicum III **Credits:** 1
- FNDH 886 - Athletic Training Practicum IV **Credits:** 1
- FNDH 887 - Athletic Training Practicum V **Credits:** 4
- FNDH 888 - Athletic Training Practicum VI **Credits:** 4
- FNDH 889 - Research Experience in Athletic Training **Credits:** 1 (Non-thesis Option students: Only 2 credits required)
- FNDH 892 - Population Health in Sports Medicine **Credits:** 3
- FNDH 899 - Master's Thesis **Credits:** 1-8 (Thesis Option students: Only 6 credits required)

  Choose one of the following:
- FNDH 720 - Administration of Health Care Organizations **Credits:** 3
- FNDH 857 - Administration in Athletic Training **Credits:** 3

The Master of Science in Athletic Training

Students interested in the Master's of Science in Athletic Training (MSAT) professional graduate program can enter the program in one of the following ways:

1. The 5-year master's program. Current Kansas State University students can apply after completion of 90 or more credits from Kansas State University or the transfer equivalent credits that includes all pre-requisite courses listed below.

2. Post-Baccalaureate. Students can apply after graduation, or with verification of graduation, from a baccalaureate degree program from an accredited institution and completion of all pre-requisite courses.

Acceptance into the 5-year Master's program is a selective process and requires a minimum 3.25 GPA, submission of a complete application packet, admission to the graduate school, three letters of recommendation, statement of objectives, copies of transcripts, GRE score to meet the requirements of the Department of Food, Nutrition, Dietetics and Health, verified completion of 25 observation hours under the supervision of a Certified Athletic Trainer, participatiion in an interview in the Spring of their application year, and verified completion of the prerequisite courses at Kansas State University or the transfer equivalent of the prerequisite courses.

Students accepted into the 5-year MSAT program will be considered graduate students in the fall semester following their acceptance into the MSAT Program. This may impact undergraduate financial aid, tuition assistance and undergraduate scholarships.

The Post-Baccalaureate admission will require a BA or BS from an accredited institution, a minimum 3.0 GPA, submission of a complete application packet, admission to the graduate school, three letters of recommendation,

statement of objectives, copies of transcripts, GRE score to meet the requirements of the Department of Food, Nutrition, Dietetics and Health, verified completion of 25 hours of observation of a certified athletic trainer, and verified completion of the pre-requisite courses at Kansas State University or the transfer equivalent of the following pre-requisite courses:

Prerequisite Courses:

- PSYCH 110 - General Psychology
- STAT 325 - Introduction to Statistics
- BIOL 198 - Principles of Biology
- FNDH 320 - Care and Prevention of Athletic Injuries
- FNDH 132 - Basic Nutrition
- PHYS 113 - General Physics I with lab
- CHM 210 - Chemistry I with lab
- KIN 330 - Biomechanics
- KIN 335 - Physiology of Exercise
- 8 hours of Human Anatomy and Physiology with lab

Choose one of the following:

- BIOL 441 - Human Body I **Credits:** 4 **and**
- BIOL 442 - Human Body II **Credits:** 4

or

- KIN 360, Anatomy and Physiology **Credits:** 8

Total hours required: 57-63

Dietetics (M.S.) (GPIDEA)

The Department of Food, Nutrition, Dietetics and Health (FNDH) offers an online Master of Science degree in Dietetics for registered dietitians (RDs). This program is offered through the Great Plains Interactive Distance Education Alliance (GPIDEA). GPIDEA is a consortium of universities that collaborate to offer online graduate programs. The online Master of Science in Dietetics through the GPIDEA is offered by the following universities:

- Kansas State University
- The University of Kansas Medical Center
- Iowa State University
- Colorado State University
- The University of Nebraska, Lincoln
- North Dakota State University
- South Dakota State University
- Oklahoma State University

Upon request, the student's graduate committee will evaluate whether graduate practicum credit earned prior to application will count toward the student's current degree plan. It is the responsibility of the student to provide requested and appropriate documentation to facilitate evaluation.

Admission

Application for admission should include the following information:

- The applicant must hold the credential of Registered Dietitian (RD) through the Commission on Dietetic Registration of the Academy of Nutrition and Dietetics. Individuals who hold credentials offered by the following foreign regulatory boards are also eligible to apply:
    - Dietitians of Canada (DC)
    - Dutch Association of Dietitians/Ministry of Welfare, Public Health and Culture (NVD)
    - Philippine Professional Regulation Commission (PRC)
    - Irish Nutrition and Dietetic Institute (INDI)
    - Health Professions Council (HCPC) United Kingdom

A copy of the applicant's CDR registration card or other official documentation of registration status must be submitted with the application.

Or, if the applicant does not hold the credential of Registered Dietitian (RD), the applicant must provide their verification statement issued by a program accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND).

- The applicant must submit official transcripts for all college coursework. A minimum undergraduate grade point average of 3.0 (or alternately, a GPA of 3.0 on the last 60 hours of coursework in the undergraduate degree) is required for admission to this program.
- The applicant must submit three professional recommendations. Individuals writing the references must be able to attest to the applicant's academic abilities and professional leadership potential.
- A completed applicant form detailing interest, skills, and experiences.

Students pursuing the thesis option muyst conduct research compatible with on-going research in FNDH.

Admission Deadlines

Deadline for applications is October 1 for spring semester admission or March 1 for summer or fall semester admission.

Program Description

The Master of Science in Dietetics is a 36 credit hour program.

Required Core Courses (9 Credit Hours)

- FNDH 775 - Research in Health Sciences **Credits:** 3
  or *equivalent
- FNDH 891 - Environmental Scanning and Analysis of Current Issues in Dietetics **Credits:** 3
- STAT 701 - Fundamental Methods of Biostatistics **Credits:** 3
  or
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
  or *equivalent

  *Equivalent courses must be approved by the supervisory committee.

Elective Courses (21 credits)

Additional FNDH courses (minimum 21 credits), or equivalent courses approved by the supervisory committee, at the graduate level are required. The major professor and the supervisory committee will work with the student to select courses that will meet the requirements and support the graduate student's professional development.

Thesis/Non-Thesis (6 Credits)

Students may elect to complete a thesis (6 credit hours of FNDH 899 Research in FNDH) OR they may elect the non-thesis option and take 6 additional credit hours from program electives.

Students completing a thesis will be required to put together a written document under the direction of their major professor and supervisory committee followed by an oral examination with their supervisory committee with an emphasis on the written document. The thesis topic must be compatible with on-going research in FNDH. Students will present a formal seminar of their research findings followed by an oral examination with their supervisory committee.

Non-thesis students may take 6 additional credit hours from program electives, OR pursue 3 additional credits from program electives plus a 3-hour dietetics practice/work-related project (FNDH 780 Problems in Food, Nutrition, Dietetics and Health) under the direction of their major professor and supervisory committee. The student will complete a written document, present a seminar about the topic followed by an oral examination with their supervisory committee with an emphasis on the written document.
Of the required 36 credit hours for the Master of Science Dietetics degree, at least 18 hours should be at the 700 level and above, including the thesis/research and the report/problems hours required by the thesis and report options.

Students admitted to any graduate program at Kansas State University may also elect to pursue a Graduate Certificate in one of the graduate certificate programs offered. Students must apply for admission to a graduate certificate program. Graduate students working toward advanced degrees may use any or all of the certificate courses in a program of study with the approval of the student's supervisory committee.

Nutrition, Dietetics, and Sensory Sciences (M.S.)

Admission

Students entering the Food, Nutrition, Dietetics and Health graduate program are expected to have a bachelor's degree from an accredited institution. Competitive applicants will have a science background appropriate for our degree programs. Recommendations concerning an applicant's qualifications and admission are made to the dean of the Graduate School by the department. The final decision regarding admission of an applicant is made by the Dean of the Graduate School.

Admission to graduate study at Kansas State University is granted on three bases: full standing, provisional, or probational.

Admission in full standing requires a minimum grade point average of 3.0 (B average) in the last 60 hours of undergraduate work in an institution whose requirements for the bachelor's degree are equivalent to those of Kansas State University. Applicants with grade point averages below 3.0 may be considered for probational admission provided there is evidence that the applicant has the ability to do satisfactory graduate work. Provisional admission may be granted to applicants who have subject deficiencies in undergraduate preparation as mentioned above or if there is uncertainty in evaluating the transcript.

Other admission requirements include: copies of transcripts; three professional recommendations; and applicant form detailing interest, skills and experiences.

Applications are holistically reviewed to determine recommendations for admission.

A faculty member must agree to be an applicant's advisor before a recommendation can be made to the Graduate School that the applicant be admitted. All applications will be considered for institutional or departmental awards and graduate assistantships.

Prospective students please visit https://www.hhs.k-state.edu/fndh/grad/requirements.html. For international students, please check the Graduate School requirements for English proficiency at https://www.k-state.edu/grad/students/international.html.

A limited number of 0.5 time teaching (GTA) and research (GRA) assistantships are available. In addition, Nina Browning Fellowships, scholarships and others are awarded to outstanding students in various amounts each year.

GTAs are appointed for nine months and GRAs for 9 or 12 months. Graduate assistants may enroll in 12 credit hours per semester and 6 credit hours per summer session. Applications for admission will be considered for both fall and spring semesters and summer session.

Master's degree requirements

The M.S. requires a minimum of 30 credits inclusive of 1) thesis (6-8 credits), 2) report (2 credits) or 3) coursework-only options.

Programs of study are developed according to the interests, backgrounds, and career goals of the students. In addition to graduate FNDH courses and the requirements listed above, students often include courses from other departments such as animal sciences and industry; grain science and industry; biochemistry; chemistry; anatomy and physiology; kinesiology; psychology; biology; statistics, marketing and business.

Minimum Coursework Requirements

Required courses:

- FNDH 880 - Professional Communication in FNDH **Credits:** 1
  (1 hour required)
- FNDH 897 - Applications in Food, Nutrition, Dietetics and Health **Credits:** 1-3
  Required for coursework option only (minimum 3 hours)
- FNDH 898 - Master's Report **Credits:** 0-18 **Required for report option only**
  (2 hours)
- FNDH 899 - Master's Thesis **Credits:** 1-8 **Required for thesis option only**
  (6-8 hours, minimum 6 hours)

Select 1 course from the following:

- STAT 701 - Fundamental Methods of Biostatistics **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3

Additional Requirements

Additional FNDH courses (minimum 3 credits) at the graduate level are required. The Thesis Supervisory Committee will determine the student's competency requirements and will work with him/her to select courses that will meet the requirements. The student's Program of Study should be approved by the Graduate Studies Coordinator (or designee).

Of the minimum 30 credit hours normally required for the master's program of study, at least 18 hours should be at the 700 level and above, including the thesis/research and the report/problems hours required by the thesis and report options.

Gerontology

Justin Hall 253
785-532-5945
gerontology@k-state.edu
https://www.hhs.k-state.edu/aging/

Director of graduate studies:

Gayle Doll

K-State Graduate Faculty:

Gayle Doll, Ph.D., Kansas State University
Migette Kaup, Ph.D., University of Wisconsin - Milwaukee
Maggie Syme, Ph.D., University of Kansas
Erin Yelland, Ph.D., University of Kentucky

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Inter-Institutional Faculty:

Anne Bronikowski, Iowa State University
Alex Bishop, Oklahoma State University
Heather Fuller-Iglesias, North Dakota State University
Page Heisser, Texas Tech University
Timothy Killian, University of Arkansas
Jennifer Margrett, Iowa State University
Peter Martin, Iowa State University
Melissa O'Connor, North Dakota State University
Emily Roberts, Oklahoma State University
Jean Scott, Texas Tech University
Barbara Stoecker, Oklahoma State University
Jane Strommen, North Dakota State University

Program Description

The inter-institutional M.S. in Gerontology draws on the expertise of graduate faculty and graduate courses from six universities. The program is taught entirely via the Internet. Students are educated in various areas of gerontology which include health issues, public policy, environmental issues and adult development.

Master of Science

Gerontology (M.S.)

(available through distance education only - https://www.hhs.k-state.edu/aging/academics/grad/masters.html)

The Masters of Science in Gerontology is offered through the Great Plains Distance Education Alliance (GP-IDEA). GP-IDEA is a consortium of universities that have come together to offer post-baccalaureate programs through distance education to students whose family or career keeps them from completing an on-campus graduate degree or certificate. Professionals offering direct services often are involved in health promotion programs; directing intergenerational activities; managing senior centers or retirement communities; counseling older people and their families; and helping people plan for retirement. Professionals involved in education and research may evaluate community-based services; teach others about the aging process; develop policies and programs to serve the needs of older adults; work with business and industry on issues related to an aging work force; and consumer education.

The program requires 36 credit hours of coursework, 24 of them in the following core areas:

- Perspectives in Gerontology
- Adult Development and Aging
- Aging in the Family Context
- Environments and Aging
- Research Methods and Program Evaluation in Aging
- Physical Health, Wellness, and Nutrition
- Public Policy, Economics, and Aging
- Capstone course, including ethics

The remaining 12 credit hours will be filled through GP-IDEA or on-campus electives at the home institution or through the other participating universities. No thesis option will be offered for this distance-based program. The GRE is not required. See information below for electives offered by KSU.

Universities collaborating on the gerontology program are listed on the Great Plains Interactive Distance Education Alliance website at https://www.gpidea.org/program/gerontology. Students select a "home" institution through which they will apply to the program and enroll. Students will then take courses taught by their home institution as well as the other cooperating universities. The program has been designed to provide students with the core competencies identified by the Association for Gerontology in Higher Education.

Core Courses (24 credits)

- GERON 772 - Adult Development and Aging **Credits:** 3
- GERON 773 - Physical Health and Nutrition in Aging **Credits:** 3
- GERON 774 - Environments and Aging **Credits:** 3
- GERON 775 - Perspectives in Gerontology **Credits:** 3
- GERON 776 - Program Evaluation and Research Methods in Gerontology **Credits:** 3
- GERON 777 - Public Policy: Economic and Social Impacts on Older Adults **Credits:** 3
- GERON 778 - Aging and the Family **Credits:** 3
- GERON 779 - Professional Seminar in Gerontology **Credits:** 3

Electives offered at KSU include the following:

- GERON 605 - Practicum in Gerontology **Credits:** 1-3

- GERON 610 - Seminar in Long-Term Care Administration **Credits:** 3
- GERON 620 - Problems in Gerontology: Bridging the Gap - Intergenerational Relationships **Credits:** 3
- GERON 630 - Mental Health & Aging **Credits:** 3
- GERON 700 - Gerontechnology **Credits:** 3
- GERON 705 - Sexuality and Aging **Credits:** 3
- GERON 710 - Creativity and Aging **Credits:** 3
- GERON 715 - Aging Veterans **Credits:** 3
- GERON 720 - Design for Aging in the Modern World **Credits:** 3
- GERON 725 - Topics of Gerontology **Credits:** 2-3

Students may take gerontology coursework offered at their home university as an elective, with the approval of their advisor. Approved courses offered by partner universities participating in the Great Plains IDEA Gerontology Program may also count as electives.

Graduate Certificate

Gerontology Graduate Certificate

(available through distance education only)

Contact: Gayle Doll
E-mail: gerontology@ksu.edu
Home Page: https://www.hhs.k-state.edu/aging/academics/grad/certificate.html

Gerontology is one of the interinstitutional graduate programs offered through the Great Plains Distance Education Alliance (GP-IDEA). GP-IDEA is a consortium of universities that have come together to offer post-baccalaureate programs through distance education to students whose family or career keeps them from completing an on-campus graduate degree or certificate. The 15-credit gerontology certificate program is designed to prepare professionals who are either working directly with older people or who are involved in education or research related to aging issues. Professionals offering direct services often are involved in health promotion programs; directing intergenerational activities; managing senior centers or retirement communities; counseling older people and their families; and helping people plan for retirement. Professionals involved in education and research may evaluate community-based services; teach others about the aging process; develop policies and programs to serve the needs of older adults; work with business and industry on issues related to an aging work force; and consumer education.

Universities collaborating on the gerontology certificate program are listed on the Great Plains Interactive Distance Education Alliance website at https://www.gpidea.org/program/gerontology. Students select a "home" institution through which they will apply to the program and enroll. Students will then take courses taught by their home institution as well as the other cooperating universities. The program has been designed to provide students with the core competencies identified by the Association for Gerontology in Higher Education.

The certificate program consists of two required three-credit courses, listed below. The remaining nine credits can be taken from other core courses or from gerontology electives offered through GP-IDEA or at the home institution (with prior approval). Up to three credits of practicum experience may be included in the certificate program.

The certificate program has been designed for students who seek a credential in gerontology and who do not need a master's degree.

Required courses

- GERON 772 - Adult Development and Aging **Credits:** 3
- GERON 775 - Perspectives in Gerontology **Credits:** 3

Courses which may be used as electives

For additional information see the course schedule matrix at www.gpidea.org.

- GERON 605 - Practicum in Gerontology **Credits:** 1-3
- GERON 610 - Seminar in Long-Term Care Administration **Credits:** 3
- GERON 620 - Problems in Gerontology: Bridging the Gap - Intergenerational Relationships **Credits:** 3
- GERON 630 - Mental Health & Aging **Credits:** 3
- GERON 700 - Gerontechnology **Credits:** 3
- GERON 705 - Sexuality and Aging **Credits:** 3
- GERON 710 - Creativity and Aging **Credits:** 3
- GERON 715 - Aging Veterans **Credits:** 3
- GERON 720 - Design for Aging in the Modern World **Credits:** 3
- GERON 725 - Topics of Gerontology **Credits:** 2-3
- GERON 773 - Physical Health and Nutrition in Aging **Credits:** 3
- GERON 774 - Environments and Aging **Credits:** 3
- GERON 776 - Program Evaluation and Research Methods in Gerontology **Credits:** 3
- GERON 777 - Public Policy: Economic and Social Impacts on Older Adults **Credits:** 3
- GERON 778 - Aging and the Family **Credits:** 3
- GERON 779 - Professional Seminar in Gerontology **Credits:** 3

Students may take gerontology coursework offered at their home universities as an elective, with the approval of their advisor. Approved courses offered by partner universities participating on the Great Plains IDEA gerontology program may also count as electives.

Hospitality Management

152 Justin Hall
785-532-5521
Fax: 785-532-5522
hospitality@k-state.edu
https://www.hhs.k-state.edu/hm/

Department Head:

Kevin R. Roberts, Interim

Graduate Program Director:

Junehee Kwon

Graduate Faculty:

*Rebecca A. Gould, Ph.D., Texas Woman's University
*Jichul Jang, Ph.D., The Ohio State University
*Junehee Kwon, Ph.D., Iowa State University
*Kevin Roberts, Ph.D., Kansas State University
Yue Teng-Vaughan, Ph.D. University of Houston

Graduate Faculty Associates:

Brett Horton, Ph.D., Purdue University
Ashley McCowan, M.S., University of Alabama

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Program description

The Department of Hospitality Management offers a master of science degree in hospitality administration and participates in the College of Health and Human Sciences doctor of philosophy program with a specialization in hospitality administration. Graduates are prepared for management and academic careers in hospitality management.

A diverse faculty provide teaching and research expertise in a variety of hospitality-related topics, including foodservice, lodging, and events management. Graduate students join the program with diverse academic and work experience backgrounds, such as foodservice management, hospitality and tourism, hotel and restaurant management, and social sciences.

Graduate faculty and students collaborate to conduct applied research and disseminate findings through scholarly publications and presentations. Flexibility in planning the program of study allows students to meet personal and professional objectives while enhancing knowledge of the discipline. Supportive faculty and peer relationships foster an environment where students may gain the knowledge, skills, and confidence needed for leadership positions in their chosen field.

Graduate assistantships

The department offers graduate teaching and research assistantships. The Department of Housing and Dining Services cooperates with the department and offers graduate assistantships for students to work as managers in residence hall foodservice.

Students are selected based on academic standing and prerequisite skills required for the assignment. Students on assistantship are required to take a minimum of 6 and no more than 12 credit hours per semester and must maintain a 3.0 GPA on all undergraduate and graduate course work. Reappointment is based on maintaining a 3.0 or higher GPA and performance in the position during the previous semester. Students on four-tenths or higher assistantship are assessed fees at the in-state rate in accordance with Graduate School policy.

Concurrent

Concurrent B.S./M.S. in Hospitality Administration

A student that successfully completes this program through the Department of Hospitality Management (HM), will receive both a Bachelor of Science (B.S.) degree in Hospitality Management (HM) and a Master's of Science (M.S.) degree in Hospitality Administration.

This program has theses and coursework formats.

Admission Requirements

The application process is the same as for the traditional M.S. degree except that completion of the B.S. degree is not required. The following requirements must be met before an individual can be admitted into this program:

- The student must be seeking a B.S degree in Hospitality Management at Kansas State University and have completed a minimum of 75 credit hours toward the B.S. degree.
- The student's cumulative undergraduate GPA must be at least 3.0.

Application Process

Application for admission will be completed online and can be accessed via the following link found on the graduate school website: http://www.applyweb.com/kstateg/ . Once you create an account, you will be able to choose the degree program you seek and manage the application process. The graduate school website includes step-by-step instructions (http://www.k-state.edu/grad/admissions/application-process/).

Application for admission should include the following information:

- Statement of objectives designating desired area of specialization, summarizing academic and/or professional experience, and identifying professional goals.
- Current resume.
- Two letters of recommendation.
    - Follow the steps as you complete the online application. Enter the contact information of each reference online, and the system will request the letters of recommendation. Recommenders will upload their letters directly to your application using the links provided.
    - For concurrent B.S./M.S. application, one letter of recommendation must be from a faculty member in hospitality management.
- Official transcripts for all college coursework.
    - You must upload an electronic copy (PDF preferred) of transcript(s) from each college or university where you have taken any higher education courses. You may also have previous institutions send official transcripts to the Department of Hospitality Management . Transcripts become part of your records at K-State and cannot be returned.

Program Formats and Guidelines

- Since there is some overlap between undergraduate and graduate study, some graduate courses will satisfy the degree requirements of the undergraduate degree. A maximum of nine graduate credit hours from the M.S. degree can be counted toward the B.S. degree.

Additional conditions:

- The student must complete 30 (thesis) or 36 (coursework) graduate credit hours with a graduate GPA of at least 3.0.

- Students with the course-only, non-thesis option may also choose graduate certificate programs offered at Kansas State University to develop a specialty area.

- The student must complete all B.S. undergraduate degree requirements.

- At least 18 hours of the program of study should be at the 700 or above level.

- Once an individual is admitted to the concurrent degree program, the student should consult the departmental and university graduate handbooks for policies and procedures for graduate degrees, including: supervisory committee, final examination, thesis defense, etc. The student's supervisory committee must approve the program of study, which is a statement of the student's graduation requirements.

- The B.S. degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.S. and M.S. degrees may be awarded concurrently.

Required Courses (19 hours)

- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
  OR
- FSHS 806 - Statistical Methods in Family Studies and Human Services I **Credits:** 3
- HM 805 - Advanced Foodservice Management **Credits:** 3
  OR
- HM 815 - Advanced Lodging Management **Credits:** 3
  OR
- HM 825 - Advanced Meetings and Business Event Management **Credits:** 3
- HM 835 - Survey of Research in Hospitality Management **Credits:** 3
- MANGT 880 - Business Strategy **Credits:** 3
  OR
- HM 905 - Advanced Hospitality Strategic Management **Credits:** 3
- HM 885 - Seminar in Hospitality Administration **Credits:** 1
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- HM 895 - Financial Management and Cost Controls for the Hospitality Industry **Credits:** 3

Additional Courses if Completing the Thesis Option (11 hours)

- HM 899 - Research in Hospitality Administration **Credits:** 1-18
  (6 credits)
- Graduate Course Electives (5 credits)
  Courses must be approved by the student's supervisory committee.

Additional Courses if Completing the Non-Thesis Option (17 hours)

- Courses must be approved by the student's supervisory committee. Six hours must be from HM.

Doctor of Philosophy Emphasis Area(s)

Hospitality Administration (Ph.D.)

Admission

The Ph.D. in Human Ecology with Specialization in Hospitality Administration is offered through the Hospitality Management graduate program. The department participates in the Ph.D. degree program awarded from the College of Health and Human Sciences with a specialization in Hospitality Administration. Admission to the Ph.D. program requires the completion of a master's degree from an accredited institution. Regular admission requires a grade point average of 3.5 on a 4.0 scale in a master's degree program.

Completion of the following prerequisite coursework is required for regular admission:

- accounting or finance
- management concepts
- marketing
- foodservice management, event, and/or lodging management

If these prerequisites are not met, the student may be admitted provisionally with the expectation that these deficiencies will be removed within the first two semesters at K-State.

One year of full time (or 2000 hours, if not full time) experience in some aspect of the hospitality industry is required. Management experience is preferred.

All applicants are required to take the Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT). International applicants are required to submit results from the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS), or Pearson Test of English.

- Applicants who are submitting a paper-based TOEFL (PBT) test scores must have a minimum total score of 550 with no part score below 55 on reading or listening sections and a TWE (Test of Written English) score of 5.0 or higher.

- Applicants who are submitting an IELTS score must have a minimum total score of 6.5 with part scores of 6.5 or higher on the reading, listening, and writing sections.

- Applicants who are submitting a Pearson Test of English (PTE) score must have a minimum total score of 58 with part scores of 58 or higher.

- Applicants who are submitting iBT TOEFL (internet-based) scores must have a minimum total score of 79 with no part score below 20 on the reading, listening, or writing sections. An international applicant who has received a degree in the last two years from an accredited college or university in the United States is exempt from this requirement.

More information in regards to English Proficiency Requirements can be found online: http://www.k-state.edu/grad/admissions/application-process/international/

International applicants must also submit an Affidavit of Financial Support.

Application materials include: official transcript of all completed academic work; GRE or GMAT scores and TOEFL scores, if applicable; statement of objectives; resume; and an Affidavit of Financial Support, if applicable. Students desiring to apply for the Ph.D. program submit the above materials online using the link: https://www.applyweb.com/kstateg

Applicants will be able to designate three individuals for letters of recommendation online. Enter the contact information of each reference online, and the system will request the letters of recommendation. Recommenders will upload their letters directly to your application using the links provided.

Doctoral Degree Requirements

The Ph.D. requires a minimum of 90 semester credit hours beyond the bachelor's degree, including 15 credit hours of dissertation research. The number of hours from a previously completed master's degree which may be counted toward the 90 hour requirement is decided by the student's supervisory committee and the Graduate School. A maximum of 30 hours may be transferred from a completed master's degree. A maximum of nine credit hours can be transferred from graduate work completed after the master's degree at another accredited university. Doctoral students are required to pass both written and oral preliminary examinations prior to admission to candidacy.

Doctor of Philosophy Course Requirements

Hospitality Administration (20 Credit Hours)

- HM 805 - Advanced Foodservice Management **Credits:** 3
  OR
- HM 815 - Advanced Lodging Management **Credits:** 3
  OR
- HM 825 - Advanced Meetings and Business Event Management **Credits:** 3

- HM 905 - Advanced Hospitality Strategic Management **Credits:** 3
- HM 885 - Seminar in Hospitality Administration **Credits:** 1

- MANGT 820 - Managing Organizational Behavior **Credits:** 3
  OR
- HM 890 - Administration of Hospitality Organizations **Credits:** 3

- HM 895 - Financial Management and Cost Controls for the Hospitality Industry **Credits:** 3
- HM 980 - Higher Education in Hospitality Management **Credits:** 3
- HM 990 - Dissertation Proposal Seminar **Credits:** 1
- HM 995 - Grantsmanship and Publication **Credits:** 3

Teaching (6 Credit Hours)

- HM 993 - Teaching Practicum in Hospitality Management **Credits:** 3
- EDCI 943 - Principles of College Teaching **Credits:** 3

Research and Methodology (33 Credit Hours)

Dissertation Research (15 Credit Hours)

- HM 999 - Research in Hospitality Administration **Credits:** 1-18

Research Methods (9 Credit Hours)

- HM 975 - Research and Applied Theories in Hospitality Management **Credits:** 3
- FSHS 809 - Qualitative Research Methods in Family Science **Credits:** 3
  OR
- SOCIO 824 - Qualitative Methodology **Credits:** 3
  OR
- EDLEA 838 - Qualitative Research in Education **Credits:** 3

  Three additional credit hours from below:
- MIS 665 - Business Analytics and Data Mining **Credits:** 3
- MIS 670 - Social Media Analytics and Web Mining **Credits:** 3
- MKTG 880 - Applied Marketing Analytics **Credits:** 3
- FSHS 888 - Research Methods in FSHS I **Credits:** 3

Statistics (9 Credit Hours from below)

- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3

- STAT 705 - Regression and Analysis of Variance **Credits:** 3
  OR
- STAT 713 - Applied Linear Statistical Models **Credits:** 3

- STAT 720 - Design of Experiments **Credits:** 3
  OR
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3

- FSHS 806 - Statistical Methods in Family Studies and Human Services I **Credits:** 3
- FSHS 906 - Statistical Methods in Family Studies and Human Services II **Credits:** 3
- EDCEP 817 - Statistical Methods in Education **Credits:** 3

Other Elective Graduate Courses (31 Credit Hours)

Courses must be approved by the student's supervisory committee. Nine hours must be from HM.

Master of Science

Hospitality Administration (M.S.)

Admission

The Hospitality Administration M.S. is offered through the Hospitality Management graduate program. Admission to the program requires a bachelor's degree from an accredited institution. Regular admission requires a grade point average of 3.0 on a 4.0 scale. Completion of the following prerequisite coursework is required for regular admission:

- accounting or finance
- management concepts
- marketing

- foodservice management, event, and/or lodging management

If these prerequisites are not met, the student may be admitted provisionally with the expectation that these deficiencies will be removed within the first two semesters at K-State.

Industry experience in some aspect of hospitality management is preferred. If the student has no industry-related work experience, 1000 hours of such experience must be completed during the degree program.

The GRE is not required of any applicant. However, international applicants are required to submit results from the Test of English as a Foreign Language (TOEFL) the International English Language Testing System (IELTS), or Pearson Test of English.

- Applicants who are submitting a paper-based TOEFL (PBT) test scores must have a minimum total score of 550 with no part score below 55 on reading or listening sections and a TWE (Test of Written English) score of 5.0 or higher.
- Applicants who are submitting an IELTS score must have a minimum total score of 6.5 with part scores of 6.5 or higher on the reading, listening, and writing sections.
- Applicants who are submitting a Pearson Test of English (PTE) score must have a minimum total score of 58 with part scores of 58 or higher.
- Applicants who are submitting iBT TOEFL (internet based) scores must have a minimum total score of 79 with no part score below 20 on the reading, listening, or writing sections. The Kansas State University Graduate School and Department of Hospitality Management accepts MyBest™ Score for each section of the TOEFL test. An international applicant who has received a degree in the last two years from an accredited college or university in the United States is exempt from this requirement.

More information in regards to English Proficiency Requirements can be found online: http://www.k-state.edu/grad/admissions/application-process/international/

International applicants must also submit an Affidavit of Financial Support.

Application materials required include: official transcript of all completed academic work; TOEFL scores, if applicable; statement of objectives and resume. International applicants must also submit an Affidavit of Financial Support. Students desiring to apply for the M.S. program submit the above materials using the Kansas State University Graduate School online application system: https://www.applyweb.com/kstateg.

Applicants will be able to designate three individuals for letters of recommendation online. Enter the contact information of each reference online, and the system will request the letters of recommendation. Recommenders will upload their letters directly to your application using the links provided.

Application materials are reviewed by graduate faculty and recommendations forwarded to the Graduate School.

Master's Degree Requirements

Individual programs of study for the master of science degree are planned according to the background and interests of students. Students may choose one of the following plans, with a certificate option, if desired:

30 hours of graduate credit consisting of 24 hours of graduate course work and 6 hours of research for a thesis, or 36 hours of graduate course work and a written comprehensive examination and oral defense.

Students with the course-only, non-thesis option may also choose graduate certificate programs offered at Kansas State University to develop a specialty area.

Required course work for Master of Science (19 hours)

- HM 805 - Advanced Foodservice Management **Credits:** 3

OR

- HM 815 - Advanced Lodging Management **Credits:** 3
  OR
- HM 825 - Advanced Meetings and Business Event Management **Credits:** 3
- HM 835 - Survey of Research in Hospitality Management **Credits:** 3
- MANGT 880 - Business Strategy **Credits:** 3
  OR
- HM 905 - Advanced Hospitality Strategic Management **Credits:** 3
- HM 885 - Seminar in Hospitality Administration **Credits:** 1
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- HM 895 - Financial Management and Cost Controls for the Hospitality Industry **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
  OR
- FSHS 806 - Statistical Methods in Family Studies and Human Services I **Credits:** 3

Additional Courses if Completing the Thesis Option (11 hours):

- HM 899 - Research in Hospitality Administration **Credits:** 1-18 (6 credits)
- Graduate Elective Courses (5 Credits)
  Courses must be approved by the student's supervisory committee.

Additional Courses if Completing the Non-Thesis Option (17 hours):

Courses must be approved by the student's supervisory committee. Six hours must be from HM.

Dual Degree

Dual Degree: Master of Business Administration and MS in Hospitality Administration

The Dual MBA/MS in Hospitality Administration Degree Program is an academic program that allows for the concurrent study of graduate business and graduate science course work and leads to both the MBA degree and the MS degree in Hospitality Administration. The program is designed for students seeking business leadership opportunities in the hospitality industry. The MBA portion is designed to advance the knowledge and practice of business administration. The Hospitality Administration portion is designed to provide industry specific knowledge necessary to succeed in the hospitality industry. Students graduating from the dual degree program will receive two degrees, an MBA and an MS in Hospitality Administration. The program requires the completion of 55 credit hours: 30 credit hours at the MBA program and 25 credit hours at the MS in Hospitality Administration program. The degrees are conferred simultaneously when all requirements for the dual degree program have been met. The assessment of the dual degree program is conducted in each program independently as specified in respective programs.

Application / Admission

Students are required to fulfill the admittance requirements of both degrees to be admitted into this dual degree program. The person seeking admission to the MBA/MS in Hospitality Administration Dual Degree Program must:

1. Complete an application on CollegeNet (https://www.applyweb.com/kstateg) using Dual MBA/MS in Hospitality Administration program link. Students desiring to apply only to the MBA or MS in Hospitality

Administration should select the specific program NOT the dual degree option in CollegeNet. The link will be assessable from both College of Business and Department of Hospitality Management portals. Application materials include: official transcript of all completed academic work; GRE or GMAT scores and TOEFL scores, if applicable; statement of objectives; resume; and an Affidavit of Financial Support, if applicable.

2. The graduate admission committee of each program will evaluate the MBA/MS application separately, and only those who are accepted by both programs will be admitted to the Dual MBA/MS program.
3. A student who is initially admitted to either the MBA or MS in Hospitality Administration degree and who later decides to pursue the dual degree must apply for change of degree to the MBA/MS dual degree prior to being awarded the first degree.
4. Students admitted to the MBA/MS joint degree program who later decide they only want to complete one of the degrees must:
    a. Submit a written notification to both programs.
    b. Must have their primary program plan changed to reflect the degree to be completed.
    c. Submit a new program of study for the degree program they will complete to the graduate school for an approval. Students must complete the requirements for the respective program to receive the MBA or MS degree.

Degree Requirements

Prerequisites

Curriculum prerequisite courses (MBA)

- Six hours of economics
- MATH 205 General Calculus and Linear Algebra or evidence of equivalent preparation
- An undergraduate statistics course or equivalent preparation (STAT 703 must be taken in the first year of the program)

Curriculum prerequisite courses (MSHA)

- accounting or finance
- management concepts
- marketing
- foodservice management, event, and/or lodging management

Business Requirement (30 credit hours total)

May waive 6-12 credit hours if "B" or better is achieved in equivalent courses at the discretion of the program director. Typically waivers are only granted for multiple undergraduate courses taken, and only credits from AACSB accredited institutions are accepted.

- ACCTG 810 - Foundations of Accounting **Credits:** 3
- ECON 815 - Economic Analysis for Business **Credits:** 3
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- MANGT 830 - Information Technology Strategy and Application **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3
- ACCTG 860 - Management Accounting and Business Problem Solving **Credits:** 3
- MANGT 860 - Managing the Triple Bottom Line Business **Credits:** 3

- MANGT 880 - Business Strategy **Credits:** 3
  Elective: 3 credit hours, must be an approved graduate elective, such as the following:
- MIS 665 - Business Analytics and Data Mining **Credits:** 3
- MIS 670 - Social Media Analytics and Web Mining **Credits:** 3
- MANGT 840 - Advanced Entrepreneurship **Credits:** 3
- MKTG 844 - Advanced International Marketing **Credits:** 3
- MKTG 880 - Applied Marketing Analytics **Credits:** 3

Hospitality Administration Requirement (25 hours total)

Required Core (13 credit hours):

- HM 805 - Advanced Foodservice Management **Credits:** 3
  Or
- HM 815 - Advanced Lodging Management **Credits:** 3
  Or
- HM 825 - Advanced Meetings and Business Event Management **Credits:** 3

- HM 835 - Survey of Research in Hospitality Management **Credits:** 3
- HM 885 - Seminar in Hospitality Administration **Credits:** 1
- HM 895 - Financial Management and Cost Controls for the Hospitality Industry **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3

Additional Courses if Completing the Thesis Option (12 hours)

- HM 899 - Research in Hospitality Administration **Credits:** 1-18
- HM 810 - Research Techniques in Hospitality Management **Credits:** 3
- HM elective

Credits / Units: 3

Additional Courses if Completing the Non-Thesis Option (12 hours)

- HM 785 - Practicum in Hospitality Management **Credits:** 1-6
- Additional Graduate Elective

Credits / Units: 9

Six hours must be from HM. Courses must be approved by the student's supervisory committee.

Interior Design and Fashion Studies

225 Justin Hall
1324 Lovers Lane
785-532-6993
Fax: 785-532-3796
idfsgradinfo@ksu.edu
www.hhs.k-state.edu/idfs

Department head:

Barbara Anderson

Director of graduate studies:

Melody LeHew

Graduate faculty:

Barbara G. Anderson, M.Arch., University of Kansas
Kelsie Doty, Ph.D., Cornell University
Michael Dudek, M.S., Florida State University
*Sherry Haar, Ph.D., Virginia Tech
*Kim Hiller-Connell, Ph.D., Michigan State University
†Migette L. Kaup, Ph.D., University of Wisconsin - Milwaukee†
Hyungchan Kim, M.F.A., Iowa State University
*Melody L. A. LeHew, Ph.D., University of Tennessee
Karen Pedersen, Ph.D., Oklahoma State University
*†Joy M. Robbins, Ph.D., Iowa State University†
*Yingying Wu, Ph.D., Cornell University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.
†Denotes graduate faculty that are faculty in Gerontology.

Inter-Institutional faculty:

Greg Clare, Oklahoma State University
Joan Ellis, South Dakota State University
Jennifer Jorgensen, University of Nebraska-Lincoln
Jaeha Lee, North Dakota State University
Nancy Lyons, South Dakota State University
Linda Manikowske, North Dakota State University

Programs

- Fashion Studies (M.S.)
- Human Ecology (Ph.D.)

Objectives

Graduate education in Fashion Studies provides online and resident opportunities to advance knowledge in fashion and merchandising with an emphasis on environmental, social and economic sustainability.

Facilities and Equipment

Product Development Laboratories

The recently renovated apparel product development laboratory includes industrial sewing, pressing, and patternmaking equipment, ergonomic furnishings, and high tech teaching technologies. Industry standard software and hardware, such as OptiTex and Adobe Suite, are used for product development, patternmaking, and technical specifications.

The textile research laboratory provides facilities for nanoweb fabrication, wettability characterization, and water vapor permeability testing. The equipment includes a water vapor transmission rate tester (W3/031, Labthink) and a SiroFAST System for fabric mechanical property testing.

A GTCO Calcomp RD3 pattern digitizer, wide format plotters, Structure Sensor, Vicon Bonita 10 motion capture system, and Novel pliance X are available for research related to anthropometrics, clothing sizing, and patternmaking. A variety of software, including AnthroScan and Geomagic are used to manipulate scanned data. Plus, a set of Tobii Eye-tracking Glasses Pro 2 and Tobii Data Analyzer software are available for behavioral research.

The natural dye laboratory is equipped for dyeing, printing, and steaming of textiles for research and creative inquiry projects. Equipment includes a bullet steamer, and a colorimeter, which is available for colorfastness tests.

Center on Aging

Some faculty in the Department of Interior Design and Fashion Studies also serve as faculty in the gerontology program and conduct collaborative research with other gerontology faculty through the K-State Center on Aging. The Center on Aging offers both undergraduate and graduate coursework for students; faculty conduct basic and applied research on issues of aging with particular emphasis on the social, economic, psychological, and environmental factors that may improve the quality of life for older adults.

Historic Costume and Textile Museum

The Historic Costume and Textile Museum is a notable collection of traditional and artistic artifacts, which are available for scholarly research. With over 15,000 holdings, the collection includes a number of Nelly Don dresses, wearable art from Anita Luvera Mayer, American quilts, haute couture, salon shoes, military uniforms, Byzantine-era textiles, Chinese and other ethnic textiles, and clothing and textiles from famous and not-so-famous mid westerners. Begun in the early 20th century, the collection's holdings are still augmented by friends, faculty, and Kansas State University alumni who have lived and traveled throughout the world.

Admission and application

Application procedures

Applicants follow the Application Process of the Kansas State University Graduate School available at http://www.k-state.edu/grad/admissions/application-process/ The additional supporting documents below are required by the Department of Interior Design and Fashion Studies as part of the application package. The Kansas State University Graduate School requires that all application packages be fully complete before review by the graduate faculty in the department.

Applicant review by graduate faculty

Applications are reviewed after they are complete in the online application system and the application fee has been paid. IDFS graduate faculty review applications and decide whether to recommend admission at monthly graduate program meetings. It is advised that applicants contact graduate faculty members prior to applying to ensure there is a match between the applicants' research interests and faculty expertise. If admission is recommended by the IDFS graduate faculty, the Graduate School conducts a final review. In the event the faculty decide against admission, the applicant is notified by letter sent via email.

Assistantships

Financial aid is available through teaching and research assistantships. Graduate students selected for an assistantship receive a monthly stipend and may be eligible for a tuition reduction or waiver. Assistantship applications are due January 8 with a decision announced by March 15.

Doctor of Philosophy

Sustainable Fashion Business (Ph.D.)

The department participates in the Ph.D. degree program awarded from the College of Health and Human Sciences with a specialization in Sustainable Fashion Business. The degree is designed to enable students to combine knowledge of fashion with an understanding of its application to a broader human perspective. The Ph.D. requires a minimum of 90 semester credit hours beyond the bachelor's degree—including 60 hours of course work and 30 hours of dissertation research. A master's degree is required and up to 30 hours from the student's Master's degree may be applied toward the course work requirement. A program of study will be individually planned to capitalize on the interests, goals, and disciplinary backgrounds of the student and faculty. A preliminary written examination and oral defense are required upon completing two-thirds of the program of study. A dissertation and oral defense of the dissertation are required.

Human Ecology Ph.D. Specialization in Sustainable Fashion Business

The PhD requires a minimum of 90 semester credit hours beyond the bachelor's degree – including 60 hours of course work and 30 hours of dissertation research. A master's degree is required and up to 30 hours from the student's Master's degree may be applied toward the course work requirement.

Core Requirements (17 Credit Hours)

- EDCI 943 - Principles of College Teaching **Credits:** 3
- FASH 600 - Soft Goods Supply Chain Management **Credits:** 3
- FASH 680 - Sustainable Fashion and Color **Credits:** 4
- FASH 700 - Foundations of Sustainability **Credits:** 3
- FASH 825 - Strategic Planning for Sustainability **Credits:** 3
- FASH 990 - Dissertation Proposal Seminar **Credits:** 1

Research and Statistics (39-42 Credit Hours)

Research Methods
Select one 3 credit hour graduate level research methods course from the options below:

- EDCEP 816 - Research Methods in Education **Credits:** 3
- FSHS 888 - Research Methods in FSHS I **Credits:** 3
- SOCIO 823 - Intermediate Methods of Social Research **Credits:** 3

Special note: students conducting qualitative dissertation research will enroll in a minimum of 3 credit hours of qualitative methods. These hours are in addition to the required 3 hours of basic research methods. Course options include:

- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- FSHS 809 - Qualitative Research Methods in Family Science **Credits:** 3

- SOCIO 824 - Qualitative Methodology **Credits:** 3

Statistics
Select a minimum of two courses (6 credit hours) of graduate level statistics. Doctoral students may substitute up to 3 credit hours of statistics from a completed master's degree. Course options include:

Educational Counseling
- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 819 - Survey Research **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3

Applied Human Sciences
- FSHS 806 - Statistical Methods in Family Studies and Human Services I **Credits:** 3
- FSHS 906 - Statistical Methods in Family Studies and Human Services II **Credits:** 3

Psychology
- PSYCH 802 - Psychological Research Design and Analysis I **Credits:** 3
- PSYCH 805 - Psychological Research Design and Analysis II **Credits:** 3

Sociology
- SOCIO 825 - Quantitative Methods **Credits:** 3
- SOCIO 925 - Specialized Approaches to Sociological Research **Credits:** 3

Statistics
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3

Dissertation Research
Complete a total of 30 credit hours of dissertation research.

- FASH 999 - Dissertation Research in Fashion Studies **Credits:** 1-12

Other Elective Graduate Courses (2-8 Credit Hours)

Select courses to fulfill remaining credit hours based upon developing an area of expertise in the field. These courses must be approved by the student's supervisory committee.

Substitute Course Policy for Research Methods and Statistics

Ph.D. students in Fashion Studies may not substitute a research methods course taken as part of a master's degree. Ph.D. students may substitute up to 3 credit hours of statistics from the master's degree.

Master of Science

Fashion Studies (M.S.)

The Department of Interior Design and Fashion Studies offers a Master of Science degree in fashion studies with two areas of emphasis: merchandising and sustainable fashion business. The merchandising emphasis is part of the Great Plains Interactive Distance Education Alliance (GPIDEA), an online multi-institutional program allowing students to

do course work at times convenient to their lives. Students choosing the merchandising emphasis complete 36 credit hours of coursework including a culminating experience. The sustainable fashion business emphasis is predominantly an on-campus program with opportunity for some online courses. Students are required to complete 24 credit hours of coursework and 6 credit hours of thesis research (30 credit hours total). The sustainable fashion business emphasis is an individualized program of study, capitalizing on the interests and disciplinary background of students and faculty to build the theoretical and methodological skills necessary to solve human ecological problems involving fashion systems.

Graduates with a merchandising emphasis are prepared to work in product development, promotions and retail management. For professionals in the industry who lack the theoretical background of merchandising, the expertise offered through this emphasis may provide for diversification or career advancements. Graduates with a sustainable fashion business emphasis are prepared for professional careers within industry, for college instructor positions, and for pursuing a Doctor of Philosophy degree.

Fashion Studies with emphasis in Merchandising (36 credit hours)

Coursework Requirements

- FASH 700 - Foundations of Sustainability **Credits:** 3
- FASH 725 - Theory and Practice of Soft Goods Marketing and Distribution **Credits:** 3
- FASH 735 - Promotional Strategies in Merchandising **Credits:** 3
- FASH 740 - Merchandising Analytics **Credits:** 3
- FASH 810 - International Merchandise Management **Credits:** 3
- FASH 815 - Financial Merchandising Implications **Credits:** 3
- FASH 825 - Strategic Planning for Sustainability **Credits:** 3
- FASH 840 - Product Development **Credits:** 3
- FASH 845 - Consumers in the Soft Goods Market **Credits:** 3
- FASH 850 - Research Methods in Fashion Studies **Credits:** 3

Select either the project report or coursework option.

Project Report Option (6 credit hours)

- FASH 896 - Project Report **Credits:** 1-3

Select one of the following:

- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- Qualitative methods course **Credits:** 3
- Elective course to support project objectives **Credits:** 3

Coursework Option (6 credit hours)

Select courses in consultation with advisor:

- FASH 720 - Professional Advancement in Merchandising **Credits:** 3
- FASH 870 - Problems in Fashion Studies **Credits:** 1-6
- FINAN 815 - Foundations of Finance **Credits:** 3
- MANGT 541 - Management of Quality **Credits:** 3

- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 820 - Managing Organizational Behavior **Credits:** 3
- MKTG 810 - Marketing Concepts and Research **Credits:** 3
- MKTG 844 - Advanced International Marketing **Credits:** 3

Fashion Studies with emphasis in Sustainable Fashion Business (30 credit hours)

Coursework Requirements

- FASH 600 - Soft Goods Supply Chain Management **Credits:** 3
- FASH 680 - Sustainable Fashion and Color **Credits:** 4
- FASH 700 - Foundations of Sustainability **Credits:** 3
- FASH 825 - Strategic Planning for Sustainability **Credits:** 3

Select ONE research methods course from the following list:

- EDCEP 816 - Research Methods in Education **Credits:** 3
- FASH 850 - Research Methods in Fashion Studies **Credits:** 3
- FSHS 888 - Research Methods in FSHS I **Credits:** 3
- SOCIO 823 - Intermediate Methods of Social Research **Credits:** 3

Select ONE analytical methods course from the following list:

- EDCEP 819 - Survey Research **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3
- FSHS 809 - Qualitative Research Methods in Family Science **Credits:** 3
- FSHS 906 - Statistical Methods in Family Studies and Human Services II **Credits:** 3
- PSYCH 805 - Psychological Research Design and Analysis II **Credits:** 3
- SOCIO 824 - Qualitative Methodology **Credits:** 3
- SOCIO 825 - Quantitative Methods **Credits:** 3
- SOCIO 925 - Specialized Approaches to Sociological Research **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3

Complete 6 credits hours of thesis research:

- FASH 899 - Master's Thesis Research **Credits:** 1-6

Select elective courses (5 credit hours) in consultation with advisor.

Personal Financial Planning

343 Justin Hall
(785) 532-1480
pfp@ksu.edu
https://www.hhs.k-state.edu/pfp/

Department Head:

Martin Seay

Graduate Faculty:

*Sonya Britt-Lutter, Ph.D., Texas Tech University
Nicholas Carr, Ph.D., Kansas State University
L. Ann Coulson, Ph.D., University of Missouri - Columbia
*Stuart Heckman, Ph.D., Ohio State University
*D. Elizabeth Kiss, Ph.D., University of Illinois - Urbana-Champaign
Derek Lawson, Ph.D., Kansas State University
HanNa Lim, Ph.D., Ohio State University - Columbus
*Maurice MacDonald, Ph.D., University of Michigan
Meghaan Lurtz, Ph.D., Kansas State University
Megan McCoy, Ph.D. University of Georgia
Blain Pearson, Ph.D., Texas Tech University
*Martin C. Seay, Ph.D., University of Georgia

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Graduate Faculty Associates:

Michael Kothakota, Ph.D. Kansas State University

Overview

The department of Personal Financial Planning at Kansas State University strives to be world known for its research, education, service, and outreach in financial planning offering emphases in financial counseling and financial therapy. We exist to prepare professionals to transform lives through financial planning.

Kinesiology

1A Natatorium
785-532-6765
Fax: 785-532-6486
kines@k-state.edu
http://www.ksu.edu/kines/

Department Head:

Katie Heinrich, Interim

Director of graduate studies:

Tom Barstow

Graduate faculty:

*Carl Ade, Ph.D., Kansas State University
*Tom Barstow, Ph.D., University of California - Davis
*Bradley Behnke, Ph.D., Kansas State University
*Gina Besenyi, Ph.D., University of South Carolina
*Steven Copp, Ph.D., Kansas State University
Yuri Feito (Adjunct), Ph.D., University of Tennessee
Paige Geiger, Ph.D., Mayo Graduate School
*Craig Harms, Ph.D., Indiana University
*Katie Marie Heinrich, Ph.D., University of Missouri - Kansas City
Sara Jahnke, University of Missouri - Kansas City
Emily Mailey, Ph.D., University of Illinois - Urbana-Champaign
*Mary McElroy, Ph.D., University of Maryland
*Timothy I. Musch, Ph.D., University of Wisconsin - Madison
Carlos Poston, Ph.D. University of California
*David Poole, Ph.D., University of California - Los Angeles

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Overview

Kinesiology is the study of physical activity across a range of tasks including exercise, daily living, play, sport, and work. Coursework integrates biological and behavioral approaches using biomechanical, physiological, psychological, and sociological perspectives to study physical activity from cell to society. This life science discipline emphasizes the breadth and depth of content, scientific methodology, and intellectualism for lifelong learning, thinking, and action. Kinesiology promotes an understanding of the necessity of movement activities for an individual's physical and psychological health.

Research facilities

Research facilities in the Department of Kinesiology are housed in four different buildings around campus. The Cardio-Oncology and Autonomic Physiology Lab (Drs. Brad Behnke and Steven Copp) are located in Justin Hall, while the Cardiorespiratory Exercise Lab (Drs. David Poole and Tim Musch) is housed in Coles Hall. Human physiological research is predominantly conducted in the Clinical Integrated Physiology Lab (Dr. Carl Ade) in the Lafene Health Center, and in the Human Exercise Physiology Lab (Drs. Tom Barstow and Craig Harms), and the Functional Intensity Training Lab (Dr. Katie Heinrich) in the Natatorium. Also in the Natatorium are the Physical Activity Intervention Research Lab (Dr. Emily Mailey) and the Physical Activity Research in Community Settings Lab (Dr. Gina Besenyi). Graduate students are provided many opportunities to work in both research and physical activity service settings.

Program Strengths

The Kinesiology Faculty has emerged as a national leader in the science of health-related physical activity with internationally-recognized faculty. Graduate education, research, and service activities are supported by grants from the

National Institutes of Health, NASA, American Cancer Society, and American Heart Association as well as private corporations and health foundations. Strong collaboration efforts with other academic units on campus such as the Departments of Anatomy and Physiology and Human Nutrition provide valuable research and applied professional preparation opportunities for students.

Financial support

The Kinesiology Department provides a limited number of Graduate Teaching Assistantships each year for qualified candidates. Teaching Assistant duties consist of teaching and related activities associated with undergraduate laboratories. The total time commitment is approximately 20 hours per week and includes a tuition waiver and stipend. GTA positions are allocated to each research faculty member to support one or more graduate students conducting thesis or dissertation research in his/her laboratory. Thus, generally, GTA positions are only offered to students conducting thesis or dissertation research in a department laboratory.

Concurrent

Concurrent B.S. Integrative Physiology / M.S. Kinesiology

The combined BS Integrative Physiology/MS Kinesiology program will provide exceptional undergraduates with the opportunity to obtain both a Bachelor of Science in Integrative Physiology (BSI.P.) and a Master of Science (MS) in Kinesiology in 5 years, a shorter time than typically required to earn the bachelor's degree plus MS if both degrees are pursued separately. This program has theses and coursework formats.

The application process is the same as for the traditional MS degree except that completion of the BS Integrative Physiology degree is not required. The following requirements must be met before an individual can be admitted into this program:

- The student must be seeking the bachelor's degree in Integrative Physiology from the Department of Kinesiology.
- The student must have completed 75[BF1] -90 credit hours toward the BS degree.
- The student must have completed the Kinesiology undergraduate core (KIN 220, KIN 310, KIN 335, KIN 336, and KIN 345) [BF2]
- The student's cumulative undergraduate GPA must be at least 3.0.

Since there is some overlap between undergraduate and graduate study, some graduate courses will satisfy the degree requirements of the undergraduate degree. A maximum of 9 graduate credit hours from the MS KIN degree may be counted toward the bachelor's degree in Integrative Physiology. Some additional conditions are:

- The student must complete 30 (thesis) or 36 (coursework) graduate credit hours with a graduate GPA of at least 3.0.
- The student must complete all undergraduate degree requirements with the exception of 9 credit hours taken at the 600 or 700 level that satisfy the undergraduate and graduate program.
- At least 18 of the graduate credit hours on the Graduate Program of Study must be in classes at the 700 level or above.
- A student pursuing a thesis format must complete at least 6 credit hours of Master's Thesis (KIN 899).

Once an individual is admitted to the concurrent BS Integrative Physiology/MS KIN degree program, the student should consult the graduate handbook for policies and procedures for graduate degrees, which include: supervisory committee, final examination, thesis defense, etc. The student's supervisory committee must approve the program of study, which is a statement of the student's graduation requirements.

Required course work (6 credit hours)

- KIN 815 - Research Methods in Kinesiology **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3

Additional Courses if Completing the Thesis Option (24 credit hours)

- Other courses and Electives **Credits:** 18
- Thesis **Credits:** 6

Additional Courses if Completing the Non-Thesis Option (24 credit hours)

- Other courses and Electives **Credits:** 30

Concurrent B.S./M.S. in Kinesiology

The combined B.S./M.S. program will provide exceptional undergraduates with the opportunity to obtain both a Bachelor of Science
and a Master of Science in Kinesiology in 5 years, a shorter time than typically required to earn a B.S. plus M.S. if both degrees are pursued
separately. This program has thesis and coursework formats.

The application process is the same as for the traditional M.S. degree except that completion if the B.S. degree is not required. The following requirements must be met before an individual can be admitted into this program:

- The student must be seeking a B.S. degree from the Department of Kinesiology.
- The student must have completed 45-90 credit hours toward the B.S. degree.
- The student must have completed the Kinesiology undergraduate core (KIN 220, 310, 335, 336, 345, and 346.)
- The student's cumulative undergraduate GPA must be at least 3.0.

Since there is some overlap between undergraduate and graduate study, some graduate courses will satisfy the degree requirements of the undergraduate degree. A maximum of 9 graduate credit hours from the M.S. KIN degree can be counted toward the
B.S. KIN degree. Some additional conditions are:

- The student must complete 30 (thesis) or 36 (coursework) graduate credit hours with a graduate GPA of at least 3.0.
- The student must complete all B.S. KIN undergraduate requirements with the exception that up to 9 credit hours taken for graduate credit can also count toward his/her undergraduate degree requirements.
- At least 18 of the graduate credit hours on the Graduate Program of Study must be in classes at the 700 level or above.
- A student pursuing a thesis format must complete at least 6 credit hours of Master's Thesis (KIN 899).

Once an individual is admitted to the concurrent B.S. /M.S. KIN degree program, the student should consult the graduate handbook for policies
and procedures for graduate degrees, which include: supervisory committee, final examination, thesis defense, etc. The student's
supervisory committee must approve the program of study, which is a statement of the student's graduation requirements.

The B.S. degree may be awarded at any time following the completion of the undergraduate degree requirements. Alternatively, the B.S. and M.S.
degrees may be awarded concurrently.

Degree requirements for the M.S. are as described in the Kinesiology (M.S.) section.

Doctor of Philosophy

Kinesiology (Ph.D.)

The Department of Kinesiology participates in the Ph.D. program in the College of Health and Human Sciences with a specialization in Kinesiology. Students are prepared to conduct research in exercise physiology or exercise behavioral science.

Doctoral Degree Requirements

The Ph.D. requires a minimum of 90 semester credit hours beyond the bachelor's degree, including 30 credit hours of dissertation research. The number of hours from a previously completed master's degree which may be counted toward the 90 hour requirement is decided by the student's supervisory committee and is reviewed by the chair of the College of Health and Human Sciences Coordinating Committee and the Graduate School. A maximum of 30 hours may be transferred from a completed master's degree. A maximum of 9 credit hours can be transferred from graduate work completed after the master's degree at another accredited university. Doctoral students are required to pass both written and oral preliminary examinations prior to admission to candidacy.

• 90 credit hours minimum
• 30 hours minimum of research
• 15 hours minimum at the 800 level or above
• 6 credit hours maximum at the 500 level
• 6 credit hours maximum of independent study
• 30 hours maximum from master's degree
• Dissertation: preparing three or more papers for publication in exercise physiology or exercise behavioral science.

Core Requirements (12 Credit Hours)

- KIN 815 - Research Methods in Kinesiology **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 720 - Design of Experiments **Credits:** 3

Other Coursework in Major Area (18 Credit Hours)

Students develop a plan of study with their major professor and graduate committee to develop an expertise in exercise physiology or exercise behavioral science. Students may select from the list below or other courses to fulfill the requirement.

Exercise Physiology

Choose from the following courses:

- KIN 601 - Cardiorespiratory Physiology **Credits:** 3
- KIN 603 - Cardiovascular Physiology **Credits:** 3
- KIN 605 - Topics in the Biological Basis of Kinesiology **Credits:** 1-3
- KIN 607 - Muscle Physiology **Credits:** 3
- KIN 609 - Environmental Physiology **Credits:** 3
- KIN 625 - Exercise Testing and Prescription **Credits:** 3
- KIN 635 - Nutrition and Exercise **Credits:** 3
- KIN 650 - Development of Motor Control **Credits:** 3
- KIN 657 - Integrative Human Pathophysiology **Credits:** 3
- KIN 792 - Health-Fitness Instructor Internship **Credits:** 3-8
- KIN 800 - Advanced Physiology of Exercise **Credits:** 3
- KIN 822 - Advanced Muscle Physiology **Credits:** 3
- KIN 824 - Physiology of Oxygen Transport **Credits:** 3
- KIN 826 - Advanced Cardiovascular Physiology **Credits:** 3
- KIN 896 - Independent Study in Kinesiology **Credits:** 1-4

Exercise Behavioral Science

Choose from the following courses:

- KIN 602 - Social Structural Determinants of Physical Activity **Credits:** 3
- KIN 606 - Topics in the Behavioral Basis of Kinesiology **Credits:** 1-3
- KIN 610 - Program Planning and Evaluation **Credits:** 3
- KIN 612 - Policy, Built Environment and Physical Activity **Credits:** 3
- KIN 655 - Individual Physical Activity Promotion **Credits:** 3
- KIN 793 - Internship/Public Health Physical Activity **Credits:** 1-8
- KIN 797 - Topics in Public Health Physical Activity Behavior **Credits:** 3
- KIN 805 - Physical Activity and Human Behavior **Credits:** 3
- KIN 808 - Social Epidemiology of Physical Activity **Credits:** 3
- KIN 818 - Social and Behavioral Bases of Public Health **Credits:** 3
- KIN 820 - Physical Activity Leadership **Credits:** 3
- KIN 835 - Group Dynamics and Physical Activity **Credits:** 3
- KIN 840 - Public Health Practice **Credits:** 3-6
- KIN 845 - Exercise Adherence **Credits:** 3
- KIN 855 - Exercise Psychology in Special Populations **Credits:** 3
- KIN 896 - Independent Study in Kinesiology **Credits:** 1-4

Dissertation Research (30 Credit Hours)

- KIN 999 - Dissertation Research **Credits:** 1-15

Master of Science

Kinesiology (M.S.)

Admission

Students entering the Kinesiology graduate program must satisfy a minimum number of undergraduate competencies. These competencies are often satisfied with an undergraduate degree in kinesiology. Students without an undergraduate degree in kinesiology may be required to complete additional undergraduate coursework. Application procedures require (1) a completed graduate application form, (2) transcripts from all universities and colleges attended, (3) three letters of reference, and a statement outlining professional goals and areas of special interest. Application for admission to the program in the fall semester should be made in the preceding late fall or early winter. Applications are also accepted for the spring semester.

Master's degree program

The Department of Kinesiology offers a master of science degree. Students may emphasize exercise physiology/pathophysiology, or exercise behavioral science.

The M.S. degree in kinesiology requires a minimum of 30 hours for students completing a master's thesis option and 36 hours for students completing a course work option. The specific program of study, designed by the student and supervisory committee, is tailored to meet the individual needs and interests of the student. A maximum of 12 hours of supporting work in other departments may be applied toward the degree. All students are expected to demonstrate a depth and breadth of understanding of kinesiology in a written and/or oral final evaluation.

Thesis Option Requirements

Research Core

- KIN 815 - Research Methods in Kinesiology **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3

Support Work

Complete a total of 18 hours from Kinesiology courses 600 and above; and approved courses outside the department

Thesis

6 hours required

Coursework Option

Research Core

- KIN 815 - Research Methods in Kinesiology **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3

Support Work

Complete a total of 30 hours from Kinesiology courses 600 and above; and approved courses outside the department.

College of Technology and Aviation (Aerospace and Technology Campus)

Kansas State Polytechnic
2310 Centennial Road
Kansas State University
Salina, KS 67401-8196

Operator: 785-826-2672
Admission: 785-826-2640
polytechnic@k-state.edu

https://polytechnic.k-state.edu/

Director of Graduate Studies:

Fred Guzek

Graduate Faculty:

Patricia Ackerman, Ph.D., Kansas State University
Kenneth Barnard, Emeritus, Ed.D., Oklahoma State University
R. Kurt Barnhart, Ph.D., Indiana State University
Raju Dandu, Ph.D., North Dakota State University
Becky DeGreef, Ph.D., North Dakota State University
Fred Guzek, Ph.D., University of Kansas
Mark Jackson, Ph.D., Liverpool Polytechnic
Siny Joesph, Ph.D., University of Massachusetts
Saeed Khan, Ph.D., University of Connecticut
John Lawrence, Ph.D., Purdue University
Jung Oh, Ph.D., University of California
Michael Pritchard, Ph.D., Dakota State University
Alysia Starkey, Ph.D., Kansas State University
Don Von Bergen, Ph.D., University of Illinois
Richard Zajac, Ph.D., Kansas State University

Graduate Faculty Associates:

Kathy Brockway, M.Acc., Kansas State University
Kurt Carraway, M.S., Air Force Institute of Technology
Susan Guzek, MSc, ESC Clermont Graduate School of Management
Troy Harding, M.S., University of Virginia
Randy Nichols, M.S., Texas A&M University

Aviation Technology

AVT 744 - Aviation Human Factors Analysis and Design

Credits: 3

An in-depth exploration of the history of air safety as related to human error and how system safety has been greatly enhanced by the incorporation of the fundamentals of human factors in design. Students will understand and articulate the major advances in Human Factors research over the past 40 years and identify knowledge gaps yet to be filled.

Requisites:
Prerequisite: AVT 611

Typically Offered
On sufficient demand

AVT 751 - Aerospace Policy

Credits: 3

Students will understand State and Federal legislative processes and appreciate how ideas become law. This course will specifically include a study of the concepts of advocacy, building coalitions, caucuses, theories of statutory interpretation, and drafting legislation. Where possible the course will include meeting with legislators. Students will also understand how to attain, track, and influence Federal legislation affecting the aviation/aerospace industry.

Typically Offered
On sufficient demand

AVT 771 - Leadership in the Aerospace Sector

Credits: 3

An exploration of the theories of leadership and critical issues facing aerospace sector leadership in the coming decades. Concepts of resilience, contingencies, communication, collaboration, ethics, strategic planning, failure/recovery, and cultural transformation will be explored. At the end of this course students will understand and appreciate the differences between effective and ineffective leaders.

Typically Offered
On sufficient demand

AVT 790 - Aerospace Topics

Credits: 3

Variable content as determined by the instructor to address emerging issues and challenges in the aviation/aerospace sector and/or to meet non-standard student needs and opportunities.

Typically Offered
On sufficient demand

AVT 799 - Advanced Topics in Aeronautics

Credits: 3

Advanced topics in Master of Science in Aeronautics.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor consent.

Typically Offered
On sufficient demand

AVT 838 - MSA Thesis

Credits: 3-6

Required research for M.S.A. thesis option students**.**

Repeat for Credit
Repeatable

Requisites:
Prerequisites: AVT 611, AVT 707

Typically Offered
On sufficient demand

AVT 841 - Management of Aerospace Safety

Credits: 3

An in-depth analysis of aviation safety across all elements of the industry from manufacturing to training, to airports. The student will understand the impacts and challenges of balancing operational efficiencies with the maximization of organizational safety. Safety Management Systems (SMS) concepts will be explored, and students will have the opportunity to design an approved SMS program.

Typically Offered
On sufficient demand

BUS 530 - Practices of Industrial and labor Relations

Credits: 3

Basic course in industrial and labor relations. Broad coverage of the institution of collective bargaining and its environment, the goals and operation of labor unions, the impact of unions on management, and labor relations law.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall

BUS 531 - Strategic Human Resource Management

Credits: 3

This course provides an overview of the human resource systems and processes needed to achieve organizational

effectiveness and strategic success. All key functional areas including human resource planning, staffing, performance management, employee development, and compensation are addressed.

Requisites:
Prerequisite: BUS 420.

Typically Offered
Spring

BUS 542 - Personal Selling and Sales Management

Credits: 3

Focuses on interpersonal communications between buyers and sellers, both oral and written. The mechanics and intricacies of personal sales presentations, which will be developed through practice.

Requisites:
Prerequisite: Concurrent enrollment in BUS 400.

Typically Offered
Spring

College of Technology and Aviation

COT 632 - Radio Frequency Technology for Unmanned Systems

Credits: 3

An introduction to the theory and design of electronic circuits for communications emphasizing the implementation and analysis of common radio-frequency (RF) building blocks. Topics include s-parameters, the Smith chart, component behavior, RF test equipment, computer simulation, filter design, impedance matching, amplifiers, oscillators, mixers, and demodulators. A report will be required of all graduate students.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Spring

COT 650 - Analytical and Computational Tools for Unmanned Systems

Credits: 3

Ordinary differential equations, vector algebra, vector calculus, partial differential equations and the separation of variables technique for solving wave equations. Students also perform simulation and analysis using software tools including MATLAB and MATHCAD applied to Unmanned Systems.

Requisites:
Prerequisite: One previous calculus course and consent of the instructor.

Typically Offered
Fall

COT 660 - Airport Law

Credits: 3

A detailed study of how the U.S. regulatory and legal systems work in relation to airport management. This course emphasizes contract law related to the Federal Aviation Administration Airport covenants and restrictions, Federal Aviation Regulation compliance, and airport operator liability.

Typically Offered
Spring

COT 661 - Airport Planning and Management

Credits: 3

An overview of the Federal Aviation Regulation Part 139 airport design standard and airport master planning process. Includes a study of the role of the airport in community development. Advanced course project required.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall

COT 662 - Aviation Management

Credits: 3

Provides the Professional Master of Technology student with the opportunity to gain a thorough understanding of basic aviation industry management practices in use today combined with historical perspectives. Includes case study analysis.

Typically Offered
Fall

COT 663 - UAS Flight Operations Management

Credits: 3

Best practices for managing complex operations of Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) including topics on: personnel and training, regulatory/policy considerations, airspace access, operating procedures, mission planning, system acquisitions, safety, customer relations, application-specific considerations, and data handling. Emphasis on the handling of unexpected delays and challenges to normal operations.

Typically Offered
Fall

COT 664 - UAS Program Management

Credits: 3

Best practices for top-level management of an Unmanned Aircraft Systems (UAS) program, including topics on:

strategic planning, business model development, proposals, marketing, customer and government relations, personnel management, data handling and security, export control, regulatory environment, and operating procedures.

Typically Offered
Spring

COT 674 - Processing Techniques for Low-Altitude Remotely Sensed Data

Credits: 3

Students learn techniques for exploring remotely sensed data using geographic information systems and image processing software. Topics include manipulation of vector and raster data, management of spatial databases, image stitching, georeferencing, orthorectification, and techniques in the use and interpretation of metadata and development of spatial analysis models useful in remote sensing applications.

Requisites:
Prerequisite: AVT 460 or AVT 463 or consent of instructor

Typically Offered
Fall

COT 675 - Acquisition and Advanced Processing of LARS Data

Credits: 3

Topics begun in COT 674 are further developed. Advanced topics include: multi-spectral data acquisition and processing, exploitation of full-motion video, interpretation of geospatial and remotely sensed data, geostatistical methods of data analysis, photogrammetric measurements, and an introduction to big data concepts.

Requisites:
Prerequisite: COT 674.

Typically Offered
Spring

COT 676 - Low-Altitude Remote-Sensing Product/Project Development

Credits: 3

Building on the skills acquired in COT 674 and 675, students fly a low-altitude remote-sensing mission to obtain geospatial data to process, manipulate, and analyze as the means of developing a finished product in areas of interest to the student. Potential areas of investigation include: precision agriculture, environmental remediation, fire management, wildlife studies, or stewardship of managed ecosystems.

Requisites:
Prerequisite: COT 675.

Typically Offered
Fall

COT 680 - Unmanned Aircraft Systems and Risk Analysis

Credits: 3

An introductory course in Unmanned Aircraft Systems (UAS) history, elements, US Aviation regulations, operations, use of geospatial data; automation, safety issues; detect and avoid systems; sensors and payloads, human factors, and future. Special attention to UAS Cyber Security Risks, Threats, Impact, Vulnerabilities, and Countermeasures will be identified. The Ryan-Nichols Risk Assessment equations will be used for qualitative risk analysis of Threats so identified.

Typically Offered
Fall

COT 682 - Open Source Cyber Surveillance

Credits: 3

One of the key public concerns for safe integration of Unmanned Aircraft Systems (UAS) into the National Air Space (NAS) is *privacy.* This course questions the technical gaps, Intelligence Community (IC) assumptions, and important legal issues related to open source cyber surveillance with emphasis on UAS activities/deployment. Topics addressed include the responsible, legal, and ethical use of data and information gathered from the use of unmanned, semiautonomous systems, web data mining, social networks, and other modern technological systems.

Typically Offered
Fall

COT 684 - Advanced Topics in Cyber Data Fusion

Credits: 3

This course is scenario-based applying cyber surveillance techniques and analysis of collected data, to realistic, terrain-oriented problems. Topics
include the digital soldier and sailor, 360-degree battlefield awareness and the use of unmanned, semiautonomous technologies. Risk Assessment and Cyber Security countermeasures are the "glue" to successful implementation of data fusion techniques. The Ryan-Nichols Risk Assessment equations and other methods will be used for qualitative risk analysis of identified Cyber Threats.

Typically Offered
Spring

COT 686 - Risk Management for Unmanned Aircraft Systems Operators, Pilots, and Ground Personnel.

Credits: 3

Unmanned Aircraft Systems (UAS) Operators, Pilots, and Ground Personnel must be committed to safety if the goal of UAS integration into National Air Space (NAS) is to be accomplished. The best tool for assessment and determination of safest possible flight is Risk Management. This course introduces three risk assessment tools for UAS Operators, Pilots, and Ground Personnel to manage the workloads associated with each phase of flight.

Typically Offered
Spring

COT 688 - Sense and Avoid Technologies in Unmanned Aircraft Systems

Credits: 3

An advanced course in Sense and Avoid (SAA) technologies for Unmanned Aircraft Systems (UAS). SAA is an extremely important concept and is the main obstacle for wider application of UAS in non-segregated airspace related to traffic safety in civilian and military/ defense domains. This course presents the state-of-the-art research results from British, American, Australian and European universities, as well as corporate organizations such as Boeing and MITRE.

Typically Offered
Fall

COT 689 - Conduct and Ethics for Cyber-Security and UAS Professionals

Credits: 3

Explores the constitutional, legal, personal and public policy fundamentals associated with the field of cyber data collection, fusion, integration, and UAV surveillance.

Typically Offered
Fall, Spring, Summer

COT 701 - Advanced Technical Communication

Credits: 3

Intensive writing practice, applying rhetorical principles to a number of genres common to non-academic professions and workplaces, including oral presentations. Introduction to allied topics such as document design and editing, and crafting technical presentations. Application of global information literacy and research methods will culminate in the preparation of a master's project proposal.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Fall

COT 702 - Applied Research Skills and Methods

Credits: 3

Survey of qualitative and quantitative research methods; use of a range of tools to develop applied research skills focusing on literature reviews. Examines applied research concepts, methods, and skills to foster enlightened decision making in professional practice.

Note:
Three hours lecture a week.

Typically Offered
Spring

COT 703 - Project Management for Professionals

Credits: 3

This course focuses on applied project management methodology, tools, and techniques. Topics include career aspects of project management; business factors affecting the project; project organization, planning, execution, and communications; the project life cycle; risk analysis; and best practices in project management.

Typically Offered
Fall

COT 704 - Managerial Finances, Metrics, and Analytics

Credits: 3

Provides an overview of an organization's financial statements, with an emphasis on the interaction between people in management positions and those statements, as well as an examination of the business investment decision-making process. Explores the use of metrics and analytics to measure and improve managerial performance.

Typically Offered
Spring

COT 705 - Transformational Leadership for Technology

Credits: 3

Study and application of leadership styles and common leader traits, skills and behaviors needed in technology industries and dynamic environments where innovation is a key success factor. Includes application in virtual team environments, and introduces concepts of transformational leadership. This course enables students to build group vision, values, and commitment and to make connections between diverse organizational cultures, leadership styles, and business strategies that enable success in a rapidly changing technology world. Students develop lifelong learning networks and information sources that enable them to continue to grow as leaders.

Typically Offered
Fall

COT 706 - Informatics and Technology Management

Credits: 3

Provides theoretical and practical experience in using information technology to support organizational decision-making processes. Provides tools in areas such as statistics, research methods, data mining, and information technology to develop solutions tailored to business problems.

Typically Offered
Spring

COT 713 - Advanced Aviation Safety Management

Credits: 3

An examination of the development of safety and how safety management has become an important part of any company. Discusses Safety Management Systems and how this blueprint is becoming an integral part of most organizations, emphasizing specific governmental and corporate programs. Topics include management tools and

techniques to aid in systematically controlling risk and developing a safety culture mind-set.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Spring

COT 720 - Application of Lean Six Sigma Methods

Credits: 3

Six sigma and lean tools within an enterprise to improve product and process development, production operations, and service activities.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Spring

COT 721 - Reliability Centered Maintenance of Plant Equipment

Credits: 3

Reliability modeling and assessment, reliability-centered maintenance, condition monitoring technologies, and computer tools.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring

COT 731 - Electromagnetics for Unmanned Systems

Credits: 3

Fundamentals of electromagnetic wave phenomena primarily using transmission line theory to study practical applications such as antennas, cables, and waveguides. Includes a treatment of EMI and related issues.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Spring

COT 741 - Aerospace Manufacturing and Materials

Credits: 3

An introduction to aerospace manufacturing and materials processes that focus on understanding manufacturing applied

to the production of aerospace vehicles and associated materials.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Fall, Spring

COT 750 - Professional Master of Technology International Experience

Credits: 0-6

Seminar and travel course including faculty-led international field experience focused on Professional Master of Technology students' area of interest, with travel followed by a final project. The course is designed to enhance students' global and cultural awareness while adding knowledge and skill in topical issues. In addition, students will be introduced to and immersed in historical components, both disciplinary and cultural.

Repeat for Credit
Repeatable

Requisites:
Instructor Consent

Typically Offered
Fall, Spring

COT 770 - Material Properties of Bulk Solids

Credits: 3

Covers material properties related to bulk solids handling such as particle density, bulk density, particle hardness, surface area, particle size and shape and its distribution, porosity and permeability. Additional material property topics include moisture content, temperatures, RH, explosiveness, cohesion and adhesion, angle of internal friction, wall friction, angle of repose, time consolidation, unconfined yield strength, shear strength and more. Sampling and measurement techniques of materials are also included.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Fall

COT 771 - Storage and Flow of Bulk Solids

Credits: 3

Covers topics related to storage and flow of bulk solids which include design of hopper , bin, chute, and feeders. A study of solid flow problems such as cohesive arching, ratholing, bridging, and shear tester operational principles is included.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Fall

COT 772 - Pneumatic Conveying of Bulk Solids

Credits: 3

Covers topics such as types and components of pneumatic conveying systems and its design principles. Trouble shooting, pipe wear and attrition, dust control are included.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Fall

COT 773 - Instrumentation and Safety of Bulk Solids Handling

Credits: 3

Examines various instrumentation used in bulk solids handling operation such as measurement of airflow, pressure, temperature, level and measuring techniques. Different type valves, PLC control and safety are included.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Spring

COT 774 - Mechanical Conveying of Bulk Solids

Credits: 3

Covers topics such as types and components of bucket elevator, screw conveyor, drag and belt conveying systems and their design principles. Different aspects of designing each component of these systems with examples and troubleshooting will be discussed.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Summer

COT 780 - UAS and High Altitude Platforms(HAPS) for Wireless Communications

Credits: 3

An introductory course to HAPS technology applied in the civilian UAS sector. Covers technologies, communications, and protection of those computer communications from hostile intent. HAPS technology provides wireless narrowband and broadband telecommunications and broadcasting services to users using either aircraft (unmanned (UAS/UAV) or manned) or lighter-than-airships (LTA). Research indicates UAS to be the best alternative. These platforms are reusable and positioned at stratospheric altitudes, from approximately 12.4 miles to 31 miles (20 to 50 km).

Requisites:
Prerequisite: Graduate Status.

Typically Offered
Spring

COT 781 - Capstone Experience for Professional Master of Technology Degree

Credits: 1-6

Students formulate research and execute a project for industry partners to gain hands-on experience under expert guidance while integrating knowledge to solve complex problems. Students write a convincing proposal for a capstone experience, gather and analyze data, draw conclusions and present results. Teams of first and second-year students may form to work on real-world projects.

Repeat for Credit
May be repeated up to a total of six credit hours.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

COT 792 - Problems in Professional Master of Technology

Credits: 0-3

Opportunity for advanced independent study of a specific topic in one of the following areas: Aviation safety, engineering technology, or technology management. Topics selected jointly by student and the instructor.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

COT 799 - Special Topics in Professional Master of Technology

Credits: 0-6

Offered on sufficient demand. Advanced topics in Professional Master of Technology.

Requisites:
Prerequisite: Varies with announced topic.

Typically Offered
Fall, Spring, Summer

Machine Learning and Autonomous Systems

MLAS 500 - Reinforcement Learning in Autonomous Systems

Credits: 3

This course will guide students through the development and operationalization of reinforcement learning frameworks. Reinforcement learning architectures such as Markov decision processes, Q-Learning, artificial neural networks, recurrent neural networks, and generative adversarial networks will be explored. This course is a guide to the complexities of reinforcement learning, their respective architectures and implementations within an autonomous system.

Requisites:
Prerequisite: STAT 325 and MLAS 350 or CC 315

Typically Offered
Fall

MLAS 501 - Artificial Intelligence Studio

Credits: 3-6

Students are expected to develop and operationalize an artificially intelligent framework using applied statistical methods, techniques in probabilistic programming, and principles of artificial intelligence. Students will be required to document underlying AI theories and demonstrate an operationalized AI framework.

Repeat for Credit
Repeatable for up to 6 credit hours.

Requisites:
Corequisites: MLAS 390 or MLAS 400 or MLAS 500

Typically Offered
Fall, Spring, Summer

MLAS 502 - Autonomous Systems Senior Capstone

Credits: 6

Students are expected to develop and operationalize an autonomous system using cybernetic principles of learning, computational frameworks, quantitative methods, and principles of engineering. Students will develop project documentation as needed to describe their autonomous systems project. Lastly, students will be required to successfully defend their project via a final oral presentation to associated faculty members. Whenever feasible, real-world projects are solicited from businesses.

Requisites:
Prerequisites: MLAS 390, MLAS 400, and MLAS 500

Typically Offered
Spring

Aviation

Kansas State Polytechnic
2310 Centennial Road
Kansas State University
Salina, KS 67401-8196

Operator: 785-826-2672
Admission: 785-826-2640
polytechnic@k-state.edu

https://polytechnic.k-state.edu/

Department Head:

Terry Hunt

Director of Graduate Studies:

Graduate Faculty:

Patricia Ackerman, Ph.D., Kansas State University
Kenneth Barnard, Emeritus, Ed.D., Oklahoma State University
R. Kurt Barnhart, Ph.D., Indiana State University
Raju Dandu, Ph.D., North Dakota State University
Becky DeGreef, Ph.D., North Dakota State University
Fred Guzek, Ph.D., University of Kansas
Mark Jackson, Ph.D., Liverpool Polytechnic
Siny Joesph, Ph.D., University of Massachusetts
Saeed Khan, Ph.D., University of Connecticut
John Lawrence, Ph.D., Purdue University
Jung Oh, Ph.D., University of California
Alysia Starkey, Ph.D., Kansas State University
Don Von Bergen, Ph.D., University of Illinois
Richard Zajac, Ph.D., Kansas State University

Graduate Faculty Associates:

Kathy Brockway, M.Acc., Kansas State University
Kurt Carraway, M.S., Air Force Institute of Technology
Susan Guzek, MSc, ESC Clermont Graduate School of Management
Troy Harding, M.S., University of Virginia
Randy Nichols, M.S., Texas A&M University

Master of Science

Aeronautics (M.S.)

The Master of Science in Aviation degree is a 30 credit, with 2-option degree that is designed to meet emerging needs of the aviation/aerospace industry. Further, each option has either a research thesis track for those who desire to

continue their education to the Ph.D., or a non-thesis option for those who do not plan on continuing their education beyond the master's degree. The M.S. in Aeronautics is also designed to accommodate either the working professional, or the traditional academic student with both distance and hybrid instruction models. In either option students will learn both from experienced professors as well as from experienced industry professionals.

The Leadership/Policy option is aimed at those who wish to continue their professional education with an ultimate career objective of an executive leadership position in the aviation/aerospace sector. Within this option, students will examine and understand current industry issues from a strategic perspective with a focus on how to make the industry more resilient in an era of constrained resources and changing national priorities.

The Aerospace Certification option is designed for those who desire advancement in, or desire to enter the workforce in, either the aerospace manufacturing or continued airworthiness sectors. Students will experience in-depth study in the areas of airworthiness certification, production certification, lean six sigma, project management, safety management and others. This program will meet and exceed emerging industry standards for education and training in airworthiness certification.

Admission Requirements

As specified in the Graduate Handbook. Students with undergraduate backgrounds other than aviation or engineering will be admitted conditionally at the discretion of the admissions committee.

A 3.0 undergraduate G.P.A. on a 4.0 scale during the last 60 hours of coursework is required for admission.

Other material required for admission: Official undergraduate transcripts, 2 letters of recommendation and a letter expressing personal goals in the completion of this program.

Graduation Requirements

30 credit hours.

Course Requirements (30 credit hours)

The program of study for the MSA program requires 30 total credits to include the following:

Core required for both options (12 credit hours)

- AVT 611 - Aircraft Regulation and Certification **Credits:** 3
- COT 701 - Advanced Technical Communication **Credits:** 3
- AVT 707 - Research Methods **Credits:** 3
- AVT 771 - Leadership in the Aerospace Sector **Credits:** 3
  or
- AVT 841 - Management of Aerospace Safety **Credits:** 3

Aerospace Certification Option (12 credit hours)

- AVT 722 - Aircraft Type Certification **Credits:** 3
- AVT 734 - Aircraft Production Certification **Credits:** 3

- AVT 744 - Aviation Human Factors Analysis and Design **Credits:** 3
- AVT 841 - Management of Aerospace Safety **Credits:** 3

Aerospace Leadership/Policy Option (12 credit hours)

- COT 704 - Managerial Finances, Metrics, and Analytics **Credits:** 3
- AVT 751 - Aerospace Policy **Credits:** 3
- AVT 771 - Leadership in the Aerospace Sector **Credits:** 3

  and one technical elective

Technical Electives

- AVT 703 - Project Management for Aerospace Professionals **Credits:** 3
- AVT 722 - Aircraft Type Certification **Credits:** 3
- AVT 734 - Aircraft Production Certification **Credits:** 3
- AVT 744 - Aviation Human Factors Analysis and Design **Credits:** 3
- AVT 751 - Aerospace Policy **Credits:** 3
- AVT 790 - Aerospace Topics **Credits:** 3
- AVT 799 - Advanced Topics in Aeronautics **Credits:** 3
- COT 704 - Managerial Finances, Metrics, and Analytics **Credits:** 3
- COT 720 - Application of Lean Six Sigma Methods **Credits:** 3

Research (3 credit hours)

At least 3 credits from:

- AVT 838 - MSA Thesis **Credits:** 3-6
  or
- AVT 836 - Master of Science in Aeronautics Capstone Project **Credits:** 3 (non-thesis students)*

  *Non-thesis students will need to enroll in one additional elective to reach 30 total hours.
  No more than 9 credits of 600 level courses can be taken. Other technical courses may be substituted upon approval. (15 credits)

Graduate Certificate

Unmanned Aircraft Systems-Information Assurance Graduate Certificate

The graduate certificate program in UAS- Information Assurance is designed to provide both working professionals and graduate students a strong educational foundation and career potential in an increasingly important industry to both civilian and military organizations all over the United States. The market for Information Assurance jobs remains bright. The primary emphasis of the graduate certificate program is to prepare the workforce to understand the protection of UASs from cyber-attacks by negligent and hostile means and teaching Information Assurance risk assessment principles to practitioners involved with UAS operations on land, sea, air, or satellite platforms.

The program will be offered via K-State Online or face-to-face at K-State Polytechnic in eight-week segments in fall, spring, and summer semesters to meet the needs of both on-campus and off-campus learners. Courses are delivered using a course management system to provide an interactive, web-based classroom to students. Thus, the delivery of the certificate provides for occupational work demands and schedules. The Graduate Certificate in UAS – Information Assurance may be completed in one year. Two courses each in the fall and spring semesters and one course in the summer semester.

Certificate Requirements: (15 credit hours)

- COT 680 - Unmanned Aircraft Systems and Risk Analysis **Credits:** 3
- COT 682 - Open Source Cyber Surveillance **Credits:** 3
- COT 684 - Advanced Topics in Cyber Data Fusion **Credits:** 3
- COT 686 - Risk Management for Unmanned Aircraft Systems Operators, Pilots, and Ground Personnel. **Credits:** 3
- COT 688 - Sense and Avoid Technologies in Unmanned Aircraft Systems **Credits:** 3

College of Veterinary Medicine

Bonnie Rush, Dean
Frank Blecha, Associate Dean
Peggy Schmidt, Associate Dean
Priscilla Roddy, Assistant Dean
Callie Rost, Assistant Dean

101 Trotter Hall
785-532-5660
Fax: 785-532-5884
vetmed@k-state.edu
https://www.vet.k-state.edu/

Veterinary Medical Library

The College of Veterinary Medicine has a well-equipped library that is a part of the Kansas State University libraries system. The general collection of books and journals encompasses veterinary medicine, basic biomedical sciences, and selected works in clinical medicine. The VM Library subscribes to approximately 875 journals and endeavors to subscribe to all English language veterinary medical titles. This is supplemented with core titles from human medicine, and selected subject areas representing faculty research interests, expertise, and teaching requirements.

Anatomy and Physiology

The mission of the Department of Anatomy and Physiology encompasses instruction, research and continuing education in the disciplines of gross and microscopic anatomy, cell and systemic physiology, pharmacology and neuroscience, all of which are central to the education of veterinarians for Kansas, to the education and training of graduate students for biomedical careers in teaching, research, and industry, and to the fulfillment of the University's mission to conduct basic and applied research important for the diagnosis and control of animal and human disease. The department has a fundamental role in acquiring new knowledge to further our understanding of animal and human physiology and pathophysiology. To maximize resources and foster collaborative interactions, the department has

established four research focus groups: Cardiovascular and Pulmonary physiology, Immunophysiology, Neuroscience, and Pharmacology. In most cases, faculty have research interests that fall under more than one group. Research programs in these groups investigate their respective topics through integrating studies at the isolated tissue or cellular level to whole organ or animal function. Programmatic strengths of these groups include an actively shared system of well-equipped laboratories and excellent support personnel, mutually supportive technical and conceptual expertise, and interrelated but diverse extramural funding sources.

Career options available with an advanced degree in anatomy or physiology include academic positions in various animal and human health science-related institutions such as Colleges of Veterinary Medicine and Schools of Medicine and Dentistry, as well as positions in industry and agribusiness. For information on graduate work, courses, and faculty, please see Anatomy and Physiology.

Clinical Science

Quality graduate education is a priority for the Department of Clinical Sciences. Strong basic and applied research programs enhance the teaching and service commitments. Most of the Clinical Sciences faculty dedicate significant time and effort to research initiatives. Research collaboration is readily available to Clinical Sciences faculty, both within the College (Departments of Anatomy and Physiology and Pathobiology) as well as throughout the University. Traditional research partners have been the Departments of Animal Science and Industries, Biochemistry, Dairy Sciences, Meat Sciences and the Center for Basic Cancer Research in the Division of Biology. These alliances provide a broad range of expertise that can be drawn on to answer basic and applied research questions.

Clinical Sciences in one of the disciplinary foci of the Masters of Veterinary Biomedical Sciences Degree. Many graduate students seeking a Masters with a focus in clinical sciences are also enrolled in clinical residency training programs or a dual degree (DVM-MS) program. Doctoral training opportunities are available to Clinical Sciences faculty and their candidates contingent upon faculty membership in, and collaborative relationships with, the graduate faculties of the Pathobiology, Anatomy and Physiology, and Animal Science and Industries programs.

For more information on graduate work, courses, and faculty, see Clinical Sciences.

Pathobiology

The Department of Diagnostic Medicine/Pathobiology includes faculty involved in the study of the epidemiology, diagnosis, pathogenesis, and prevention/control of infectious and parasitic diseases of animals and humans. In addition, the Department has faculty with expertise in topics related to food safety and security, public health and zoonosis. Opportunities exist for advanced graduate work after the Master's degree include the Doctor of Philosophy degree in the areas of bacterial and viral pathogenesis, clinical and anatomic pathology, epidemiology, immunology, parasitology, toxicology, and food safety and security.

The Pathobiology graduate program of the Department is a multi-disciplinary program. It is sufficiently diverse to provide the critical mass and cross-disciplinary interactions necessary to offer high quality graduate training, yet focused enough to avoid dilution of resources and conflicts with other graduate program. The scope and flexibility of the graduate program is a notable strength. The diversity of academic programs and broad expertise of the faculty provide opportunities for cross-disciplinary interaction. As such supervisory committees for the graduate students can custom design graduate training programs which address the interests of individual students. Collectively, the faculty in the Pathobiology Graduate Program has a history of successful extramural funding from both federal and industry sources to support graduate training programs and produce research which results in scientific publications of high quality. Many of our graduates have become successful researchers in academia, pharmaceutical and biological industries, private veterinary practice, federal agencies and diagnostic lags. The graduates have also been highly competitive for high quality postdoctoral research positions which allow them to continue their research training.

The Diagnostic Laboratory, housed in the Department, was established in 1961 and is fully accredited by the American Association of Veterinary Diagnostic Laboratory Diagnosticians. The laboratory has more than 50 employees who

provide services to the veterinary teaching hospital, veterinary profession and animal industries of Kansas and surrounding states. The Diagnostic Laboratory is internationally recognized for its diagnostic capabilities for many important diseases of food and companion animals. Laboratories and support staff address all aspects of diagnosis from necropsy and histopathology, clinical pathology, serology, toxicology and infectious agents detection. Annual submissions to the laboratory exceed 100,000. Residency training in anatomic and clinical pathologist is fully integrated into the service activities of the laboratory. The Department houses the internationally recognized rabies laboratory that provides rabies diagnostic services for both humans and animals. The laboratory also provides information regarding disease occurrence for public health agencies, Federal and State regulatory officials, and the animal industry.

For information on graduate work, courses, and faculty, please see Diagnostic Medicine/Pathobiology.

Programs offered

Doctor of Veterinary Medicine

Veterinary Medicine (D.V.M.)

Doctor of Philosophy

Pathobiology (Ph.D.)
Physiology (Ph.D.)

Master of Science

Veterinary Biomedical Science (M.S.)

Master of Public Health

Master of Public Health (M.P.H.)

Graduate Certificate

Stem Cell Biotechnology Graduate Certificate

Professional DVM Certificate
Food Animal Veterinary

Doctor of Veterinary Medicine

Veterinary Medicine (D.V.M.)

Admission

Enrollment in the College of Veterinary Medicine is limited to qualified students who have completed the minimum 64 required hours of pre-professional courses (see pre-professional requirements at http://www.vet.ksu.edu/admit/requirements.htm). To be eligible for consideration to the professional program leading to a Doctor of Veterinary Medicine, a student must first complete the pre-professional requirements with a minimum 2.800 average GPA (on an A = 4 point basis) in an accredited college or university, and a minimum 2.800 average GPA in the last 45 semester hours of undergraduate work. The General Test of the Graduate Record Examination (GRE) is also required and must be taken before making application to the professional program.

Personal interviews are required of all students admitted. Selection is based upon academic achievement and professional potential as determined by the interview with the Admissions Committee. Applicants are evaluated on

such items as motivation, maturity, communication skills, experience with and knowledge of animals, and experience with and knowledge of veterinary medicine. Therefore, all students interested in applying to the College of Veterinary Medicine are encouraged to have adequate animal exposure and to have work experience related to veterinary medicine to demonstrate to the Admissions Committee an understanding of the profession. Because veterinary medicine is so diverse, it is advisable to become acquainted with several areas of practice as well as with veterinarians in industry, public health and research.

KSU supplemental applications are available **June 1 to October 1, each year at www.vet.ksu.edu/admit/index.htm.**

Applicants must apply through VMCAS http://www.aavmc.org and also **must** complete the KSU supplemental application.

KSU supplemental applications must be completed online, printed and mailed along with a nonrefundable $50 processing fee. Applicants must request all transcripts and GRE scores be sent to: Admissions, College of Veterinary Medicine, 101 Trotter Hall, Manhattan, KS 66506. A complete application consists of the VMCAS application, KSU supplemental application, transcripts from all Colleges/Universities attended, GRE scores and a non-refundable application fee made payable to College of Veterinary Medicine by October 1.

All inquiries can be addressed to the following address:

Associate Dean for Admissions
College of Veterinary Medicine
101 Trotter Hall
Kansas State University
Manhattan, KS 66506-5601
admit@vet.ksu.edu
(785) 532-5660

Additional information about application to the College of Veterinary Medicine can be found at: http://www.vet.ksu.edu/admit/index.htm.

Fees for veterinary medical students

College of Veterinary Medicine fees are higher than undergraduate fees. Since these are determined annually, contact the Office of the Associate Dean for current fees.

Doctor of Veterinary Medicine curriculum

The professional curriculum in veterinary medicine is balanced and comprehensive with consideration given to all species. Detailed information can be found at: http://www.vet.ksu.edu/admit/program.htm.

Master of Science

Veterinary Biomedical Science (M.S.)

The Veterinary Biomedical Sciences (VBS) program is a College of Veterinary Medicine based program leading to a Master's (MS) degree. This program is governed by the rules and regulations adopted by the University Graduate Faculty and the Graduate Council as set forth in the Graduate Faculty Handbook and by additional program policies established by the Graduate Faculty in the College of Veterinary Medicine.

Areas of Emphasis

Three Areas of Emphasis have been established within the Veterinary Biomedical Sciences program: Anatomy and Physiology, Clinical Sciences, and Pathobiology. Information about each Area of Emphasis can be found below.

Credit Requirements

A minimum of 30 semester hours of credit is required for completion of the Veterinary Biomedical Sciences MS Degree.

Regular MS Students:
Students with a bachelor's degree must complete a minimum of 30 semester hours of credit.

Dual-Degree DVM/MS Students:
Students with a bachelor's degree who are concurrently pursuing the DVM degree at Kansas State University may apply up to 12 hours of credit from relevant courses in the veterinary curriculum toward both the DVM degree and the 30 semester hours of credit required for the MS degree provided that the grades in these courses are consistent with Graduate School requirements. The specific courses from the veterinary medicine degree transcript for which credits are being claimed must be listed on the program of study under the transfer credit(s) section.

Post DVM Students:
Students with a veterinary medicine degree may apply up to 12 hours of credit from the veterinary medicine degree transcript toward the 30 semester hours of credit required for the MS degree provided that the grades are consistent with Graduate School requirements and the courses are relevant to the program of study.

Program Options and Research Credits

The Veterinary Biomedical Sciences MS degree program offers three different academic plans:

Thesis:
As part of the degree program requirements the student will complete 6-12 credit hours of research and will write and defend a thesis as the culminating experience for the degree.

Report:
As part of the degree program requirements the student will complete 2 credit hours of a specified research project or a specified problem in the major field. The student will write and submit a report on the research project or identified problem as the culminating experience for the degree.

Non-Thesis/Non-Report (coursework):
The student's degree program will consist of course work only, but will include evidence of scholarly efforts, such as term papers, as determined by the committee. This option is not available in the Clinical Sciences Area of Emphasis.

Admission Requirements

Anatomy and Physiology Area of Emphasis:
Research Option
Clinical Sciences Area of Emphasis
Pathobiology Area of Emphasis

In order to be considered for admission in the Veterinary Biomedical Sciences, the applicant must FIRST identify, contact, and be accepted by a graduate faculty member within one of the three areas of emphasis: Anatomy and

Physiology, Clinical Sciences or Pathobiology. Once the student has been accepted by a graduate faculty mentor, the student should submit an online application.

The following will be required in order to complete the online application:

- Statement of Objectives
- Official transcripts of all college coursework completed
- GRE scores are recommended, but not required
- Three letters of recommendation

International applicants must also submit the following:

- TOEFL scores
- Affidavit of Financial Support form

Applications will be considered on a rolling basis and admission will follow deadlines set forth by the Kansas State University Graduate School.

Anatomy and Physiology Area of Emphasis:
Coursework Option

In order to be considered for admission in the Veterinary Biomedical Sciences: Anatomy and Physiology Area of Emphasis: Coursework Option, students should submit an online application. The following will be required in order to complete the online application:

- Official transcripts of all college coursework completed
- GRE scores

International applicants must also submit the following:

- TOEFL scores
- Affidavit of Financial Support form

Applications will be considered on a rolling basis and admission will follow deadlines set forth by the Kansas State University Graduate School

Areas of Emphasis

Anatomy and Physiology Area of Emphasis

The Anatomy and Physiology Area of Emphasis is administered by the Graduate Faculty and Ancillary Graduate Faculty in the Department of Anatomy and Physiology. The Anatomy and Physiology Department offers two M.S. options: a research-based M.S. and a coursework based M.S.

Research Option:

The primary goal of graduate study in the Anatomy and Physiology Area of Emphasis: Research Option is to prepare students for academic positions in various health science-related institutions such as Colleges of Veterinary Medicine and Schools of Medicine and Dentistry, as well as positions in industry and agribusiness. Epithelial physiology, stem cell biology and cancer, cardiopulmonary physiology, immunophysiology, neuroscience and pharmacology are major themes of research in the department. Specific areas of interest include cell signaling, epithelial cell solute transport, comparative exercise physiology, food animal immunophysiology, molecular biology of membranes, mechanisms of stress phenomena, molecular genetics and gene mapping, neural control of cardiovascular function, and pathophysiology of microcirculation. Research laboratories are equipped with state-of-the-art facilities, equipment, and

instruments to provide excellent opportunities for basic and applied research. Adjunct faculty members from other departments comprise a strong ancillary support group.

Course Requirements

- Additional courses according to the desires of the student, the major professor and the student's supervisory committee.
- AP 803 - Seminar **Credits:** 1 (per semester for two semesters)

Seminar Requirements

- The student will present two seminars in addition to his or her oral defense/examination. The seminars will provide partial fulfillment of the course requirements for Anatomy and Physiology Seminar (AP 803).

Coursework Option:

The primary goal of graduate study in the Anatomy and Physiology Area of Emphasis: Coursework Option is to prepare students for successful entry into medical professional training programs such as D.V.M., M.D., D.O., D.D.S., etc. degree programs.

Course Requirements

The following courses are required for the one-year coursework degree option:

Summer Semester (10 Credits)

- AP 841 - Introduction to Histology **Credits:** 3
- AP 842 - Anatomy 2 **Credits:** 3
- AP 843 - Physiology **Credits:** 4

Fall Semester (2 Credits)

- AP 773 - Bioinstrumentation Laboratory **Credits:** 1
- AP 840 - Study Methods and Career Preparation for Health Professional Students **Credits:** 1

Spring Semester (4 credits)

- AP 600 - Introduction to Pharmacology for Health Professionals **Credits:** 3
- AP 803 - Seminar **Credits:** 1

Electives (14 Credits)

In addition, 14 hours of electives must be selected in consultation with the student's major professor and supervisory committee. Examples of appropriate electives include:

AP – any graduate course 700+
CS – any graduate course 700+
DMP – any graduate course 700+
ASI – any course 700+
BIOCH (Biochemistry) – any course 700+

BIOL (Biology) – any from the following:

- BIOL 670 - Immunology **Credits:** 4
- BIOL 675 - Genetics of Microorganisms **Credits:** 3
- BIOL 705 - Eukaryotic Genetics **Credits:** 3
- BIOL 707 - Advanced Cell Biology **Credits:** 3
- BIOL 730 - General Virology **Credits:** 3
- BIOL 808 - Mechanisms of Gene Regulation **Credits:** 3
- BIOL 830 - Advanced Virology **Credits:** 3
- BIOL 835 - Cellular and Molecular Parasitology **Credits:** 3
- BIOL 840 - Molecular and Cellular Immunology **Credits:** 3
- BIOL 855 - Molecular Biology of Cellular Membranes **Credits:** 3
- BIOL 860 - Modern Molecular Approaches **Credits:** 3

Culminating Experience Requirement

In addition to the required coursework, students in the one-year master's program must complete a culminating experience for the master's degree. Students will consult with their major professor and supervisory committee to determine what the culminating experience will be. The culminating experience may or may not be taken for credit. Students can enroll in AP898 – Master's Report (2 credits) if desired to reflect their work on this experience as elective credits.

Clinical Sciences Area of Emphasis

The Clinical Sciences Area of Emphasis is administered by the Graduate Faculty in the Department of Clinical Sciences.

The primary goal of graduate study in the Clinical Sciences Area of Emphasis is to prepare students for careers in teaching, research, or service in a clinical specialty area or research and development program. Training in planning research projects and writing research proposals provides students the ability to function with teams of scientists from the fields of biomedical and clinical sciences. The student's experience in teaching and literature study will form the basis for development of future teaching and research programs within his or her discipline. After completing graduate work the student will be better prepared to conduct research both independently and as a team member. The department, along with the Veterinary Health Center at Kansas State University, has modern facilities and equipment for both basic and applied studies.

The Clinical Sciences area of emphasis for the Veterinary Biomedical Science master's program can include graduate students, dualdegree students enrolled in the professional curriculum of the Veterinary College at Kansas State University, or concurrent residency-graduate programs.

Course requirements

- A minimum of 3 hours of credit in a statistics course.

- Clinical Sciences Seminar (CS 859 or another seminar course as approved by the supervisory committee) for a minimum of one semester.
- Additional courses according to the desires of the student, the major professor and the student's supervisory committee.

Seminar Requirements

- The student will present a minimum of 1 seminar in addition to his or her oral defense/examination. The seminar will provide partial fulfillment of the course requirements for Clinical Sciences Seminar (CS 859 or another seminar course as approved by the supervisory committee).

Off Campus Research

- In selected cases a student may conduct extensive research and training off campus. These activities must be approved by the candidate's supervisory committee in advance.

Pathobiology Area of Emphasis

The Diagnostic Medicine/Pathobiology Area of Emphasis is administered by the Graduate Faculty and Ancillary/Adjunct Graduate Faculty in the
Department of Diagnostic Medicine/Pathobiology.

The primary goal of graduate study in the Pathobiology Area of Emphasis is to prepare students for careers in teaching, research, or service in academic institutions, industries, or in state and federal agencies. The graduate study in Pathobiology is an interdepartmental and interdisciplinary program with faculty involved in the study of the epidemiology, diagnosis, pathogenesis, and prevention/control of infectious, metabolic, and parasitic diseases of animals and humans. In addition, the program has faculty with expertise in topics related to food safety and security, public health and zoonosis, and cancer biology. Opportunities exist to work towards the Master's degree in the areas of bacterial and viral pathogenesis, clinical and anatomic pathology, epidemiology, immunology, parasitology, toxicology, cancer biology, and food safety and security. The Pathobiology graduate program is sufficiently diverse to provide the critical mass and cross-disciplinary interactions necessary to offer high quality graduate training, yet focused to avoid dilution of resources and conflicts with other graduate programs. The scope and flexibility of the graduate program are notable strengths. Research laboratories are equipped with state-of-the- art facilities, equipment, and instruments to provide excellent opportunities for basic and applied research. The Diagnostic Laboratory, housed in the department, is fully accredited by the American Association of Veterinary Diagnostic Laboratory Diagnosticians. The Diagnostic Laboratory is internationally recognized for its diagnostic capabilities for many important diseases of food and companion animals. Laboratories and support staff address all aspects of diagnosis from necropsy and histopathology, clinical pathology, serology, toxicology and detection of infectious agents.

Course Requirements

- Pathobiology Seminar (DMP 870) for two semesters (1 credit hour per semester). One of the seminar courses, with the permission of the student's supervisory committee, could be taken from a different program or department.
- Additional courses according to the desires of the student, the major professor and the student's supervisory committee.

Seminar Requirements

- The student will present two seminars in addition to his or her oral defense/examination. The seminars will provide partial fulfillment of the course requirements for Pathobiology Seminar (DMP 870).

Graduate Certificate

Stem Cell Biotechnology Graduate Certificate

Contact: Duane Davis
Email: davis@ksu.edu

The certificate is offered through the College of Veterinary Medicine The overarching purpose of the certificate program is to add value to other degrees in the biological and life sciences, specifically including animal sciences, veterinary medicine, biology and biochemistry.

Certificate Requirements

Students with graduate standing and a 3.0 GPA in a field in the biological sciences or with a cumulative GPA of 3.0 or higher in the DVM curriculum are eligible to enroll. Exceptions are possible upon approval by the coordinator in consultation with the faculty.

Fifteen hours are required. The core courses are designed to ensure a benchmark level of knowledge about stem cell biotechnology.
Elective courses are intended to allow for: (1) specific advancement toward research competence in the field or (2) commercialization of stem cell and related technology.

Courses in the certificate may be included in graduate programs upon approval of the student's major professor and advisory committee. Inclusion of courses from other institutions and programs may be substituted for credit in the certificate in stem cell biotechnology with the approval of the program director in consultation with associated faculty.

Required Courses

- AP 711 - Stem Cells and Comparative Biomedicine **Credits:** 2
- AP 850 - Stem Cell Techniques **Credits:** 2
- ASI 802 - Gametes, Embryos, and Stem Cells in Farm Animals **Credits:** 2
- ASI 902 - Topics in Animal Science **Credits:** 1-6
  -May be taken either two or three times.

Elective Courses for Emphasis in Research or Entrepreneurship

Any three of the remaining courses qualify for the remaining credit hour requirements.

- AP 810 - Microscopic Anatomy I **Credits:** 5
- AP 995 - Problems in Physiology **Credits:** 1-18
- ASI 600 - Applied Animal Biotechnology **Credits:** 3
- ASI 961 - Graduate Problem in Animal Sciences and Industry **Credits:** 1-18
- BIOL 510 - Developmental Biology **Credits:** 3
- BIOL 670 - Immunology **Credits:** 4
- BIOL 671 - Immunology Lab **Credits:** 2

- BIOL 705 - Eukaryotic Genetics **Credits:** 3
- BIOL 707 - Advanced Cell Biology **Credits:** 3
- BIOL 886 - Confocal, Fluorescence and Light Microscopy **Credits:** 3
- DMP 817 - Principles of Veterinary Immunology **Credits:** 3
- DMP 850 - Immunology of Domestic Animals **Credits:** 3
- DMP 878 - Applications of Flow Cytometry **Credits:** 1-3
- GRAD 820 - Leadership Practicum **Credits:** 3
- MANGT 845 - Technology Entrepreneurship and Strategy **Credits:** 3
- PLPTH 610 - Biotechnology **Credits:** 3

Professional Certificate

Food Animal Veterinary DVM Certificate

The goal of the Food Animal Veterinary Certificate (FAVC) program is to prepare graduates for long-term success in food animal veterinary practice by incorporating skills in varied areas including animal health, production medicine, practice management, and client communications. Achieving this goal will result in a veterinary workforce capable of meeting the needs of livestock producers in a sustainable practice environment.

Required Core Courses

Coursework for completion of the certificate program is divided into two sections: core and elective courses. All coursework in the FAVC program are elective courses available within the DVM curriculum. Students in the DVM program must take 12 pre-clinical elective credits and 11 clinical elective credits as part of the degree requirements.

The core courses (4 credits) provide foundational knowledge and skills which must be acquired by all FAVC students. Students may select elective coursework (10 credits) to align with their specific areas of interest in food animal medicine. The combination of core and elective coursework results in 14 required credit hours for FAVC completion. The clinical elective coursework may include a relevant course at another academic institution with an accredited DVM program as approved by the FAVC faculty committee.

Third Year

Fourth Year

- VCS 901 - Clinical Externship and/or Programmed Study **Credits:** 1-3
- VCS 917 - Advanced Rural Food Animal Business Management **Credits:** 1

Elective Courses

Pre-clinical Courses (at least 4 credit hours):

- VCS 891 - CS Veterinary Medicine Elective **Credits:** .5-3
- DMP 816 - Trade and Agricultural Health **Credits:** 2
- DMP 888 - Globalization, Cooperation, & the Food Trade **Credits:** 1

Clinical (4th Year) (at least 6 credit hours):

- VCS 901 - Clinical Externship and/or Programmed Study **Credits:** 1-3
- VCS 913 - Advanced Feedlot Production Management **Credits:** 2
- VCS 915 - Advanced Cow-Calf Production Management **Credits:** 2
- VCS 917 - Advanced Rural Food Animal Business Management **Credits:** 1
- VCS 919 - Food Animal Reproduction **Credits:** 2
- VDMP 911 - Dairy Production Medicine **Credits:** 3
- Relevant course at another academic institution

Required Core Experiences

Member of at least one national veterinary professional association (e.g. AABP, AVC, AASRP, AASV).

Complete required procedure log (Appendix 1).

Complete required number of procedures from elective procedure log (Appendix 2).

Documented proficiency at core clinical skills during DVM core coursework:

- CS748 Food Animal Local Practice
- CS749 Food Animal Medicine and Surgery
- DMP785 Diagnostic Medicine

College-wide seminar presentation of accumulated experiences and selected case management.

- scheduled in conjunction with CS774 Rural Business Management

Anatomy and Physiology

228 Coles Hall
785-532-5666
ap@vet.ksu.edu
http://www.vet.ksu.edu/academics/anatomy-physiology/index.html

Department Head:

Johann Coetzee

Director of graduate studies:

Peying Fong

Graduate Faculty:

Matthew Basel, Ph.D., Kansas State University
*Frank Blecha, Ph.D., Washington State University
*Johann Coetzee, Ph.D., Iowa State University

*Jeffrey Comer, Ph.D., University of Illinois
*Robert DeLong, Ph.D., Johns Hopkins University
Jon D. Dunn, Emeritus, Ph.D., University of Kansas
Steve Ensley, Ph.D., Institution Iowa State University
*Howard Erickson, Emeritus, DVM, Kansas State University; Ph.D., Iowa State University
Roger Fedde, Ph.D., Emeritus, University of Minnesota
*Peying Fong, Ph.D., University of California - San Francisco
*Stephanie Hall, Ph.D., University of Northern Colorado
Judy Klimek, DVM, MS, Purdue University
*Stanley Butch KuKanich, DVM, Virginia Tech; Ph.D., North Carolina State University
*Meena Kumari, Ph.D., Delhi University
Geraldine Magnin, Ph.D., University of Louis Pasteur
Pradeep Malreddy, Ph.D., Kansas State University
*Daniel C. Marcus,Emeritus, D.Sc., Washington University
*Stephanie Martinez, Ph.D., University of Manitoba
*Nancy Monteiro-Riviere, Emeritus, Ph.D., Purdue University
*Timothy Musch, Ph.D., University of Wisconsin - Madison
Fernando Pierucci-Alves, DVM, Federal University of Uberlandia
*David Poole, Ph.D., University of California - Los Angeles
*Jim Riviere, DVM, Emeritus, Ph.D., Purdue University
*Bruce D. Schultz, Ph.D., Cornell University
*Jishu Shi, DVM, Beijing Agricultural University, Ph.D., Kansas State University
*Cathryn Sparks, Ph.D., Louisiana State University
*Masaaki Tamura, DVM, Ph.D., Azabu Veterinary College
*Deryl Troyer, Emeritus, DVM, Ph.D., Kansas State University
*Abbie Viscardi, Ph.D., University of Guelph
Lihua Wang, Ph. D., Beijing China
*A. Philine Wangemann, Emeritus, Ph.D., Albert-Ludwigs University, Freiburg, Germany
*Mark Weiss, Ph.D., University of Pennsylvania - Philadelphia

Ancillary Faculty

*Tom Barstow, Ph.D., University of California-Davis
Elizabeth Davis, DVM, Florida State University; Ph.D., Kansas State University
*Sally A. Davis, Ph.D., North Carolina State University
*Sherry D. Fleming, Ph.D., University of Colorado
*Craig Harms, Ph.D., Indiana University
Michael Kleinhenz, Ph.D., Kansas State University
Bonnie Rush, DVM, MS, The Ohio State University
*Tom Schermerhorn, VMD, University of Pennsylvania
Justin Thomason, D.V.M., Oklahoma State University
*Jonathan Tomich, Ph.D., Guelph-Waterloo (Canada) Center for Graduate Work
*Ruth Welti, Ph.D., Washington University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Program of study

The Department of Anatomy and Physiology offers opportunities for graduate studies leading to both M. S. (Veterinary Biomedical Science) and Ph.D. degrees. Cell and systemic physiology, immunophysiology, neuroscience, and pharmacology are the major themes of research of the department. Specific areas of interest include comparative exercise physiology, food animal immunophysiology, molecular biology of membranes, molecular genetics and gene

mapping and expression, neural control of cardiovascular function, ion channel structure and function, and transport processes and pathophysiology of microcirculation. Faculty from other departments comprise a strong ancillary support group. Career options available with an advanced degree in anatomy or physiology include academic positions in various animal and human health science-related institutions such as Colleges of Veterinary Medicine and Schools of Medicine and Dentistry, as well as positions in industry and agribusiness.

Admissions

To be admitted with full standing, the applicant must have an average of B or better in the junior and senior years, a bachelor's or veterinary medical degree from an approved institution, and adequate undergraduate preparation in the proposed field.

For the Ph.D. degree, 90 semester hours of graduate study beyond the bachelor's degree are required, including at least 30 hours of research. For DVM candidates, if 12 hours of dual credit has not been applied to the master of science degree, it may be applied toward the Ph.D.

Application procedure

See Veterinary Medicine in this catalog for additional information. Applications are considered on a rolling basis. Teaching and research assistantships are awarded on the basis of merit and availability, using many of the same criteria used for admission decisions. Interested students are encouraged to peruse the departmental website http://www.vet.ksu.edu/depts/ap. All students offered admission are considered for financial support.

Additional Programs of Interest

Stem Cell Biotechnology Graduate Certificate

The overarching purpose of the certificate program is to add value to other degrees in the biological and life sciences, specifically including animal sciences, veterinary medicine, biology and biochemistry. For additional information, please see the Stem Cell Biotechnology Graduate Certificate catalog page.

Veterinary Biomedical Science

The Masters of Veterinary Biomedical Science Degree is a College of Veterinary Medicine -based program leading to an MS degree. Graduate study may be inter-disciplinary or focused in one of the three participating disciplines: Anatomy & Physiology; Clinical Sciences; Pathobiology. Each student's program will be designed by his/her supervisory committee to support the student's thesis project, educational and career goals. For additional information, please see the Veterinary Biomedical Science catalog page.

Doctor of Philosophy

Physiology (Ph.D.)

The Department of Anatomy and Physiology offers opportunities for studies leading to a Doctor of Philosophy degree. Cell and systemic physiology, immunophysiology, neuroscience, and pharmacology are the major themes of research of the department. Their specific areas of interest include: biomedical applications for nanomedicine and drug delivery, comparative exercise physiology, food animal immunophysiology, molecular biology of membranes, molecular genetics and gene mapping and expression, neural control of cardiovascular function, ion channel structure and function, transport processes and pathophysiology of microcirculation.

Degree Requirements

- Minimum 3 years, 2 semesters/years
- Equivalent of 90 semester hours
- Dissertation representing minimum 30 hours research (AP 999. Research in Physiology)

Students with a BS Degree

At least 90 semester hours of credits including a minimum of 15 hours of formal course work (800-level or higher) and 30 hours of research credits for the dissertation, a preliminary examination, research, a written dissertation, and a satisfactory defense of the dissertation at the final oral examination.

Students with a MS Degree

A maximum of 30 hours from a master's degree may be used on a doctoral degree, if the supervisory committee decides that the course work is relevant to the doctoral program. At least 60 semester hours of credits including a minimum of 15 hours of formal course work (800-level or higher) and 30 hours of research credits for the dissertation (AP 999. Research in Physiology), a preliminary examination, research, a written dissertation, and a satisfactory defense of the dissertation at the final oral examination.

Students with a DVM Degree or in a Dual DVM/PhD Degree Program

At least 90 semester hours of credits including a minimum of 15 hours of formal course work (800-level or higher) and 30 hours of research credits for the dissertation (AP 999. Research in Physiology), a preliminary examination, research, a written dissertation, and a satisfactory defense of the dissertation at the final oral examination. Students who hold professional doctorate degree (DVM, MD, etc.) degree or enrolled in a dual DVM/PhD program may transfer a maximum of 30 graduate credit hours from a professional doctorate degree toward the doctorate program of study. For students who do not have a bachelor's degree or not yet earned a bachelor's degree and are enrolled in the dual degree (DVM/PhD) program, the doctoral degree shall be awarded concurrently with the DVM or after the completion of the DVM degree.

Core Curriculum

Note: 19 hours; all PhD students in Anatomy and Physiology.

- AP 804 - Veterinary Physiology I **Credits:** 5
- AP 818 - Veterinary Physiology II **Credits:** 6
- AP 803 - Seminar **Credits:** 1
- AP 896 - Introduction to Responsible Conduct of Biomedical Research **Credits:** 2
- STAT 701 - Fundamental Methods of Biostatistics **Credits:** 3

Elective Courses (6-12 hours)

As appropriate; consult with major professor and Supervisory Committee.

Clinical Sciences

A-111D Mosier Hall
785-532-4890
Fax: 785-532-2252
krdrew@ksu.edu
http://www.vet.ksu.edu/academics/clinical-sciences/index.html

Department Head:

Elizabeth Davis

Program Director:

T.G. Nagaraja

Graduate Faculty:

*Raghavendra Amachawadi, PhD, Kansas State University
*Michael D. Apley, D.V.M., PhD, Kansas State University
Chieko Azuma, Ph.D., North Carolina State University
Mary Bagladi-Swanson, D.V.M., Kansas State University
Laurie A. Beard, D.V.M., Washington State University
Warren L. Beard, D.V.M., Texas A&M University
David Biller, D.V.M., Auburn University
Christopher Blevins, D.V.M., Kansas State University
James Carpenter, D.V.M., Oklahoma State University
Nicolette Cassel, DipVDI, European College of Veterinary Diagnostic Imaging
*Elizabeth G. Davis, D.V.M., University of Florida; PhD, Kansas State University
Keith DeDonder, D.V.M., Ph.D., Kansas State University
Katherine Delph, D.V.M., Purdue University
Adryanna Drake, Ph.D., Kansas State University
David Eshar, D.V.M., Hebrew University
Sara Gardhouse, D.V.M., Ontario Veterinary College
McArthur Hafen, Ph.D., Brigham Young University
Kenneth Harkin, D.V.M., Iowa State University
Mary Lynn Higginbotham, D.V.M., University of Missouri - Columbia
Sam Hocker, D.V.M., Kansas State University
David S. Hodgson, D.V.M., Kansas State University
Maria C. Jugan, D.V.M., University of Tennessee
*Michael Kleinhenz, D.V.M., Ph.D., Kansas State University
Emily Klocke, D.V.M., Michigan State University
*Katherine A. KuKanich, D.V.M., University of Minnesota; Ph.D., University of Tennessee
Phillip Lancaster, Ph.D., Texas A&M University
*Robert L. Larson, D.V.M., Ph.D, Kansas State University
*Brian Lubbers, Ph.D., Kansas State University
John Dylan Lutter, D.V.M., Kansas State University
Diane Mason, D.V.M., Ohio State University; Ph.D., Kansas State University
Rose McMurphy, D.V.M., Washington State University
Jessica Meekins, D.V.M., The Ohio State University
Matt D. Miesner, D.V.M., Washington State University

Amy Rankin, D.V.M., University of Wisconsin
David C. Rankin, D.V.M., Kansas State University
Walter Renberg, D.V.M., Oklahoma State University
Emily Reppert, D.V.M., Colorado State University
James Roush, D.V.M., Purdue University
Bonnie Rush, D.V.M., Ohio State University
Elizabeth Santschi, D.V.M., University of Illinois
*Thomas Schermerhorn, D.V.M., University of Pennsylvania
Justin Thomason, D.V.M., Oklahoma State University
David Upchurch, D.V.M., Auburn University
*Brad J. White, D.V.M., University of Missouri - Columbia
Raelene Wouda, D.A.C.V.I.M., Diplomate of the American College of Veterinary Internal Medicine

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Clinical Graduate Faculty:

Kara Berke, D.V.M., Ohio State University
Neala Boyer, D.V.M., University of Missouri - Columbia
Robert "Brad" Crauer, D.V.M., Iowa State University
Jason Grady, D.V.M, Kansas State University
Shaun Huser, D.V.M., Kansas State University
Sara Gardhouse, D.V.M., Ontario Veterinary COllege - Guelph

Graduate Faculty Associates:

William Whitehouse, D.V.M., University of Georgia

About the department

The Department of Clinical Sciences offers a graduate program leading to the Master of Science (Veterinary Biomedical Science) degree. Graduate work in clinical sciences may be pursued in several fields of specialization including agricultural practice, anesthesiology, cardiology, equine medicine and surgery, oncology, exotic and wildlife medicine, ophthalmology, radiology, small animal medicine, small animal surgery, and theriogenology. The department, along with the Veterinary Health Center at Kansas State University, has modern facilities and equipment for both basic and applied studies.

The primary goal of graduate study programs in clinical medicine is to prepare students for careers in teaching and research in a clinical specialty area. After completing graduate work, the student will be better prepared to conduct research both independently and as a team member. Adequate training in planning research projects and writing research proposals will give the student the ability to function with teams of scientists from the biomedical field. The student's experience in clinical teaching and literature study will form the basis for development of future teaching programs within his or her discipline.

A residency program designed to prepare and qualify a veterinarian for specialty boards recognized by the AVMA is usually combined with the graduate program. While a graduate program can be accomplished in a shorter period of time, the duration of combined programs is usually three years. This reflects the minimum time required to satisfy the objectives of each program. Details of an individual residency program can be obtained from the Director of the Veterinary Health Center at Kansas State University. An individually tailored graduate program concurrent with professional veterinary school or for non-DVM applicants can be arranged on an individual basis.

Admission Requirements

In order to be considered for admission, the applicant must FIRST identify, contact, and be accepted by a graduate faculty member within Clinical Sciences. Once the student has been accepted by a graduate faculty mentor, the student should submit the application online.

Applications will be considered on a rolling basis and admission will follow deadlines set forth by the Kansas State University Graduate School.

Continued Enrollment Requirements

Applicants for graduate study must have a minimum grade average of B. Applicants currently enrolled in the professional veterinary curriculum or those holding a baccalaureate degree will be considered on an individual basis.

A student who has less than a B average, based on individual merit, may be admitted on probationary status. Full standing is attained automatically upon completion of at least 9 hours of course work for graduate credit with grade of B or better and upon the removal of any deficiency which was specified at the time of admission. International students must have a health certificate and an acceptable score on the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS).

A graduate student may be denied continued enrollment in the university for any of the following reasons:

a. Failure of a student on probation as a condition of admission to achieve a minimum cumulative GPA of 3.0 in the first 9 credit hours of graduate level coursework.
b. Failure of a student placed on probation for deficient grades to achieve a cumulative GPA of at least 3.0 within 2 semesters for full-time students and within 12 credit hours for part-time students.
c. Failure to meet published departmental or University requirements.
d. Failure to maintain satisfactory progress toward a graduate degree.
e. Failure in the final degree examination(s).
f. Failure to acquire mastery for the methodology and content in a field sufficient to complete a successful thesis or dissertation.
g. Qualifying for placement on probation a second time, except when the first period of probation is a condition of admission or when the second period is a condition of reinstatement.
h. A recommendation for suspension or expulsion by the Honor Council.

Diagnostic Medicine/Pathobiology

305 Coles Hall
785-532-1214
Fax: 785-532-4481
tnagaraj@vet.ksu.edu
http://www.vet.ksu.edu/academics/dmp/index.html

Department Head:

Derek Mosier

Director of Graduate Studies:

T.G. Nagaraja

Graduate Faculty:

A. Paige Adams, D.V.M., Ph.D., Cornell University
Kelli Almes, D.V.M., Kansas State University
Gary Anderson, D.V.M., Ph.D., University of California - Davis
*Jianfa Bai, Ph.D., Kansas State University
*Natalia Cernicchiaro, D.V.M., Ph.D., University of Guelph
*Kyeong-Ok Chang, D.V.M., Ph.D., The Ohio State University
*Jeba Jesudoss Chelladurai, B.V.Sc., PhD, Iowa State University
*M. M. Chengappa, D.V.M., Ph.D., Michigan State University; ACVM Diplomate
*A. Sally Davis, D.V.M., Ph.D., North Carolina State University
*Roman Reddy Ganta, Ph.D., All India Institute of Medical Sciences
Natasha Gaudreault, Ph.D., University of Nebraska - Lincoln
*Jordan Gebhardt, D.V.M., Ph.D., Kansas State University
Gregg Hanzlicek, D.V.M., Ph.D., Kansas State University
*Philip Hardwidge, Ph.D., Mayo Clinic Graduate School
Jamie Henningson, D.V.M., Ph.D., University of Nebraska
*Brian Herrin, Ph.D., Oklahoma State University
*Stephen Higgs, Ph.D., Reading University, United Kingdom
Margaret Highland, D.V.M., Ph.D., Washington State University
*Justin Kastner, Ph.D., University of Guelph
Yunjeong Kim, D.V.M., Ph.D., Ohio State University
*Derek A. Mosier, D.V.M., A.C.V.P. Diplomate, Ph.D., Oklahoma State University
Ellyn Mulcahy, M.P.H., Ph.D., Creighton University
*Waithaka Mwangi, Ph.D., Washington State University
*T. G. Nagaraja, M.V.Sc., Ph.D., Kansas State University
Brad Njaa, M.V.Sc., D.V.M., Western College of Veterinary Medicine
*Megan Niederwerder, D.V.M., Ph.D., Kansas State University
*Rachel Palinski, Ph.D., Kansas State University
*Brandon L. Plattner, D.V.M., Ph.D., Iowa State University
*Roman Pogranichniy, D.V.M., Ph.D., Iowa State University
Lisa Pohlman, M.S., D.V.M., University of Guelph
*Kathryn Reif, Ph.D., Louisiana State University
*David G. Renter, D.V.M., Ph.D., Kansas State University
*Jurgen Richt, D.V.M., Ph.D., Universitat Giessen, Germany
*Michael Sanderson, M.S., D.V.M., Colorado State University
Nora Springer, D.V.M., Ph.D., Cornell University
*Dana Vanlandingham, Ph.D., Liverpool School of Tropical Medicine, UK

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Ancillary Graduate Faculty:

*Michael Apley, D.V.M., Ph.D., Kansas State University, ACVCP Diplomate
*Frank Blecha, Ph.D., Washington State University
Cassie Jones, Ph.D., Iowa State University
Phillip Klebba, Ph.D., University of California, Berkeley
*Robert Larson, D.V.M., Ph.D., Kansas State University, ACT, ACVPM Diplomate
Abbey Nutsch, Ph.D., Kansas State University
Randall K. Phebus, Ph.D., University of Tennessee
Mark Weiss, Ph.D., University of Pennsylvania

*Brad White, D.V.M., MS, Mississippi State University
Jason Woodworth, Ph.D., Kansas State University

Adjunct Graduate Faculty:

Jason Ackleson, Ph.D., The London School of Economics
Debbie Briggs, Ph.D., Kansas State University
Benjamin Chapman, Ph.D., University of Guelph
Barbara Drolet, Ph.D., Oregon State University
Kelly Lechtenberg, D.V.M., Ph.D., Kansas State University
Scott McVey, D.V.M., Ph.D., Texas A&M University
Harvey Morgan Scott, D.V.M., Ph.D., University of Guelph, Canada
Alfonso Torres, D.V.M., National University of Columbia, Ph.D., University of Nebraska Medical Center
Deon Van Der Merwe, D.V.M., Ph.D., North Carolina State University
William Wilson, Ph.D., University of Illinois at Urbana-Champaign

Graduate Faculty Associate:

Charles Dodd, Ph.D., Kansas State University
Christy Hanthorn, D.V.M., Iowa State University
Yan-Jang Huang, Ph.D., Kansas State University
Deborah Jaworski, Ph.D., Ohio State University
Dana Mitzel, Ph.D., Montana State University
Fawzi Mohammed, Ph.D., University of Georgia
Arathy Nair, Ph.D., Rajiv Gandhi Center for Biotechnology - India
Greg Peterson, Ph.D., Kansas State University
Erin Schirtzinger, Ph.D., New Mexico State University

Program description

The Pathobiology Graduate Program of the College of Veterinary Medicine offers graduate programs leading to M.S., (Veterinary Biomedical Science), Ph.D., and combined D.V.M./M.S., or D.V.M./Ph.D. degrees. Degree candidates may specialize in research areas represented by the expertise of the members of the Graduate Group. Requirements for the Ph.D. degree include full-time study equivalent to at least 90 semester hours [78 for individuals with a D.V.M. degree] including at least 30 hours of research credit for the dissertation and generally 30-39 hours of formal course work, a preliminary examination, research, a written dissertation, and a satisfactory defense of the dissertation at the final oralexamination. The Ph.D. degree normally requires at least three years of full-time study. Students who hold a master's degree may request transfer of up to 30 hours of that degree toward a Ph.D. Demonstration of proficiency in foreign languages is not required. The University operates on a semester basis plus an eight-week summer session.

See Veterinary Medicine in this catalog for additional information.

Program requirements

Minimum entrance requirements, include a B average in the junior and senior undergraduate years for applicants not holding a D.V.M./V.M.D. degree. All applicants are required to take General GRE and submit the scores with the application. International students must demonstrate proficiency in English by earning a satisfactory score on the TOEFL and must provide health and financial certificates. Candidates for admission to the Graduate School must be approved by the Pathobiology Graduate Program. Most incoming students have a degree in veterinary medicine, but

some have degrees in animal science, microbiology, biology, biochemistry/pharmacology, genetics, or food science. The most important considerations for applicants are documented academic achievement and an interest in continued study and research in Pathobiology. Sufficient training in biology and a strong background in biochemistry are important requirements. Application for admission to the program in a fall semester should be made in the preceding late fall or early winter.

Financial support

Assistantships and temporary assistant instructor positions are available for qualified candidates on a limited, competitive basis. Prospective students are encouraged to apply for federally sponsored fellowships and traineeships from agencies such as the USDA, NASA, NDEA, NIH, and NSF. Application information is available from the Dean of the Graduate School, Kansas State University, Manhattan, KS 66506.

Research facility

Housed in a spacious modern building complex with up-to-date equipment to provide excellent opportunities for graduate research. Major equipment include cell counters, an electron microscope, environmental chambers, cryostats, densitometers, fluorometers, chromatography equipment, high-vacuum evaporators, neurophysiological recording devices, recording spectrophotometers, spectrometers (atomic absorption, respiratory mass, scintillation), biohazard safety hoods, stereotaxic instruments, ultracentrifuges, ultramicrotomes, ultrasonic membrane destructors, flow cytometer and high-performance liquid chromatography units. Surgery and housing facilities for large and small animals, intensive library holdings and facilities, and easy access to the University's computer center are also available. Extensive research potential in food animals is enhanced by an interstate cooperative program with the University of Nebraska-Lincoln.

Doctor of Philosophy

Pathobiology (Ph.D.)

The Pathobiology Graduate Program is an interdepartmental and interdisciplinary program with a mission to provide a broad based graduate education to students seeking a PhD degree in the areas of infectious and non-infectious diseases of animals, food safety, security, and policy, and production animal medicine and management. The research activities of the graduate faculty, primarily in the Departments of Diagnostic Medicine/Pathobiology and Clinical Sciences are in specialized areas of Infectious Diseases, including Zoonotic Diseases and Transboundary Diseases, Bacteriology, Companion Animal Health, Comparative Biomedical Sciences, Cancer Biology and Treatment, Epidemiology, Food Animal Health and Management, Food Safety and Security, Immunology, and Translational Medicine. The graduate program faculty have established programmatic requirements, within the overall policies of the Graduate School, for admission, supervision, and completion of the degree and provide both the course instruction and the research training essential to complete the PhD degree. The program offers opportunities for DVM students to concurrently work on a dual degree program (DVM/PhD).

Students with a BS Degree

At least 90 semester hours of credits including a minimum of 15 hours of formal course work (800-level or higher) and 30 hours of research credits for the dissertation, a preliminary examination, research, a written dissertation, and a satisfactory defense of the dissertation at the final oral examination.

Students with a MS Degree

At least 60 semester hours of credits including a minimum of 15 hours of formal course work (800-level or higher) and 30 hours of research credits for the dissertation (DMP 999. Ph.D. Research in Pathobiology), a preliminary examination, research, a written dissertation, and satisfactory defense of the dissertation at the final oral examination. For students who do not have a bachelor's degree or not yet earned a bachelor's degree and are enrolled in the dual degree (DVM/Ph.D.) program, the doctoral degree shall be awarded concurrently with the DVM or after the completion of the DVM degree.

Students with a DVM Degree or in a Dual DVM/PhD Degree Program

At least 90 semester hours of credits including a minimum of 15 hours of formal course work (800-level or higher) and 30 hours of research credits for the dissertation (DMP 999. PhD Research in Pathobiology), a preliminary examination, research, a written dissertation, and a satisfactory defense of the dissertation at the final oral examination. Students who hold a professional doctorate degree (DVM, MD, etc.) degree or enrolled in a dual DVM/PhD program may transfer a maximum of 30 graduate credit hours from a professional doctorate degree toward the doctorate program of study. For students who do not have a bachelor's degree or not yet earned a bachelor's degree and are enrolled in the dual degree (DVM/PhD) program, the doctoral degree shall be awarded concurrently with the DVM or after the completion of the DVM degree.

Core Course Requirements

1. Three credits of Graduate Seminar. At least one of the three credits should be DMP 970. Seminar in Pathobiology (PhD).
2. Two credits of course on responsible conduct and ethics in research (AP 896-Introduction to Responsible Conduct of Biomedical Research).

Graduate Certificate

Agricultural Biosecurity Research Graduate Certificate

Contact: Dana Vanlandingham
Email: dlvanlan@k-state.edu

The 12-credit hour Agricultural Biosecurity Research Graduate Certificate is designed to foster the development of research scientists to safely plan and execute research in a variety of biosafety level environments (BSL-3, BSL-3 Ag, and BSL-4). This interdisciplinary certificate will instill common biosafety, containment, and regulatory compliance knowledge and skills that are required to work in high and maximum containment research facilities. The certificate will also provide a deeper understanding of the agents and toxins which are frequently studied in these facilities.

The Agricultural Biosecurity Research Graduate Certificate is offered through the College of Veterinary Medicine to non-degree and degree seeking graduate and Doctor of Veterinary Medicine (DVM) students who plan to work in high and maximum containment facilities. Students will develop an appreciation, and necessary skills, for the exacting performance standards required in these complex and demanding work environments.

Core Courses (10 credits)

- DMP 690 - Essential Practices for BSL-3 Research Settings **Credits:** 1
- DMP 691 - Introduction to High Containment Laboratory Topics and Techniques **Credits:** 3
- DMP 813 - Select Agent Studies **Credits:** 3
- DMP 846 - Foundations of Biosecurity **Credits:** 3

Elective Courses (2 credits)

- DMP 770 - Emerging Diseases **Credits:** 3
- DMP 855 - Disease Detection, Surveillance and Risk Assessment **Credits:** 3
- DMP 871 - Molecular Diagnostics of Infectious Diseases **Credits:** 3
- DMP 893 - Principles of Biosafety and Biocontainment **Credits:** 2
- FDSCI 730 - A Multidisciplinary Overview of Food Safety and Security **Credits:** 2
- FDSCI 731 - Food Protection and Defense--Essential Concepts **Credits:** 2
- FDSCI 753 - Risk Assessment for Food, Ag, & Vet Med **Credits:** 3

  Please note that other classes may be approved by the program director and associated faculty.

Total Required Hours: 12

Graduate School

113-119 Eisenhower Hall
785-532-6191
Fax: 785-532-2983
grad@ksu.edu
www.k-state.edu/grad

The Graduate School lists support courses for interdiscplinary programs supported by faculty participants from many academic departments of the university.

Biobased Products and Bioenergy Graduate Certificate

Contact: John Schlup
Email: jrsch@k-state.edu

This certificate is offered through the Graduate School, currently through the collaboration of the Departments of Agronomy, Biological and Agricultural Engineering, Chemical Engineering, and Grain Science and Industry. Chemical feedstocks, materials, and fuels derived from biomass have received increasing emphasis nationally and are seen as being very desirable from a number of standpoints. Private industry now actively recruits individuals with specific training in bioprocessing and biobased materials. With the interest in green chemistry and in sustainability increasing along with the escalation of crude oil prices during 2008, emphasis on the utilization of biomass for energy and materials can only continue to increase. This rapidly expanding industry has a growing need for a trained workforce. This Graduate Certificate Program is designed to identify students' focus in their graduate training as well as provide post-baccalaureate educational opportunities for industry practitioners for whom a full graduate degree program is not appropriate at that point in their career. Students can develop a truly interdisciplinary background in a specific area, and yet the certificate will permit any given individual to tailor their program of study to their specific interests.

Structure

The graduate certificate program proposed will consist of a minimum of fifteen (15) credit hours of coursework selected from a series of
courses approved by the Biobased Products and Bioenergy Certificate Committee (BPBCC). Each student will be required to complete at

least one of the courses below, each of which includes content from more than one of the designated subject areas. In the case of students
pursuing a graduate degree, the course cannot be selected from a student's primary academic department.

- AGRON 630 - Crop Improvement and Biotechnology **Credits:** 3
- AGRON 640 - Cropping Systems **Credits:** 3
- GRSC 825 - Novel Uses of Biopolymers **Credits:** 2
- CHE 715 - Biochemical Engineering **Credits:** 3
- BAE 545 - Biological Process Engineering **Credits:** 3
- GRSC 745 - Fundamentals of Bioprocessing **Credits:** 3
  Each student must complete a variable (2-3) credit hour special topics course in which the student completes a "capstone" experience as a member of a multidisciplinary team. Each team will select their project from an approved list of interdisciplinary topics and will be mentored by a faculty member. Students will enroll in one of the courses below to meet this requirement.
- AGRON 600 - Crop Problems **Credits:** 1-18
- BAE 620 - Topics in Biological Systems Engineering **Credits:** 1-18
- BAE 820 - Topics in Biological & Agricultural Engineering **Credits:** 1-18
- CHE 802 - Selected Topics in Materials Science **Credits:** 1-18
- CHE 805 - Selected Topics in Biochemical Engineering **Credits:** 3
- GRSC 910 - Topics in Grain Science **Credits:** 1-18

Associated Courses

The remaining coursework is to be selected from at least three of the following four subject areas: plant science, plant/crop production, processing, and utilization. Courses must be taken from a minimum of three different academic departments. The primary required course chosen by the student (AGRON 630, AGRON 640, GRSC 825, CHE 715, BAE 545, or GRSC 745) counts towards the subject area and academic department requirements.

Students will submit a proposed list of courses to be used in meeting the requirements for the certificate of graduate studies to the coordinator of the biobased products and bioenergy certificate program with the program of study being formally approved by the BPBCC.

- AGRON 550 - Forage Management and Utilization **Credits:** 3
- AGRON 610 - Biotechnology **Credits:** 3
- AGRON 625 - Applications of Nutrient Management **Credits:** 3
- AGRON 630 - Crop Improvement and Biotechnology **Credits:** 3
- AGRON 640 - Cropping Systems **Credits:** 3
- AGRON 655 - Site Specific Agriculture **Credits:** 3
- AGRON 746 - Environmental Soil Physics **Credits:** 3
- AGRON 680 - Plant Genetics **Credits:** 3
- AGRON 840 - Crop Physiology **Credits:** 3
- BIOL 500 - Plant Physiology **Credits:** 3
- BIOL 676 - Molecular Genetics Laboratory **Credits:** 3
- PLPTH 610 - Biotechnology **Credits:** 3
- BIOCH 766 - Recombinant DNA Laboratory I **Credits:** 1
- BIOCH 767 - Recombinant DNA Laboratory II **Credits:** 1
- PLPTH 880 - Plant Molecular Biology **Credits:** 3
- BIOCH 775 - Molecular Biophysics **Credits:** 3
- BIOCH 755 - Biochemistry I **Credits:** 3

- BIOCH 765 - Biochemistry II **Credits:** 3
- CHM 820 - Materials Chemistry **Credits:** 3
- BAE 545 - Biological Process Engineering **Credits:** 3
- BAE 650 - Energy and Biofuel Engineering **Credits:** 3
- BAE 740 - Biomaterials Processing **Credits:** 3
- GRSC 602 - Cereal Science **Credits:** 3
- GRSC 620 - Extrusion Processing in the Food and Feed Industries **Credits:** 4
- GRSC 740 - Biomaterials Processing **Credits:** 3
- GRSC 825 - Novel Uses of Biopolymers **Credits:** 2
- GRSC 830 - Physical Properties of Cereal Polymers **Credits:** 3
- GRSC 901 - Starch Chemistry and Technology **Credits:** 3
- CHE 626 - Bioseparations **Credits:** 3
- CHE 656 - Polymer Science and Engineering **Credits:** 3
- CHE 682 - Surface Phenomena **Credits:** 3
- CHE 715 - Biochemical Engineering **Credits:** 3

Interdisciplinary Programs

Interdiscplinary programs are supported by faculty participants from many academic departments of the university.

Biochemistry and Molecular Biophysics

141 Chalmers Hall
785-532-6121
Fax: 785-532-7278
gbiochem@ksu.edu
http://www.k-state.edu/bmb/

Biochemistry and Molecular Biophysics is an interdepartmental graduate program with faculty participants from many academic departments of the University.

Department Head:

Michal Zolkiewski

Director of graduate studies:

Erika Geisbrecht

Admissions Chair:

Om Prakash

Graduate Faculty:

*Katsura Asano, (Biology), Ph.D., University of Tokyo
Neal Dittmer, Ph.D., Michigan State University
*Timothy Durrett, Ph.D., University of Missouri

*Gregory Finnigan, Ph.D., University of Oregon
*Peying Fong, (Anatomy and Physiology), Ph.D., University of California, San Francisco
*Roman Reddy Ganta, (Diagnostic Medicine/Pathobiology), Ph.D., All India Institute of Medical Science
*Brian Geisbrecht, Ph.D., The Johns Hopkins University School of Medicine
*Erika Geisbrecht, Ph.D., The Johns Hopkins University School of Medicine
*Maureen Gorman, Ph.D., Iowa State University
*Revathi Govind, (Biology), Ph.D., Texas Tech University
*Philip Hardwidge,(Diagnostic Medicine/ Pathobiology), Ph.D., Mayo Clinic Graduate School
*Michael R. Kanost, Ph.D., Purdue University
*Phillip E. Klebba, Ph.D., University of California, Berkeley
*Stella Lee, (Biology), Ph.D., Dalhousie University, Canada
*Ho Leung Ng, Ph.D., University of California, Los Angeles
*Kristin Michel, (Biology),Ph.D., University of California, Riverside
Saurav Misra, The University of Illinois, Urbana-Champaign
Salete Newton, Ph.D., Universidade de Sao Paulo
*Annelise Nguyen,(Diagnostic Medicine/ Pathobiology), PhD, Texas A&M University
*Om Prakash, Ph.D., Central Drug Research Institute, India
*Ryan Rafferty, (Chemistry), Ph.D., Colorado State University
*Gerald R. Reeck, Ph.D., University of Washington
*Jeroen Roelofs, (Biology), Ph.D., University of Groningen, The Netherlands
*Jeremy Schmit, (Physics), Ph.D., University of California, Santa Barbara
*Kathrin Schrick, (Biology), Ph.D., University of Washington
*Bruce Schultz, (Anatomy and Physiology), Ph.D., Cornell University
*Paul E. Smith, (Chemistry), Ph.D., University of Liverpool, UK
*John M. Tomich, Ph.D., Guelph-Waterloo University, Canada
*Nicholas Wallace, (Biology), Ph.D., Tulane University
*Ruth Welti, (Biology), Ph.D., Washington University, St. Louis
*Yulam Xiong (Anatomy and Physiology), Ph.D., Lancaster University, UK
*Zhilong Yang, (Biology), Ph.D., University of Nebraska-Lincoln
*Anna Zolkiewska, Ph.D., Nencki Institute of Exp. Biology, Poland
*Michal Zolkiewski, Ph.D., Institute of Physical Chemistry, Warsaw, Poland

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Overview

Biochemistry and Molecular Biophysics explores the molecular basis of life processes. It examines structure, function, assembly, and dynamic changes of macromolecules and the chemistry and dynamics of small molecules. Through use of recombinant DNA technology and new instrumentation, a revolution is underway in our understanding of the ways that plants and animals regulate metabolic processes and express genetic information. Researchers at Kansas State University are in the forefront of that revolution. The study of biochemistry at Kansas State University is conducted under a versatile arrangement through which faculty of the Department of Biochemistry and Molecular Biophysics and faculty in other departments cooperate in a graduate biochemistry program. Both fundamental questions about living processes and applications to living systems are supported in this interdisciplinary program.

Degree programs

The biochemistry and molecular biophysics program seeks excellence in teaching and research through a program tailored to the development of the individual student. The core curriculum is broad and students are expected to specialize through appropriate choice of advanced courses from the many offerings taught by faculty in their areas of research expertise. A strong seminar program involves presentations by eminent visiting scholars from around the world and by the faculty of many departments on campus. A graduate student seminar program provides further opportunity for acquiring insights into new developments in the field.

The Graduate Biochemistry and Molecular Biophysics Group administers granting of M.S., B.S./M.S., and Ph.D. degrees in biochemistry whether the research is conducted within the Department of Biochemistry or in other cooperating departments. The program of study is flexible, accommodating students with a wide range of backgrounds, including genetics, microbiology, physics, and medicine as well as the traditional chemistry, biochemistry, and biology degrees. Students are admitted to either the M.S. or the Ph.D. program based on qualifications, which include undergraduate and graduate performance, letters of recommendation, and program of study deficiencies.

In biochemistry and molecular biophysics, both the Ph.D. and the M.S. degrees are considered research degrees. Thus, in addition to specific course requirements, there is a requirement for writing a thesis based on independent and original research conducted in the laboratory of one of the participating faculty members.

Students in either the M.S. or Ph.D. degree program take the two-semester, comprehensive, core biochemistry courses Biochemistry I and II and a one-semester course in molecular biophysics. All students are expected to attend the weekly graduate student seminar and individual research group meetings.

Financial support of graduate students

Within the Department of Biochemistry and Molecular Biophysics, support for graduate teaching assistants is through the College of Arts and Sciences. Graduate research assistants are supported through the Agricultural Experiment Station and by research grants. Usually a student is admitted to the graduate program in biochemistry and molecular biophysics only if university funds are available for salary support or if the student has another source of support such as a government (U.S. or other) fellowship. U.S. citizens with a strong undergraduate record can apply for NSF predoctoral fellowships. Some supplements to teaching and research support are available on a competitive basis from the Graduate School for outstanding U.S. students.

Incoming students receive half of their support in the form of teaching assistantships (requiring six contact hours per week) and half in the form of a research assistantship. After the first year, the teaching assistantship may be replaced by extramural support. This is expected for Ph.D. candidates beyond their third year of study.

Graduate students in the B.S./M.S. dual degree program will not be expected to teach and will not be supported by departmental teaching or research assistantships. They are eligible for support as research assistants in laboratoies of individual faculty members.

Student fees

For graduate teaching assistants and graduate research assistants, student fees are assessed at the instate level. Students receiving such support are required to enroll in 6 credit hours each semester. A waiver of half the tuition costs is provided to those supported as combined graduate teaching/research assistants.

Research environment and facilities

More than two dozen faculty members are formally associated with the Graduate Biochemistry and Molecular Biophysics Group. Many others with interests in biochemistry and molecular biology are collaborative investigators and participants on graduate student supervisory committees. The research environment in biochemistry is exciting and vigorous because of these diverse but interacting programs. Our graduates compete favorably with those from the world's best programs because they are well trained in biochemical literature and research techniques. Members of the group currently receive more than $3 million per year in outside research funds. These funds support technicians, postdoctoral fellows, and some graduate research assistants at later stages of their career. They also allow purchase of up-to-date research equipment and supplies.

The Department of Biochemistry and Molecular Biophysics has 14 large research suites. Ten are located in Chalmers Hall. That building also houses the department's teaching laboratories. The other research suites are located in Burt Hall. The department is well equipped for advanced research in a wide range of areas. NMR studies are conducted

within the NMR Facility using Varian 500 MHz Unity Plus NMR with triple channel detection, pulsefield gradient, and high stability temperature control and waveform generation. Other biophysical studies are conducted with conventional and magnetic circular dichroism, fluorescence spectroscopy with fluorescence polarization capability and UV-Visible differential scanning spectroscopy. A new analytical ultracentrifuge (Beckman XL-I), micro calorimeters (MicroCal VP-DSC and isothermal titration calorimeter), and a surface plasmon resonance instrument (Biacore 3000) enhance studies of macromolecule interactions and folding properties.

The department has equipment and technical capability for gene cloning (supported by polymerase chain reaction capabilities) and all varieties of electrophoresis experiments. For preparative procedures the department has multiple ultracentrifuges, high performance liquid chromatographs, and facilities for both anaerobic enzyme preparations and large scale preparations of subcellular organelles. The department has several cold rooms, animal cell culture facilities, instrument rooms, and dark rooms. Facilities are available for housing animals and growing plants year-round. Analytical instruments include scintillation counters, gamma counters and scanning spectrophotometers.

The university Biotechnology Core Facility is housed within the Department of Biochemistry and Molecular Biophysics and provides both instruments and expertise for mass spectometry of biopolymers, oligonucleotide synthesis, peptide synthesis and gas-phase peptide sequencing. High resolution purification of peptides and synthesis of peptides containing non-natural amino acids are areas of special interest. The mass spec capabilities include high throughput screening of peptides.

Additional facilities are also available on campus: DNA sequencing, fluorescence-activated cell sorting, electron microscopy (transmission and scanning), quasi-elastic light scattering, GLC-mass spectrometry, emission spectrometry, Fourier-transform infrared spectrometry, atomic absorption and stopped flow kinetics. High resolution GLC- mass spec is used for lipidomics studies. Parallel computing, mini super-computers, and ethernet and internet networks are available throughout the campus.

Job opportunities

Biochemistry and molecular biology are growth areas in the economy of the 21st century. Graduate training in biochemistry and molecular biophysics provides a strong base for varied academic and technological careers. Our Ph. D. and postdoctoral graduates find positions not only in departments of biochemistry, biophysics, and molecular biology, but also in biology, chemistry, pharmacology, nutrition and medicine. Doctoral graduates find positions requiring independent work in a wide range of industries including biotechnology, chemistry, pharmacology, medicine, and food technology. M.S. graduates occupy skilled technical positions in industry, government and academic research laboratories. Many also continue for the Ph.D. at this or other institutions.

Concurrent

Concurrent B.S./M.S. in Biochemistry

A combined B.S./M.S. program provides exceptional undergraduates an opportunity to obtain both a Bachelor of Science and a Master of Science in Biochemistry in 5 years. Admission and retention in the program require a 3.0 GPA. Students may apply after they have accumulated 45-90 hours towards the B.S. degree. Students in the Medical Biochemistry track are not eligible to apply to the Concurrent B.S./M.S. program. Degree Requirements for the M.S. are as described in the Graduate Catalog, with the exception that up to 9 hours of credits obtained for the B.S. (Biochemistry I, Biochemistry II, and Molecular Biophysics) may be counted toward the M.S. program.

Entrance requirements

Students may apply for the concurrent B.S./M.S. program from the second semester of the sophomore year through the second semester of the junior year when they have accumulated 45-90 credit hours toward the B.S. degree and have

completed at least one semester of organic chemistry. Students may apply during the senior year with special permission from the Biochemistry and Molecular Biophysics graduate program director.

The application process will be the same as for the traditional M.S. degree except for that completion of the B.S. degree is not required prior to enrollment in the M.S., and the application must include a recommendation from the student's undergraduate advisor. Minimum standards for regular admission and for retention in the program require a cumulative GPA of 3.0 and a GPA of 3.0 in required math and science courses. The requirement for the Graduate Record Exam will be waived.

Year 1-4 requirements

- BIOCH 110 - Biochemistry and Society **Credits:** 3
- BIOCH 521 - General Biochemistry **Credits:** 3
- BIOCH 522 - General Biochemistry Laboratory **Credits:** 3
- BIOCH 755 - Biochemistry I **Credits:** 3
- BIOCH 765 - Biochemistry II **Credits:** 3
- BIOCH 775 - Molecular Biophysics **Credits:** 3
- BIOCH 799 - Problems in Biochemistry **Credits:** 1-18
- BIOL 198 - Principles of Biology **Credits:** 4
- BIOL 450 - Modern Genetics **Credits:** 4
- BIOL 455 - General Microbiology **Credits:** 4
- BIOCH 756 - Biochemistry I Laboratory **Credits:** 2
- BIOL 541 - Cell Biology **Credits:** 3
- CHM 210 - Chemistry I **Credits:** 4
- CHM 230 - Chemistry II **Credits:** 4
- CHM 350 - General Organic Chemistry **Credits:** 3
- CHM 351 - General Organic Chemistry Laboratory **Credits:** 2
- CHM 371 - Chemical Analysis **Credits:** 4
- CHM 500 - General Physical Chemistry **Credits:** 3
- MATH 220 - Analytic Geometry and Calculus I **Credits:** 4
- MATH 221 - Analytic Geometry and Calculus II **Credits:** 4
- PHYS 113 - General Physics I **Credits:** 4
- PHYS 114 - General Physics II **Credits:** 4
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
  *Upper-division biochemistry, chemistry, biological science, statistics, computer science, analytical geometry and calculus III, or differential equations elective **Credits**: 13
  *Advanced Biochemistry Laboratories **Credits:** 2
  (BIOCH 757, BIOCH 758, BIOCH 766, BIOCH 767) can be applied toward the requirement for BIOCH 799 - Problems in Biochemistry

*Laboratories

Up to two credit hours of Advanced Biochemistry Laboratories can be applied towards the requirement for BIOCH 799-Problems in Biochemistry.

- BIOCH 757 - NMR Laboratory **Credits:** 1
- BIOCH 758 - Protein Structure Laboratory **Credits:** 1
- BIOCH 766 - Recombinant DNA Laboratory I **Credits:** 1

- BIOCH 767 - Recombinant DNA Laboratory II **Credits:** 1

Note

The courses in the list above satisfy the natural sciences and quantitative reasoning requirements shown in the general requirements for the BS degree.

Arts and Sciences requirements (32 credit hours)

Biochemistry and Molecular Biophysics track

- BIOCH 110 - Biochemistry and Society **Credits:** 3
- BIOCH 521 - General Biochemistry **Credits:** 3
- BIOCH 522 - General Biochemistry Laboratory **Credits:** 3
- BIOCH 755 - Biochemistry I **Credits:** 3
- BIOCH 756 - Biochemistry I Laboratory **Credits:** 2
- BIOCH 765 - Biochemistry II **Credits:** 3
- BIOCH 775 - Molecular Biophysics **Credits:** 3
- BIOCH 799 - Problems in Biochemistry **Credits:** 1-18
- BIOL 198 - Principles of Biology **Credits:** 4
- BIOL 450 - Modern Genetics **Credits:** 4
- BIOL 455 - General Microbiology **Credits:** 4
- BIOL 541 - Cell Biology **Credits:** 3
- CHM 210 - Chemistry I **Credits:** 4
- CHM 230 - Chemistry II **Credits:** 4
- CHM 350 - General Organic Chemistry **Credits:** 3
- CHM 351 - General Organic Chemistry Laboratory **Credits:** 2
- CHM 371 - Chemical Analysis **Credits:** 4
- CHM 500 - General Physical Chemistry **Credits:** 3
- MATH 220 - Analytic Geometry and Calculus I **Credits:** 4
- MATH 221 - Analytic Geometry and Calculus II **Credits:** 4
- MATH 222 - Analytic Geometry and Calculus III **Credits:** 4

- PHYS 213 - Engineering Physics I **Credits:** 5
  or
- PHYS 223 - Physics I, Mechanics, and Thermodynamics **Credits:** 5

- PHYS 214 - Engineering Physics II **Credits:** 5
  or
- PHYS 224 - Physics II, Electromagnetism, and Sound **Credits:** 5

- PHYS 664 - Thermodynamics and Statistical Physics **Credits:** 3
  or
- PHYS 775 - Biological Physics **Credits:** 3

- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3

*Upper-division electives **Credits:** 3 (biochemistry, chemistry, biological sciences, statistics, computer science, and mathematics)

Year Five Fall Semester (~12 credit hours)

- M.S. Research **Credits:** 4-6
- Upper level Biochemistry, Biology, or Bioinformatics electives **Credits:** 4-6
- BIOCH 806 - Biochemistry Seminar **Credits:** 0-1

Year Five Spring Semester (~10 credit hours)

- M.S. Research **Credits:** 4-6
- Upper level Biochemistry, Biology, or Bioinformatics electives **Credits:** 4-6
- BIOCH 806 - Biochemistry Seminar **Credits:** 0-1

Doctor of Philosophy

Biochemistry (Ph.D.)

Offered through the Biochemistry and Molecular Biophysics graduate program.

Entrance requirements

Applicants must have a bachelor's degree from an accredited institution, appropriate and adequate course work, and an average of B or better in the junior and senior years or an excellent postgraduate record at another institution. Provisional admission may occur when there are limited deficiencies in undergraduate course work that can be removed by course work taken at Kansas State University or when there is uncertainty in evaluation of transcripts, as may occur in the case of international students. In the latter case, removal of the provisional status occurs upon the accumulation of 9 hours of course work with a B or better average.

Undergraduate and postgraduate credits should include analytical, organic, and physical chemistry, calculus, physics, and a semester of biology including a laboratory. Physical chemistry may be completed as part of an M.S. or Ph.D. program, but all other deficiencies must be completed without graduate credit. No foreign language is required.

All applicants are required to take the Graduate Record Exam and submit their scores with the application.

International students

A minimal score of 550 on the written Test of English as a Foreign Language (TOEFL) or 79 on the Internet-based TOEFL (IBT) is required for admission to the Graduate School for any student whose native language is not English. Because beginning graduate students in biochemistry are appointed as combined teaching/research assistants, a Test of Spoken English (TSE) score of 50 of 60 is required by the Kansas Board of Regents. The test may be taken in the U.S. or abroad.

Degree Requirements

The Graduate School requires at least three years of two semesters each of graduate study (equivalent to 90 semester hours) beyond the bachelor's degree and a dissertation for the degree of Doctor of Philosophy. Approximately 30 to 40 hours of course work are required for the Ph.D. in addition to research for a satisfactory dissertation.

In addition to the required biochemistry courses, 10 credit hours of biology courses are required, and advanced chemistry or physics courses are encouraged. Two credits must be obtained in the Graduate Biochemistry Seminar (BIOCH 806).

Admission to candidacy for the Ph.D. requires satisfactory performance in the two core biochemistry courses, and defense of a research proposal on a topic selected by the student in consultation with their supervisory committee. This defense serves as the preliminary examination for admission to candidacy for the Ph.D.

Master of Science

Biochemistry (M.S.)

Offered through the Biochemistry and Molecular Biophysics graduate program.

Entrance requirements

Applicants must have a bachelor's degree from an accredited institution, appropriate and adequate course work, and an average of B or better in the junior and senior years or an excellent postgraduate record at another institution. Provisional admission may occur when there are limited deficiencies in undergraduate course work that can be removed by course work taken at Kansas State University or when there is uncertainty in evaluation of transcripts, as may occur in the case of international students. In the latter case, removal of the provisional status occurs upon the accumulation of 9 hours of course work with a B or better average.

Undergraduate and postgraduate credits should include analytical, organic, and physical chemistry, calculus, physics, and a semester of biology including a laboratory. Physical chemistry may be completed as part of an M.S. or Ph.D. program, but all other deficiencies must be completed without graduate credit. No foreign language is required.

All applicants are required to take the Graduate Record Exam (GRE) and submit their scores with the application.

International Applicants

A minimal score of 550 on the written Test of English as a Foreign Language (TOEFL) or 79 on the Internet-based TOEFL (IBT) is required for admission to the Graduate School for any student whose native language is not English. Because beginning graduate students in biochemistry are appointed as combined teaching/research assistants, a Test of Spoken English (TSE) score of 50 of 60 is required by the Kansas Board of Regents. The test may be taken in the U.S. or abroad.

Degree Requirements

For the M.S. degree, the Graduate School requires a minimum of 30 semester hours of graduate credit, which includes a master's thesis based on 6-8 credit hours of research. In addition to the required biochemistry courses, one credit must be obtained in the Graduate Biochemistry Seminar (BIOCH 806).

Food Science

216 Call Hall
785-532-4057
Fax: 785-532-5861
foodsci@k-state.edu
http://www.foodsci.k-state.edu

The Food Science interdepartmental graduate program is part of the Food Science Institute and includes graduate faculty housed in five colleges and eleven departments.

Institute Director:

Jeanette Thurston

Director of graduate studies:

J. Scott Smith

Graduate faculty:

Jason Ackleson, Ph.D., The London School of Economics
*Sajid Alavi, Ph.D., Cornell University
*Jayendra Aamacharla, Ph.D., North Dakota State University
*Fadi M. Aramouni, Ph.D., Louisiana State University
*R. Scott Beyer, Ph.D., University of Georgia
*Elizabeth Ernst Boyle, Ph.D., Colorado State University
*Delores H. Chambers, Ph.D., Kansas State University
*Edgar Chambers, IV, Ph.D., Kansas State University
Kay Cooksey, Ph.D., University of Illinois
*Hulya Dogan, Ph.D., Middle East Technical University, Turkey
*James S. Drouillard, Ph.D., University of Nebraska
*Larry E. Erickson, Emeritus, Ph.D., Kansas State University
Faris Hussain, Ph.D., Kansas State University
*Jason Ellis, Ph.D., Iowa State University
*Jon M. Faubion, Ph.D., Kansas State University
*Kelly J. K. Getty, Ph.D., Kansas State University
*Sara Gragg, Ph.D., Texas Tech University
Mark Haub, Ph.D., University of Kansas
*Terry A. Houser, Ph.D., Iowa State University
*Shawn Hutchinson, Ph.D., Kansas State University
Cassandra Jones, Ph.D., Iowa State University
*Curtis L. Kastner, Emeritus, Ph.D., Oklahoma State University
*Justin Kastner, Ph.D., University of Guelph, Canada
*Kadri Koppel, Ph.D., Tallinn University of Technology, Estonia
Junehee Kwon, Ph.D., Iowa State University
Rebecca Miller, Ph.D., Kansas State University
T.G. Nagaraja, Ph.D., Kansas State University
Abbey Nutsch, Ph.D., Kansas State University
Londa Nwadike, Ph.D., University of Iowa
*Travis O.Quinn, Ph.D., Colorado State University
*Hikaru H. Peterson, Ph.D., Cornell University
*Randall K. Phebus, Ph.D., University of Tennessee
Om Prakash, Ph.D., Central Drug Research Institute, India

Gerald R. Reeck, Ph.D., University of Washington
Joe Regenstein, Ph.D., Brandeis University
*Dave Renter, Ph.D., Kansas State University
Deanna D. Retzlaff, Ph.D., Kansas State University
Kevin Roberts, Ph.D., Kansas State University
*Karen Schmidt, Ph.D., University of Minnesota
*Carol Shanklin, Ph.D., University of Tennessee
*Yong-Cheng Shi, Ph.D., Kansas State University
Gordon Smith, Ph.D., Texas A&M University
*J. Scott Smith, Ph.D., Pennsylvania State University
*X. Susan Sun, Ph.D., University of Illinois
*Valentina Trinetta, Ph.D., University of Milan, Italy
Jessie Vipham, Ph.D., Texas Tech University
*Donghai Wang, Ph.D., Texas A&M University
*Weiqun (George) Wang, Ph.D., Nanjing Agriculture University
*David Wetzel, Ph.D., Kansas State University
*Umut Yucel, Ph.D., Pennsylvania State University
*Ludek Zurek, Ph.D., University of Alberta

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Graduate faculty associate:

Marlena B. Jones, M.S., University of Hawaii

Inter-institutional faculty:

Suzanne Hendrich, Iowa State University
Robert Hutkins, University of Nebraska-Lincoln
Mark Love, Iowa State University
Ruth MacDonald, Iowa State University
Azlin Mustapha, University of Missouri-Columbia
Byron Stecher, Iowa State University

About the Program

The food science graduate program involves the interrelationships of about 46 professionals from 11 departments. Faculty from five colleges (agriculture, arts and sciences, engineering, human ecology, and veterinary medicine) have participated in the interdisciplinary food science masters and doctoral programs since 1965. Graduate faculty are located in the Departments of Agricultural Economics, Animal Sciences and Industry, Biochemistry; Biological and Agricultural Engineering; Chemical Engineering; Communications and Agricultural Education, Entomology, Diagnostic Medicine/Pathobiology; Geography, Grain Science and Industry; Hospitality Management; and Food, Nutrition, Dietetics, and Health.

Graduate students conduct their research in one of the participating departments. The food science faculty are involved in research on the chemical, microbiological, sensory, and nutritional aspects, functional characteristics, and processing of foods. Faculty with expertise in chemical analysis, instrumental analysis, sensory analysis, systems analysis, biochemistry, dietetics, statistics, microbiology, thermodynamics, rheology, biochemical engineering, and food engineering participate in the food science program.

Research facilities related to animal products include complete dairy and red-meat processing facilities, well-equipped research laboratories for red meat, poultry and dairy research, food chemistry, and food microbiology research laboratories. Research facilities for cereals include a complete pilot plant for milling grain into flour, complete baking research facilities, laboratory for extrusion research, well-equipped laboratories for cereal chemistry, a specialized cereal science library, and other supporting facilities. The flavor and sensory evaluation laboratories and instrumentation for physical, histological, and biochemical analysis of food products are also available. Laboratory facilities for food engineering research include ultrafiltration cells, instrumental fermenters, gas and liquid chromatography, an elemental analyzer, and an environmental chamber with temperature and humidity control. Facilities and instrumentation for food safety studies are available.

Graduate study in food science provides training for a number of varied academic and technical careers. Food processing is a leading industry in the United States so the need for food scientists is growing.

Admission

The application should be submitted by December 15 for Fall admission and June 15 for Spring admission for international students and February 1st for Fall admission and September 15th for Spring admission for domestic students. For those applying to the online program application should be submitted by April 15 for Fall admission and September 15 for Spring admission, and preferably earlier to ensure availability of a major professor. Admission is highly competitive and not all applicants are admitted. All prospective students must submit the following online: application form, application fee, statement of objectives, official transcripts, three letters of recommendation, and GRE scores. Seniors and master's students may submit a current transcript and, if admitted, will receive provisional acceptance pending submission of an official transcript showing completion of a bachelor's degree, or M. S. degree for doctoral applicants. It is imperative that the statement of objectives contain a specific area of study within food science, i.e., food chemistry, food microbiology, cereals, red meat, or sensory analysis, so that the application may be directed to the appropriate faculty. Terms such as food processing and food technology are too general and may result in rejection because of lack of specificity.

International students must submit a TOEFL score of at least 550 (paper), 79 (IBT), 6.5 (IELTS) or 58 for Pearson Test of English(PTE) or have received a degree in the last two years from a United States college or university. In addition, an **affidavit of the financial form** must be completed and signed by a sponsor and a financial institution to show evidence of support for the entire program of study.

All applications will be reviewed by three appropriate members of the food science graduate admission committee. A faculty member must be willing to act as a major advisor prior to submission of credentials to the graduate school.

Research and teaching assistantships administered by the individual departments are available on a limited basis. Those receiving assistantships pay in-state fees. Members of the food science program obtain funds from the Agricultural and Engineering Experiment Stations and outside research funds that help sponsor some graduate research assistants. Currently, research stipends are competitive but may vary by department.

General requirements for entering graduate study in food science are: (1) calculus; (2) statistics; (3) biochemistry; (4) organic chemistry; (5) a course in physics; (6) an introductory course in microbiology; and (7) a course in botany, zoology, or biology. The student's supervisory committee will resolve course deficiencies. Certain programs within Food Science may require additional courses.

When the student's committee believes it is necessary, the student will be required to take additional undergraduate courses to prepare more completely for the individual program.

Candidates for degrees are expected to select courses that provide adequate coverage in several food areas, with primary emphasis in one or more areas.

The M.S./Ph.D. program of study shall be expected to include courses in biochemistry, statistics, food microbiology, food chemistry, and food processing/food engineering. No more than 6 credit hours at the 500 level will be accepted.

One credit of food science seminar for the M.S. degree and 2 credits of food science seminar for the Ph.D. degree shall be included. There is no foreign language requirement.

Course requirements will be evaluated by the student's supervisory committee. The chairman of the food science graduate program must approve members of the student's advisory committee and the program of study.

Doctor of Philosophy

Food Science (Ph.D.)

K-State's interdepartmental Food Science and Industry graduate program is part of the Food Science Institute which includes graduate faculty housed in five colleges and eleven departments. The program offers a Ph.D. degree on campus only.

The program provides a variety of research opportunities in the field of food science. Research emphasis includes food chemistry, food microbiology, food safety, sensory analysis, food processing, and food engineering. The program also provides opportunities to work with several food commodities including: cereal; dairy; meats and poultry; fruits and vegetables.

Application Procedures

When should I apply?

Applications should be made at the beginning of the previous semester, and preferably earlier to ensure availability of a major professor. Admission to the program is highly competitive.

- The international student deadline for Fall semester application submission is December 15.
- The international student deadline for Spring semester application submission is June 15.
- The domestic student deadline for Fall semester application submission is February 1.
- The domestic student deadline for Spring semester application submission is September 15.
- The online student deadline for Fall semester application submission is April 15.
- The online student deadline for Spring semester application submission is September 15.

What will I have to submit?

- A completed online application
- Three letters of recommendation
- Official transcripts of all previous college work
- A short statement of objectives
- Graduate Record Examination (GRE) general test scores are required
- Students may submit a current transcript and, if admitted, will receive provisional acceptance pending submission of an official transcript showing completion of a bachelor's degree, or M.S. degree for doctoral applicants.

Are there any special requirements for international students?

International students must also submit the following:

- TOEFL score of at least 577 (paper), 90 (IBT), 7.0 (IELTS) or evidence of a degree from a U.S. university
- Complete financial form and evidence of financial support for entire graduate training
- Ensure sections 1, 2, and 3 are filled out completely on the affidavit. It must include the official bank seal and signature of the bank official. A certificate of deposit or a bank statement is not acceptable to fulfill this requirement.

Program Requirements

Course requirements for the program of study will be evaluated by the student's supervisory committee. However, students are expected to select courses that provide adequate coverage in several food areas, with primary emphasis in one or more areas. The chairman of the Food Science Graduate Program must approve members of the student's supervisory committee and the program of study.

The M.S./Ph.D. program usually includes courses in biochemistry, food chemistry, microbiology, food processing, food engineering, and statistics. For the Ph.D. degree, at least 90 semester hours is required including a dissertation representing at least 30 hours of research credit. Students who hold a master's degree may request transfer of up to 30 hours of that degree toward a Ph.D. In addition, Ph.D. students must complete 24 hours of credit within a 12-month period (residence requirement). Of these 24 hours, at least 12 hours must be in graduate-level courses, and two credits of food science graduate seminar shall be included. There is no foreign language requirement.

Master of Science

Food Science (M.S.)

Click here to view the Food Science and Industry graduate program page.

Thesis option:

- Minimum of 30 credit hours.
- At least 24 course credit hours.
- At least 18 hours at 700 level including FDSCI 850 Graduate Seminar and 6 credit hours of FDSCI 899.

Report option:

- Minimum of 30 credit hours.
- At least 28 course credit hours.
- At least 18 hours at 700 level including FDSCI 850 Graduate Seminar and 2 credit hours of FDSCI 898.

Non-Thesis (course-work only) option:

- Minimum of 34 credit hours.
- 20-22 core credits.
- At least 18 hours at 700 level.

  The core courses as outlined below are to ensure that the student possesses the critical graduate level food science knowledge and communication skills required.

Core Courses (20-22 credit hours):

Block A- Required Core Courses (12 credit hours):

- ENGL 758 - Scientific Writing **Credits:** 3
  OR
- AGCOM 810 - Scientific Communication **Credits:** 3

- FDSCI 600 - Food Microbiology **Credits:** 2
- FDSCI 815 - Advanced Food Chemistry **Credits:** 3
- FDSCI 850 - Food Science Graduate Seminar **Credits:** 1
- STAT 705 - Regression and Analysis of Variance **Credits:** 3

Block B- Must take at least 3 out of 5 courses listed below (8-10 credit hours):

- FNDH 701 - Sensory Analysis **Credits:** 3
- FDSCI 690 - Principles of HACCP and HARPC **Credits:** 3
- FDSCI 695 - Quality Assurance of Food Products **Credits:** 3
- FDSCI 725 - Food Analysis **Credits:** 3
- FDSCI 740 - Research and Development of Food Products **Credits:** 4

Total core courses: 20 credits minimum

Elective courses (12-14 credit hours)

* May include courses from Block B

Note

It is possible that a student may already have taken one or more of these courses or their equivalent on another degree. Therefore, the graduate advisory committee will determine course substitution as needed.

Graduate Certificate

Food Safety and Defense Graduate Certificate

Contact: J. Scott Smith – Graduate Program Chair
E-mail: jsschem@ksu.edu
Contact: Nicole Marple – Program Assistant
E-mail: nmarple@ksu.edu
Home Page: http://foodsci.k-state.edu/future-students/online/fsdefense/index.html

This certificate is offered through the Food Science and Industry graduate program. By providing a distance education Food Safety and Defense graduate certificate program we will serve the needs of industry and agencies that must protect the human food supply from accidental or deliberate contamination with pathogenic microbes and/or toxicants. In an era of terrorism and global food systems, effective control of foodborne hazards requires advanced education. There is an urgent need for online education for food industry personnel who, while working fulltime, would like to pursue more in-depth specialized training in food safety and security that is pertinent to their job. Many food-related industry and agency professionals have a B.S. in some aspect of food and agricultural sciences or related area along with good technical background and work experience but they may not be able to pursue a full graduate degree, due to

expense, time constraints and/or interests. These needs warrant the development of a program to prepare graduate students and food-related professionals to effectively deal with food safety and biosecurity issues.

Upon completion of the graduate certificate, students will be better prepared to meet the challenges of accidental or deliberate food contamination within the food industry to protect public health, prevent foodborne illnesses, and facilitate or improve the profitability of food industries by minimizing health risks related to foodborne pathogens and toxicants.

The certificate program requires 12 credit hours comprised of core and elective courses, as outlined below. Students must complete the required 12 credit hours with a cumulative GPA of at least 3.0 and may have no grade lower than a "B" in any certificate-program course. Students must be enrolled the semester the certificate program is completed.

Required Courses (8 credit hours)

Must take 4 courses from the list below:

- FDSCI 600 - Food Microbiology **Credits:** 2
- FDSCI 690 - Principles of HACCP and HARPC **Credits:** 3
- FDSCI 730 - A Multidisciplinary Overview of Food Safety and Security **Credits:** 2
- FDSCI 731 - Food Protection and Defense--Essential Concepts **Credits:** 2
- FDSCI 750 - Food Toxicants **Credits:** 2
- FDSCI 820 - Advanced Food Microbiology & Biotechnology **Credits:** 2

Elective Courses

- AGEC 710 - Comparative Food and Agriculture Systems **Credits:** 3
- AGEC 805 - Agricultural Marketing **Credits:** 3
- AGEC 810 - Price, Income and Trade Policies in Agriculture **Credits:** 3
- DMP 754 - Introduction to Epidemiology **Credits:** 3
- DMP 806 - Environmental Toxicology **Credits:** 2
- DMP 816 - Trade and Agricultural Health **Credits:** 2
- DMP 845 - Food Safety Risk Analysis **Credits:** 3
- FDSCI 713 - Rapid Methods and Automation in Microbiology **Credits:** 2
- FDSCI 725 - Food Analysis **Credits:** 3
- FDSCI 727 - Chemical Methods of Food Analysis **Credits:** 2
- FDSCI 731 - Food Protection and Defense--Essential Concepts **Credits:** 2
- FDSCI 751 - Food Laws and the Regulatory Process **Credits:** 2
- FDSCI 753 - Risk Assessment for Food, Ag, & Vet Med **Credits:** 3
- FDSCI 791 - Advanced Application of HACCP Principles **Credits:** 3
- FDSCI 810 - Fermented Foods **Credits:** 2
- FDSCI 815 - Advanced Food Chemistry **Credits:** 3
- FDSCI 820 - Advanced Food Microbiology & Biotechnology **Credits:** 2
- FDSCI 961 - Graduate Problem in Food Science **Credits:** 1-18
- Other courses as deemed appropriate by the Food Science Program Chair.

Genetics

4024 Throckmorton Hall
785-532-6176
Fax: 785-532-5692
genetics@ksu.edu
http://www.ksre.ksu.edu/genetics/

Genetics is an interdepartmental graduate program with faculty participants from many academic departments of the University.

Director of graduate studies:

Chris Toomajian

Graduate faculty:

*Eduard D. Akhunov, Ph.D., Institute of Genetics - Russia
Alina Akhunova, Ph.D., St. Petersburg State University
*Guihua Bai, Ph.D., Purdue University
*Nora Bello, Ph.D., Michigan State University
Jennifer Bormann, Ph.D., Iowa State University
*Susan J. Brown, Ph.D., University of Missouri
*Ming-Shun Chen, Ph.D., Kansas State University
*Rollie J. Clem, Ph.D., University of Georgia
*David E. Cook, Ph.D., University of Wisconsin - Madison
*Timothy Durrett, Ph.D., University of Missouri
*John P. Fellers, Ph.D., University of Kentucky
*Carolyn Ferguson, Ph.D., University of Texas - Austin
Gregory Finnigan, Ph.D., University of Oregon
*Bernd R. Friebe, Ph.D., Free University of Berlin
*Allan K. Fritz, Ph.D., Kansas State University
*Erika Geisbrecht, Ph.D., The Johns Hopkins University School of Medicine
*Bikram S. Gill, Ph.D., University of California - Davis
*Revathi Govind, Ph.D., Texas Tech University Health Sciences Center
*Michael A. Herman, Ph.D., Massachusetts Institute of Technology
*Michael Kanost, Ph.D., Purdue University
*John F. Leslie, Ph.D., University of Wisconsin - Madison
*Sanzhen Liu, Ph.D., Iowa State University
*Berlin Luxelly Londono Renteria, Ph.D., Tulane University
* Douglas Marthaler, Ph.D.,University of Minnesota
*Jocelyn McDonald, Ph.D., University of Illinois
*Beth A. Montelone, Ph.D., University of Rochester
*Ted Morgan, Ph.D., Washington State University
*Geoffrey Morris, Ph.D., University of Chicago
*Bradley Olson, Ph.D., Michigan State University
*Sunghun Park, Ph.D., Texas A&M University
*Yoonseong Park, Ph.D., University of Arizona
*Jesse Poland, Ph.D., Cornell University
*Megan Rolf, Ph.D., Kansas State University
*William T. Schapaugh Jr., Ph.D., Purdue University
*Kathrin Schrick, Ph.D., University of Washington - Seattle
*Stephanie Shames, Ph.D., University of British Columbia - Canada
*Kristopher S. Silver, Ph.D., Cornell University

*C. Michael Smith, Ph.D., Mississippi State University
*Tesfaye Tesso, Ph.D., Kansas State University
*Richard B. Todd, Ph.D., University of Melbourne
*Peter Tomlinson, Ph.D., University of Arkansas
*Christopher Toomajian, Ph.D., University of Chicago
*Harold Trick, Ph.D., Florida State University
*Barbara Valent, Ph.D., University of Colorado
*Govindsamy Vediyappan, Ph.D., University of Madras, India
*Steve Welch, Ph.D. Michigan State University
Zhilong Yang,Ph.D., University of Nebraska - Lincoln
*Anna Zinovyeva, Ph.D., Indiana University

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

Program overview

The Genetics Graduate Program is sponsored by several departments to offer specialized education in genetics to students in multidisciplines. Graduate work leading to M.S. and Ph.D. degrees in Genetics is administered by the faculty of participating departments. These departments are Agronomy; Animal Science and Industry; Biochemistry; Entomology; Horticulture, Forestry, and Recreation Resources; Plant Pathology; Veterinary Medicine; and the Division of Biology. The genetics program consists of 35 graduate faculty members and about 20 graduate students, in addition to visiting scientists, and postdoctoral fellows. All faculty members direct active research projects, and there is a high degree of interaction and cooperation among researchers in various areas of genetics.

Graduate students are expected to start research in their first year and will receive individual attention and guidance. The objective is to produce graduates with a broad training in genetics, who are able to conduct independent research programs that are creative and productive. The curriculum is broad, including plant, animal, physiological, molecular, microbial, fungal, yeast, population, quantitative and behavioral genetics, as well as cytogenetics, genetic engineering, and biotechnology in general. Students are expected to specialize in one of four areas of genetics for their advanced study: Molecular Cellular and Developmental Genetics; Genetics of Plant-Microbe Interactions; Arthropod Genetics; or Quantitative Genetics.

Original research is a requirement for study in the Genetics Graduate Program. The small size of the research labs, typically three to six students per lab, makes for close interaction within the group. Students are also encouraged to interact with other faculty and students in the program and in the member departments.

Admission

Incoming students generally have degrees in some area of biology. However, the overwhelming considerations are an intensive interest in genetics, and minimum prerequisites for admission into our programs. Application procedures require:

1. A completed application form
2. A statement of professional goals and objectives
3. Transcripts from all colleges and universities attended
4. Three letters of recommendation

Additional Graduate School regulations apply to applicants from outside of the United States. Foreign students are expected to have a TOEFL score of 600 or better; the GRE is desired but not required. Outof- state tuition is waived for students who are awarded graduate research or teaching assistantships.

Students who consider pursuing graduate careers at Kansas State University are encouraged to visit the university in order to meet with members of faculty and with other students and to form their own impression of the general

atmosphere and of the many research possibilities. If that is not possible, students are encouraged to browse the research programs of specific Genetics Faculty (http://www.ksre.ksu.edu/genetics/). Research programs that interest prospective students should be listed when applying for admission to the program.

Doctor of Philosophy

Genetics (Ph.D.)

Refer to the Genetics page for more information.

Doctoral degree requirements

Genetics Program students are also required to meet the seminar requirements of the students in their host departments.

A minimum of 90 credits is required, with typical course programs of 25 to 40 credit hours: Courses must include:

- A statistics course (700 level or higher)
- A biochemistry class (700 level or higher)
- A course in population genetics (700 level or higher)
- BIOL 675 - Genetics of Microorganisms **Credits:** 3
- BIOL 705 - Eukaryotic Genetics **Credits:** 3

Additional courses required for the PhD degree depend on the emphasis of the degree program:

Molecular, cellular and developmental genetics emphasis

PhD students in the Molecular, Cellular and Developmental Genetics emphasis must take two or more of the following courses:

- BIOCH 907 - Advanced Topics in Insect Biochemistry **Credits:** 3
- BIOCH 920 - Nucleic Acids **Credits:** 2
- BIOL 707 - Advanced Cell Biology **Credits:** 3
- BIOL 860 - Modern Molecular Approaches **Credits:** 3
- BIOL 868 - Advanced Cellular and Developmental Biology **Credits:** 3
- BIOL 890 - Advanced Topics in Biology **Credits:** 1-6
- PLPTH 880 - Plant Molecular Biology **Credits:** 3

Genetics of plant-microbe interactions emphasis

PhD students in Genetics of Plant-Microbe Interactions emphasis must take two or more of the following courses:

- PLPTH 732 - Introduction to Plant Resistance to Pests **Credits:** 2

- PLPTH 755 - Plant Resistance to Diseases **Credits:** 2
- PLPTH 880 - Plant Molecular Biology **Credits:** 3
- PLPTH 905 - Ecology and Epidemiology of Plant Pathogens **Credits:** 3
- PLPTH 910 - Molecular Plant-Microbe Interactions **Credits:** 3
- PLPTH 927 - Fungal Genetics **Credits:** 3

Arthropod genetics emphasis

PhD students in the Arthropod Genetics emphasis must take two or more of the following courses:

- BIOCH 907 - Advanced Topics in Insect Biochemistry **Credits:** 3
- ENTOM 655 - Plant Resistance to Insects **Credits:** 2
- ENTOM 799 - Problems in Entomology **Credits:** 1-18
- ENTOM 830 - Molecular Entomology **Credits:** 2
- ENTOM 875 - Insect Physiology **Credits:** 4
- ENTOM 860 - Insect Genetics **Credits:** 3
- ENTOM 930 - Topics in Entomology **Credits:** 1-9
- PLPTH 732 - Introduction to Plant Resistance to Pests **Credits:** 2

Quantitative genetics emphasis

PhD students in the Quantitative Genetics emphasis must take two or more of the following courses:

- BIOL 890 - Top/Ecology of Fungi
- BIOL 890 - Top/Ecology of Genomics
- AGRON 610 - Biotechnology **Credits:** 3
- AGRON 630 - Crop Improvement and Biotechnology **Credits:** 3
- AGRON 680 - Plant Genetics **Credits:** 3
- AGRON 860 - Applied Plant Breeding **Credits:** 3
- AGRON 970 - Advanced Plant Breeding I **Credits:** 3
- AGRON 980 - Genomic Analysis for Crop Improvement **Credits:** 3
- ASI 655 - Behavior of Domestic Animals **Credits:** 3
- ASI 749 - Advanced Animal Breeding **Credits:** 3
- BIOL 604 - Biology of the Fungi **Credits:** 3
- BIOL 870 - Advanced Plant Systematics **Credits:** 4
- BIOL 875 - Evolutionary Ecology **Credits:** 3
- BIOL 890 - Advanced Topics in Biology **Credits:** 1-6
- ENTOM 930 - Topics in Entomology **Credits:** 1-9
- PLPTH 610 - Biotechnology **Credits:** 3
- PLPTH 905 - Ecology and Epidemiology of Plant Pathogens **Credits:** 3
- PLPTH 915 - Advanced Plant Genetics **Credits:** 3

Master of Science

Genetics (M.S.)

Refer to the Genetics page for more information

Master's degree requirements

A minimum of 30 credits with 6 to 8 research hours is required for the Master of Science in Genetics. Courses must include:

- A 700 level statistics course
- A 500 level biochemistry course
- A course in population genetics (700 level or higher)
- BIOL 675 - Genetics of Microorganisms **Credits:** 3
- BIOL 705 - Eukaryotic Genetics **Credits:** 3

Graduate Certificate

Genetics, Genomics and Biotechnology Graduate Certificate

Contact: Richard Todd
E-mail: rbtodd@ksu.edu

The graduate certificate requires a minimum of 15 credit hours. To pursue the Genetics, Genomics and Biotechnology graduate certificate the student must file an application for admission with the program coordinator. A genetics course is a pre-requisite for entry into the program.

Required courses (6 credit hours)

- PLPTH 812 - Introduction to Integrative Genome Analysis **Credits:** 3
- AGRON 610 - Biotechnology **Credits:** 3
  OR
- PLPTH 610 - Biotechnology **Credits:** 3

Laboratory course (2-3 credit hours)*

*Students whose graduate research involves use of biotechnology laboratory techniques will not be required to complete a laboratory course. An exemption from this requirement will be granted by the Program Director if the student demonstrates use of the range of covered techniques by coauthor status on a publication (either submitted or published), or first author status on an abstract for a presentation at a national meeting, and/or direct confirmation of the contribution by the student's advisor. In this case, elective courses may be substituted for the laboratory course to reach the 15 hours of minimum credits required.

- BIOL 676 - Molecular Genetics Laboratory **Credits:** 3
  or
- BIOCH 766 - Recombinant DNA Laboratory I **Credits:** 1
  and
- BIOCH 767 - Recombinant DNA Laboratory II **Credits:** 1

Electives (6-7 credit hours)

- AGRON 630 - Crop Improvement and Biotechnology **Credits:** 3
- AGRON 732 - Introduction to Plant Resistance to Pests **Credits:** 2

or

- ENTOM 732 - Introduction to Plant Resistance to Pests **Credits:** 2

or

- PLPTH 732 - Introduction to Plant Resistance to Pests **Credits:** 2
- AGRON 680 - Plant Genetics **Credits:** 3
- AGRON 860 - Applied Plant Breeding **Credits:** 3
- AGRON 970 - Advanced Plant Breeding I **Credits:** 3
- AGRON 980 - Genomic Analysis for Crop Improvement **Credits:** 3
- ASI 600 - Applied Animal Biotechnology **Credits:** 3
- ASI 749 - Advanced Animal Breeding **Credits:** 3
- ASI 831 - Molecular Reproductive Endocrinology **Credits:** 1
- BIOCH 755 - Biochemistry I **Credits:** 3
- BIOCH 765 - Biochemistry II **Credits:** 3
- BIOL 609 - Cellular and Molecular Biology of Human Diseases **Credits:** 3
- BIOL 640 - Population Biology **Credits:** 3
- BIOL 670 - Immunology **Credits:** 4
- BIOL 671 - Immunology Lab **Credits:** 2
- BIOL 675 - Genetics of Microorganisms **Credits:** 3
- BIOL 705 - Eukaryotic Genetics **Credits:** 3
- BIOL 707 - Advanced Cell Biology **Credits:** 3
- BIOL 730 - General Virology **Credits:** 3
- BIOL 734 - Introduction to Genomics and Bioinformatics **Credits:** 4

or

- CIS 734 - Introduction to Genomics and Bioinformatics **Credits:** 4
- BIOL 840 - Molecular and Cellular Immunology **Credits:** 3
- BIOL 860 - Modern Molecular Approaches **Credits:** 3
- BIOL 886 - Confocal, Fluorescence and Light Microscopy **Credits:** 3
- BIOL 888 - Electron Microscopy Techniques **Credits:** 3
- ENTOM 655 - Plant Resistance to Insects **Credits:** 2
- ENTOM 860 - Insect Genetics **Credits:** 3
- HORT 710 - Plant Cell, Tissue and Organ Culture. **Credits:** 3
- HORT 910 - Advances in Plant Cell Culture **Credits:** 2
- PLPTH 813 - Bioinformatics Applications **Credits:** 3
- PLPTH 755 - Plant Resistance to Diseases **Credits:** 2
- PLPTH 885 - Genomic Technologies Workshop **Credits:** 2
- PLPTH 820 - Population Genetics **Credits:** 3
- PLPTH 835 - Plant Virology **Credits:** 3
- PLPTH 880 - Plant Molecular Biology **Credits:** 3
- PLPTH 910 - Molecular Plant-Microbe Interactions **Credits:** 3
- PLPTH 915 - Advanced Plant Genetics **Credits:** 3
- PLPTH 916 - Cytogenetics Laboratory **Credits:** 1
- PLPTH 927 - Fungal Genetics **Credits:** 3

Leadership Communication

207 Leadership Studies
785-532-6099

steffy@k-state.edu
http://www.k-state.edu/lead-comm/

Leadership Communication is an interdisciplinary graduate program that is managed with these units: Communications and Agricultural Education Department, Communication Studies, and the Mary Lynn and Warren Staley School of Leadership Studies.

Director of Leadership Communication:

Tim Steffensmeier

Graduate Faculty:

*Lauri Baker, Ph.D. University of Florida
*Soumia Bardhan, Ph.D. University of New Mexico
*Raluca Cozma, Ph.D., Louisiana State University
*Jason Ellis, Ph.D. Iowa State University
*Soo-Hye Han, Ph.D. University of Texas, Austin
*Brandon Kliewer, Ph.D. University of Georgia
*Colene Lind, Ph.D. University of Texas, Austin
*Nikhil Moro, Ph.D., Ohio State University
*Nancy Muturi, Ph.D., University of Iowa
*Sam Mwangi, Ph.D., University of South Carolina
*Gregory Paul, Ph.D. Texas A&M University
*Kerry Priest, Ph.D. Virginia Polytechnic Institute and State University
David Procter, Ph.D. University of Nebraska, Lincoln
*Steven Smethers, Ph.D., University of Missouri
*Tim Shaffer, Ph.D. Cornell University
*Tim Steffensmeier, Ph.D. University of Texas, Austin
*Alec Tefertiller, Ph.D., University of Oregon
*Mary Tolar, Ph.D. Kansas State University
*Jonathan Ulmer, Ph.D. University of Missouri, Columbia
*Andrew Wefald, Ph.D. Kansas State University
*Heather Woods, Ph.D. University of North Carolina, Chapel Hill
*Xiaochen Angela Zhang, Ph.D., University of Florida

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students

Program Overview

The Leadership Communication doctoral program is an interdisciplinary research degree grounded in community-engaged scholarship. This degree is rooted in the theories and methods of leadership, communication, and other areas of inquiry related to collaborative change. Through the study and practice of leading change, students will produce original research that contributes to making progress on the most difficult challenges of our times.

Admissions

Our students bring a variety of academic backgrounds, professional experience, and civic interests to this program. Strong candidates for this doctoral program are committed to:

- Engaging with others to leverage diverse perspectives
- Developing capacities to conduct original research, convene stakeholders, and facilitate change processes
- Enhancing careers with foundations, NGOs, corporations, educational institutions, and governmental agencies

Application procedures require:

1. A completed application form
2. Transcripts from all colleges and universities attended
3. Three letters of recommendation
4. Two writing samples

Additional Graduate School regulations apply to applicants from outside of the United States.

Doctor of Philosophy

Leadership Communication

Doctoral Degree Requirements:

A minimum of 90 credit hours are required for the doctor of philosophy degree, 30 hours can be from master's or other post-baccalaureate work

Core (18 credit hours)

- LEAD 814 - Graduate Studies in Leadership Communication **Credits:** 3 Crosslisted: COMM/AGCOM 814
- LEAD 815 - Seminar in Leadership Communication **Credits:** 1 Crosslisted: COMM/AGCOM 815
  This seminar is offered each semester. Students must enroll for a minimum of 3 credit hours over 3 semesters.
- LEAD 820 - Contemporary Perspectives on Leadership Theory and Practice **Credits:** 3
- LEAD 845 - Approaches to Public/Community Engagement **Credits:** 3 Crosslisted: COMM/AGCOM 845
- COMM 916 - Communication Theories and Engagement **Credits:** 3 Crosslisted: AGCOM 916
- LEAD 945 - Social Science Research for Public Problem Solving **Credits:** 3 Crosslisted: COMM/AGCOM 945

Research Methodologies (Minimum of 12 hours)

- COMM 821 - Experimental Research in Communication Studies **Credits:** 3
- COMM 822 - Field Research in Communication Studies **Credits:** 3
- EDCEP 817 - Statistical Methods in Education **Credits:** 3
- EDCEP 917 - Experimental Design in Educational Research **Credits:** 3
- EDLEA 838 - Qualitative Research in Education **Credits:** 3

- EDLEA 938 - Advanced Data Analysis in Qualitative Methods **Credits:** 3
- EDLEA 948 - Data Representation and Writing in Qualitative Research **Credits:** 3
- EDLEA 848 - Understanding Theoretical Frameworks **Credits:** 3
- EDLEA 928 - Organizational Leadership in Education **Credits:** 3
- EDLEA 958 - Case Study in Qualitative Research **Credits:** 3
- EDLEA 968 - Discourse Analysis **Credits:** 3
- EDLEA 978 - Qualitative Data Management and Analysis Using Nvivo **Credits:** 3
- EDLEA 988 - Differentiated Research **Credits:** 3
- GEOG 801 - Seminar in Qualitative and Mixed Methods Research **Credits:** 3
- PLAN 803 - Community Research Methods **Credits:** 3
- POLSC 900 - Advanced Research Methods I **Credits:** 3
- POLSC 901 - Advanced Research Methods II **Credits:** 3
- PSYCH 802 - Psychological Research Design and Analysis I **Credits:** 3
- PSYCH 805 - Psychological Research Design and Analysis II **Credits:** 3
- SOCIO 824 - Qualitative Methodology **Credits:** 3
- SOCIO 825 - Quantitative Methods **Credits:** 3
- SOCIO 822 - Introduction to Methods of Social Analysis **Credits:** 3

Additional Requirements:

Beyond the core and methods courses, students must complete an additional 30 credit hours. A minimum of 15 credit hours must be from dissertation research hours. The remaining 15 credit hours may come from either elective coursework or more dissertation research hours.

Dissertation Research (15-30 credit hours)

Completion of a dissertation which examines a topic congruent with the program of study using a systematic methodology consistent with accepted research paradigms; the dissertation must be successfully defended in a public, oral defense.

- LEAD 999 - Research in Leadership Communication **Credits:** 1-15
  Crosslisted: COMM/AGCOM 999

Electives (0-15 hours)

Students will work with their committees to select 0-15 credit hours of elective courses appropriate for their programs of study. Example courses include:

- COMM 790 - Deliberation & Dialogue Theory **Credits:** 3
- COMM 831 - Deliberation & Dialogue Process Models **Credits:** 3
- COMM 832 - Dialogue, Deliberation, and Public Engagement: Core Skills and Strategies **Credits:** 3
- COMM 833 - Dialogue, Deliberation, and Public Engagement: Capstone Experience **Credits:** 3
- EDACE 816 - Foundations of Social Justice Education: Research, Theory, and Practice **Credits:** 3
- EDACE 817 - Reflective Practice in Social Justice Education **Credits:** 3

Public Health

103 Trotter Hall
785-532-2042
mphealth@ksu.edu
http://www.k-state.edu/mphealth/

Director of graduate studies:

Ellyn Mulcahy

Graduate faculty:

A. Paige Adams, PhD., Cornell University
*Laura Brannon, Ph.D., The Ohio State University
*Natalia Cernicchiaro, DVM, Ph.D., University of Guelph
Elva Cha, DVM, PhD., Cornell University
*Edgar Chambers IV, Ph.D., Kansas State University
*Stephen K. Chapes, Ph.D., MPH, University of Illinois
*M.M. Chengappa, Ph.D., Michigan State University
*Lee Cohnstaedt, Ph.D., Yale University
*A. Sally Davis, DVM, PhD., North Carolina State University
*Steve Dritz, DVM, PhD., Kansas State University
*Michael W. Dryden, DVM, PhD., Purdue University
*Sherry Fleming, PhD., University of Colorado Health Sciences Center
*Roman Ganta, Ph.D., All India Institute of Medical Sciences, New Delhi
*Kelly Karr Getty, Ph.D., Kansas State University
*Rebecca Gould, Ph.D., R.D., Texas Woman's University
*Sara Gragg, PhD., Texas Tech University
*Jennifer A. Hanson, PhD., Kansas State University
*Mark D. Haub, Ph.D., University of Kansas
*Katie Heinrich, Ph.D., University of Missouri, Kansas City
*Wei-Wen Hsu, Ph.D., Michigan State University
Brandon Irwin, Ph.D., Michigan State University
*Majid Jaberi-Douraki, Ph.D., University of Laval, Canada
*Elaine Johannes, Ph.D., Kansas State University
*Justin Kastner, Ph.D., University of Guelph
*Tandalayo Kidd, Ph.D., LPN, RD, Kansas State University
*Katherine KuKanich, D.V.M., Ph.D., University of Minnesota, University of Tennessee
*Robert L. Larson, DVM, Ph.D, Kansas State University
*Zhoumeng Lin, Ph.D., The University of Georgia
Annika Linde, Ph.D., Kansas State University
*Brian Lindshield, Ph.D., University of Illinois at Urbana-Champaign
Emily Mailey, Ph.D., University of Illinois at Urbana-Champaign
*Mary McElroy, Ph.D., University of Maryland
*Jodi McGill, Ph.D., University of Iowa
*Tonatiuh Melgarejo, Ph.D., Purdue University
*Beth A. Montelone, Ph.D., University of Rochester
Susan Moore, Ph.D., Kansas State University
*Derek A. Mosier, D.V.M., Ph.D., Kansas State University, Oklahoma State University
Ellyn Mulcahy, Ph.D., Creighton University

Lina Mur, Ph.D., University of Complutense of Madrid, Spain
Nancy Muturi, Ph.D., University of Iowa
*T.G. Nagaraja, Ph.D., Kansas State University
*Sanjeev Narayanan, Ph.D., Kansas State University
*Dana Nayduch, Ph.D., Clemson University
*Annelise Nguyen, Ph.D., Texas A&M University
*Abbey L. Nutsch, Ph.D., Kansas State University
Londa Nwadike, Ph.D., University of Iowa
*Paula Peters, Ph.D., Ohio State University
*Randall K. Phebus, Ph.D., University of Tennessee
*Sandra B. Procter, Ph.D, R.D., Kansas State University
Ram Raghavan, Ph.D., Kansas State University
*Kathryn Reif, Ph.D., Louisana State University
Walter Renberg, D.V.M., M.S., Oklahoma State University, Virginia Polytechnic Institute and State University
*David G. Renter, D.V.M., Ph.D., Kansas State University
Deanna D. Retzlaff, Ph.D., Kansas State University
*Richard Rosenkranz, Ph.D., Kansas State University
*Sara Rosenkranz, Ph.D., Kansas State University
*Michael W. Sanderson, D.V.M., M.S., Colorado State University, Washington State University
*J. Scott Smith, Ph.D., Pennsylvania State University
Maggie Syme, Ph.D., University of Kansas
Loubna Tazi, Ph.D., Montpellier II University
*Dana Vanlandingham, Ph.D., Liverpool School of Tropical Medicine, UK
*Deon van der Merwe, Ph.D., North Carolina State University
*Victoriya Volkova, Ph.D., Mississippi State University
*Weiqun (George) Wang, Ph.D., Nanjing Agricultural University
Erin Yelland, Ph.D., University of Kentucky
*Ludek Zurek, Ph.D., University of Alberta, Canada

Graduate Faculty Associate:

Keith Hamilton, MS, London School of Hygiene and Tropical Medicine

*Denotes graduate faculty that are certified to serve as the major professor for doctoral students.

About the program

Public health is an interdepartmental graduate professional program with faculty participants from many academic departments of the university. The 42 semester hour program is designed to provide graduate-level education for individuals currently employed or anticipating a career in the field of public health. The purpose of public health is to address the physical, mental, social and environmental concerns of communities and populations. Its focus is on prevention of injury and disease in populations while they are still healthy, rather than treating individual patients after they become sick. The field of public health involves programs, strategies, and interventions designed to protect and improve community health through health education, promotion, research, and disease prevention. The final outcome of all public health efforts is to improve the quality of life in communities as well as targeted populations. The MPH program includes the five core areas within the field of public health: environmental health, behavioral sciences/health education, epidemiology, biostatistics, and health services administration. In addition to the five core areas, a student can select an area of emphasis in food safety and biosecurity, infectious diseases/zoonoses, public health nutrition, or public health physical activity.

Application and admission requirements

The Kansas State University Graduate School oversees admissions for the Master of Public Health (MPH) degree and the Graduate Certificate in Public Health Core Concepts. To be eligible for admission to a graduate program, an applicant must have completed an undergraduate degree. Prospective students may apply for the degree and/or the certificate by following the application procedures under each heading.

- Application procedures for MPH Degree
- Application procedures for Graduate Certificate in Public Health Core Concepts

Concurrent

Concurrent Bachelor/Master of Public Health

Participating bachelor's programs include:

- Animal Sciences & Industry
- Athletic Training and Rehabilitation Sciences
- Biochemistry
- Biology
- Dietetics
- Food Science & Industry
- Kinesiology
- Life Sciences
- Microbiology
- Nutritional Sciences
- Psychology
- Nutrition and Health

These programs will adhere to the policies and procedures for concurrent Bachelor/Master/Graduate Certificate programs listed in the Graduate Handbook. Students enrolled in the concurrent BS (or BA)/MPH programs will be allowed to take up to 9 hours for graduate credit in courses numbered in the 600 and 700 sequences and to use these 9 hours toward both the bachelor's and master's degrees, upon approval of the student's supervisory committee for credit toward the master's degree.

Students in these undergraduate programs would apply for admission to Public Health and the Graduate School in their junior year. Qualified students would be provisionally admitted and be allowed to enroll in courses for graduate credit, generally beginning in the summer or fall of the 4th undergraduate year. Upon completion of the bachelor's degree, students would be fully admitted to the Graduate School and the MPH program, and their status would change to that of a graduate student in KSIS.

Master of Public Health

Master of Public Health (M.P.H.)

Degree requirements

A total of 42 semester hours is required to complete this degree offered through the Public Health graduate program. The program is a professional degree that requires a core of public health courses (15 credit hours), a field experience or master's thesis (6 credit hours), and an area of emphasis determined by the student's program committee (21 credit

hours). An area of emphasis may be selected from food safety and biosecurity, infectious diseases/zoonoses, public health human nutrition, or public health physical activity.

Public health core (15 credit hours)

- MPH 701 - Fundamental Methods of Biostatistics **Credits:** 3
- MPH 720 - Administration of Health Care Organizations **Credits:** 3
- MPH 754 - Introduction to Epidemiology **Credits:** 3
- MPH 802 - Environmental Health **Credits:** 3
- MPH 818 - Social and Behavioral Bases of Public Health **Credits:** 3

Area of emphasis (21 credit hours)

Select from one of these four areas. The 21 credit hours required for each emphasis area are listed below.

• Food Safety and Biosecurity
• Infectious Diseases and Zoonoses
• Public Health Nutrition
• Public Health Physical Activity

Food Safety and Biosecurity

Required courses (10 credit hours):

- FDSCI 730 - A Multidisciplinary Overview of Food Safety and Security **Credits:** 2
- FDSCI 731 - Food Protection and Defense--Essential Concepts **Credits:** 2
- DMP 815 - Multidisciplinary Thought and Presentation **Credits:** 3
- DMP 816 - Trade and Agricultural Health **Credits:** 2
- DMP 888 - Globalization, Cooperation, & the Food Trade **Credits:** 1

Select any remaining credits needed for the degree from the list below:

- AAI 801 - Interdisciplinary Process **Credits:** 3
- DMP 710 - Introduction to One Health **Credits:** 2
- DMP 806 - Environmental Toxicology **Credits:** 2
- DMP 844 - Global Health Issues **Credits:** 3
- DMP 880 - Problems in Pathobiology (MS) **Credits:** 1-6
- DMP 855 - Disease Detection, Surveillance and Risk Assessment **Credits:** 3
- DMP 888 - Globalization, Cooperation, & the Food Trade **Credits:** 1
- FDSCI 600 - Food Microbiology **Credits:** 2
- FDSCI 601 - Food Microbiology Lab **Credits:** 2
- FDSCI 690 - Principles of HACCP and HARPC **Credits:** 3
- FDSCI 695 - Quality Assurance of Food Products **Credits:** 3
- FDSCI 750 - Food Toxicants **Credits:** 2
- FDSCI 751 - Food Laws and the Regulatory Process **Credits:** 2
- FDSCI 753 - Risk Assessment for Food, Ag, & Vet Med **Credits:** 3
- FDSCI 791 - Advanced Application of HACCP Principles **Credits:** 3

- FDSCI 820 - Advanced Food Microbiology & Biotechnology **Credits:** 2
- MC 750 - Strategic Health Communication **Credits:** 3
- MC 760 - Issues, Risk, and Reputation **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3

Plus any graduate course approved by the graduate committee and the program director.

Infectious Diseases and Zoonoses

In addition to the core courses (15 credit hours) and field experience (6 hours) or thesis research and field experience (9 hours), students must complete credit hours from the Infectious Diseases and Zoonoses emphasis area as outlined below to fulfill the 42 credit hour requirement for the MPH degree. Substitutions may be approved by the major professor, supervisory committee, and the MPH Program director.

Required courses (11 or 12 credit hours):

- BIOL 530 - Pathogenic Microbiology **Credits:** 3
  OR
- VDMP 838 - Veterinary Bacteriology & Mycology Lecture and Lab **Credits:** 4 (or DMP 814 Lecture only **Credits**: 3)

- DMP 817 - Principles of Veterinary Immunology **Credits:** 3

- DMP 710 - Introduction to One Health **Credits:** 2

- DMP 815 - Multidisciplinary Thought and Presentation **Credits:** 3

Select any remaining credits needed for the degree from the list below:

- AAI 801 - Interdisciplinary Process **Credits:** 3
- ASI 540 - Principles of Animal Disease Control **Credits:** 3
- BIOL 529 - Ecology **Credits:** 3
- BIOL 545 - Human Parasitology **Credits:** 3
- BIOL 546 - Human Parasitology Laboratory **Credits:** 1
- BIOL 604 - Biology of the Fungi **Credits:** 3
- BIOL 670 - Immunology **Credits:** 4
- BIOL 671 - Immunology Lab **Credits:** 2
- BIOL 675 - Genetics of Microorganisms **Credits:** 3
- BIOL 687 - Microbial Ecology **Credits:** 3
- BIOL 730 - General Virology **Credits:** 3
- DMP 834 - Veterinary Parasitology **Credits:** 4
- DMP 770 - Emerging Diseases **Credits:** 3
- AP 845 - Toxicology **Credits:** 2
- DMP 806 - Environmental Toxicology **Credits:** 2
- DMP 816 - Trade and Agricultural Health **Credits:** 2
- DMP 851 - Veterinary Virology **Credits:** 3
- DMP 830 - Quantitative Analysis in Veterinary Medicine **Credits:** 3
- DMP 844 - Global Health Issues **Credits:** 3

- DMP 850 - Immunology of Domestic Animals **Credits:** 3
- DMP 854 - Intermediate Epidemiology **Credits:** 3
- DMP 855 - Disease Detection, Surveillance and Risk Assessment **Credits:** 3
- DMP 860 - Bacterial Pathogenesis and Host Response **Credits:** 3
- DMP 871 - Molecular Diagnostics of Infectious Diseases **Credits:** 3
- DMP 880 - Problems in Pathobiology (MS) **Credits:** 1-6
- DMP 888 - Globalization, Cooperation, & the Food Trade **Credits:** 1
- DMP 954 - Advanced Epidemiology **Credits:** 4
- ENTOM 849 - Arthropod Vectors of Human Pathogens **Credits:** 3
- FDSCI 690 - Principles of HACCP and HARPC **Credits:** 3
- FDSCI 730 - A Multidisciplinary Overview of Food Safety and Security **Credits:** 2
- FDSCI 731 - Food Protection and Defense--Essential Concepts **Credits:** 2
- GEOG 508 - Geographic Information Systems I **Credits:** 4
- GEOG 608 - Geographic Information Systems II **Credits:** 3
- MC 750 - Strategic Health Communication **Credits:** 3
- MC 760 - Issues, Risk, and Reputation **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 716 - Nonparametric Statistics **Credits:** 3
- STAT 717 - Categorical Data Analysis **Credits:** 3
- STAT 720 - Design of Experiments **Credits:** 3
- STAT 730 - Multivariate Statistical Methods **Credits:** 3

Plus any graduate course approved by the graduate committee and the program director.

Public Health Nutrition

In addition to the core courses (15 credit hours) and field experience (6 hours) or thesis research and field experience (9 hours), students must complete credit hours from the Public Health Nutrition emphasis area as outlined below to fulfill the 42 credit hour requirement for the MPH degree. Substitutions may be approved by the major professor, supervisory committee, and the MPH Program director.

Required courses (10 credit hours):

- FNDH 600 - Public Health Nutrition **Credits:** 3
- FNDH 820 - Functional Foods for Chronic Disease Prevention **Credits:** 3
- FNDH 844 - Nutritional Epidemiology **Credits:** 3
- FNDH 880 - Professional Communication in FNDH **Credits:** 1

Select any remaining credits needed for the degree from the list list below:

- AAI 801 - Interdisciplinary Process **Credits:** 3
- FNDH 620 - Nutrient Metabolism **Credits:** 3
- FNDH 631 - Clinical Nutrition I **Credits:** 3
- FNDH 632 - Clinical Nutrition II **Credits:** 3
- FNDH 635 - Sports Nutrition **Credits:** 3
- FNDH 700 - Global Health and Nutrition **Credits:** 3
- FNDH 718 - Physical Health and Aging **Credits:** 3

- FNDH 726 - Nutrition and Wellness **Credits:** 3
- FNDH 735 - Advanced Energy Balance **Credits:** 3
- FNDH 780 - Problems in Food, Nutrition, Dietetics and Health **Credits:** 1-6
- FNDH 782 - Topics in Food Nutrition, Dietetics and Health **Credits:** 1-6
- FNDH 800 - Nutrition Education and Communication **Credits:** 3
- FNDH 810 - Advanced Macronutrient Metabolism **Credits:** 5
- FNDH 812 - Advanced Micronutrient Metabolism **Credits:** 3
- FNDH 841 - Consumer Research - Fundamentals **Credits:** 1
- FNDH 862 - Maternal and Child Nutrition **Credits:** 3
- FNDH 891 - Environmental Scanning and Analysis of Current Issues in Dietetics **Credits:** 3
- KIN 610 - Program Planning and Evaluation **Credits:** 3
- KIN 805 - Physical Activity and Human Behavior **Credits:** 3
- MC 750 - Strategic Health Communication **Credits:** 3
- MC 760 - Issues, Risk, and Reputation **Credits:** 3
- PSYCH 518 - Introduction to Health Psychology **Credits:** 3
- SOCIO 541 - Wealth, Power, and Privilege **Credits:** 3
- SOCIO 570 - Race and Ethnic Relations in the USA **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 710 - Sample Survey Methods **Credits:** 3
- STAT 713 - Applied Linear Statistical Models **Credits:** 3
- STAT 716 - Nonparametric Statistics **Credits:** 3
- STAT 717 - Categorical Data Analysis **Credits:** 3
- STAT 720 - Design of Experiments **Credits:** 3
- STAT 725 - Introduction to the SAS Computing **Credits:** 1
- STAT 730 - Multivariate Statistical Methods **Credits:** 3

Plus any graduate course approved by the graduate committee and the program director.

Public Health Physical Activity

Required courses (9 credit hours):

- KIN 610 - Program Planning and Evaluation **Credits:** 3
- KIN 612 - Policy, Built Environment and Physical Activity **Credits:** 3
- KIN 805 - Physical Activity and Human Behavior **Credits:** 3

Select any remaining credits needed for the degree from the list below:

- AAI 801 - Interdisciplinary Process **Credits:** 3
- KIN 600 - Interpersonal Aspects of Physical Activity **Credits:** 3
- KIN 601 - Cardiorespiratory Physiology **Credits:** 3
- KIN 602 - Social Structural Determinants of Physical Activity **Credits:** 3
- KIN 606 - Topics in the Behavioral Basis of Kinesiology **Credits:** 1-3
- KIN 614 - Physical Activity Behavior Settings: Youth Sport to Senior Centers **Credits:** 3

- KIN 616 - Obesity and Physical Activity: Behavioral, Environment, and Policy Influences **Credits:** 3
- KIN 625 - Exercise Testing and Prescription **Credits:** 3
- KIN 635 - Nutrition and Exercise **Credits:** 3
- KIN 655 - Individual Physical Activity Promotion **Credits:** 3
- KIN 815 - Research Methods in Kinesiology **Credits:** 3
- KIN 851 - Topics in the Physiological Basis of Kinesiology **Credits:** 1-3
- KIN 852 - Topics in the Behavioral Basis of Kinesiology **Credits:** 1-3
- KIN 896 - Independent Study in Kinesiology **Credits:** 1-4
- FNDH 600 - Public Health Nutrition **Credits:** 3
- FNDH 844 - Nutritional Epidemiology **Credits:** 3
- MC 750 - Strategic Health Communication **Credits:** 3
- SOCIO 541 - Wealth, Power, and Privilege **Credits:** 3
- SOCIO 545 - The Sociology of Women **Credits:** 3
- SOCIO 570 - Race and Ethnic Relations in the USA **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 710 - Sample Survey Methods **Credits:** 3
- STAT 716 - Nonparametric Statistics **Credits:** 3
- STAT 717 - Categorical Data Analysis **Credits:** 3
- STAT 720 - Design of Experiments **Credits:** 3
- STAT 725 - Introduction to the SAS Computing **Credits:** 1
- STAT 730 - Multivariate Statistical Methods **Credits:** 3

Plus any graduate course approved by the graduate committee and the program director.

Required “Public Health Practice” (3, 4 or 6 hours)

Field experience (6 hours); OR a combined field experience (4 hours) and master’s report (2 hours); OR a combined master’s thesis (6 hours) and field experience (3 hours)

- MPH 840 – Public Health Field Experience credits (3, 4 or 6 hours)
- DMP, FDSCI, HN or KIN 898 – Master’s Report credits (var.) plus MPH 840 for 4 hrs
- DMP, FDSCI, HN or KIN 899 – Master’s Thesis credits (var.) plus MPH 840 for 3 hrs

Graduate Certificate

Public Health Core Concepts Graduate Certificate

Contact: Ellyn Mulcahy
E-mail: emulcahy@ksu.edu

The certificate program in Public Health Core Concepts is designed to give individuals, both working professionals and graduate students on campus with no formal public health education, a strong foundation of knowledge in the five core concept areas in public health: biostatistics, epidemiology, environmental health sciences, health services administration, and social and behavioral sciences. The courses required for the certificate are the same ones required in the core concept areas for the Master of Public Health (MPH) degree program currently offered at Kansas State University. These five areas meet the Council of Education for Public Health (CEPH) program accreditation standards. The following are the basic or core competencies in each of the five discipline areas:

- Biostatistics: collection, storage, retrieval, analysis, and interpretation of health data; design and analysis of health-related surveys and experiments; and concepts and practice of statistical data analysis.
- Epidemiology: distributions and determinants of disease, disabilities, and death in human populations; the characteristics and dynamics of human populations; and the natural history of disease and the biologic basis of health.
- Environmental Health Sciences: environmental factors including, biological, physical, and chemical factors that affect the health of a community.
- Health Services Administration: planning, organization, administration, management, evaluation, and policy analysis of health programs.
- Social and Behavioral Sciences: concepts and methods of social and behavioral sciences relevant to the identification and the solution of public health problems.

Enrolling in the Certificate Program

To apply for admission to the certificate program:

- Students must have completed an undergraduate degree and be making satisfactory progress in or completed a graduate degree as documented by an
  official transcript or other appropriate documentation
- Students must be concurrently enrolled in a graduate program at K-State OR be admitted in the graduate program as a non-degree student
- Students must submit a narrative letter that describes their interest and experience in public health and objectives for completing the
  certificate
- Students must submit a letter of recommendation from their major professor or employer (if already completed graduate degree)

After review of the application documents by the Director of the Master of Public Health Program, the Director may:

1. Admit the student to the certificate program
2. Conditionally admit the student to the certificate program and indicate which pre-requisite courses must be completed prior to
   enrollment in some or all of the certificate program courses
3. Reject the student for the certificate program

If at a later time the student applies to the MPH Program at Kansas State University and is admitted, the full fifteen hours in the graduate
certificate may be applied to the MPH degree.

Graduate students working toward advanced degrees may use any or all of the certificate courses in a program of study with the approval of the student's
supervisory committee. All students are required to fill out an enrollment form to maintain tracking of progress by the Master of Public Health Program
Office. Completed forms should be signed, dated, and returned to the Program Director via campus mail or in person at

103 Trotter Hall. The Program
Office will verify grades achieved prior to the expected date of graduation.

Required Courses (15 credit hours)

Coursework can be taken in a distance learning format or in the traditional on-campus classroom setting. The certificate program in public health core concept requires a total of 15 credit hours taken from the following six courses:

- MPH 701 - Fundamental Methods of Biostatistics **Credits:** 3
- MPH 720 - Administration of Health Care Organizations **Credits:** 3
- MPH 754 - Introduction to Epidemiology **Credits:** 3
- MPH 802 - Environmental Health **Credits:** 3
- MPH 818 - Social and Behavioral Bases of Public Health **Credits:** 3

Notes

All courses applied toward the certificate must be completed with a grade point average of 3.0 or higher.

Program Administration

The Director of the Master of Public Health degree program serves as the administrator of the Graduate Certificate in Public Health Core Concepts.

Send all documentation to

Dr. Ellyn R. Mulcahy
Director, Master of Public Health Program
103 Trotter Hall
Kansas State University
Manhattan, KS 66506

More information about the MPH Program can be found at: http://www.k-state.edu/mphealth/.

School of Applied and Interdisciplinary Studies (Olathe Campus)

22201 W Innovation Dr.
Olathe KS, 66061
913-541-1220
Fax: 913-541-1488
olatheinfo@ksu.edu
http://olathe.k-state.edu/

Dean:

Jacqueline D. Spears

Department Head:

Jacqueline D. Spears

Graduate Faculty:

Paige Adams, Ph.D., Cornell University
Royce Ann Collins, Ph.D., Kansas State University
Judy Favor, Ph.D., University of Kansas
Sara Gragg, Ph.D., Texas Tech University
Haley Larson, Ph.D., University of Minnesota - Twin Cities
Londa Nwadike, Ph.D., University of Iowa
Eleni Pliakoni, Ph.D., University of Thessaly
Ralph Richardson, D.V.M., Kansas State University
Rebekkah Stuteville, Ph.D., University of Missouri - Kansas City
Gerald Wyckoff, Ph.D., University of Chicago

Graduate Faculty Associates:

Marianne Swaney-Stueve, Ph.D., University of Missouri

The School of Applied and Interdisciplinary Studies advances Kansas State University Olathe's mission to be the model and leader of adaptable, interdisciplinary and innovative education, research and public/private engagement in the Kansas City area, bridging the University with global and local communities, government and industry partners. The School offers academic programs and applied research that address industry demand in the food, animal health and related sectors. The interdisciplinary studies approach to critical thinking allows students to gain a more comprehensive understanding of complex issues and an enhanced ability to address broad and multi-faceted challenges. The School provides students with a high degree of flexibility in designing their educational and research plans, which increase the technical and professional skills needed for career advancement.

Master of Science

Professional Science Master's in Applied Biosciences

Offered by the K-State School of Applied and Interdisciplinary Studies (Olathe Campus), this 30-credit hour program combines education in animal health and food safety and security with leadership and management skills. The program is ideal for students seeking to build the STEM and professional expertise needed for career advancement. All students take professional skills courses, a statistics course, and STEM courses in either the animal health track or food safety and security track. Students must select the track they wish to pursue at the time of admission. All students must also complete two capstone courses.

After completion of the program, graduates will be able to:

1) Demonstrate advanced knowledge of one or more relevant STEM fields,

2) Demonstrate oral and written communication skills in a professional STEM environment,

3) effectively analyze quantitative data for use across multiple science disciplines, and

4) synthesize information from multiple disciplines to accurately identify problems and develop innovative solutions.

Courses are offered online, face-to-face, and in combination. This program is recognized as a Professional Science Master's (PSM) program, approved by the National PSM Office.

Core Courses (6)

- AAI 801 - Interdisciplinary Process **Credits:** 3
- AAI 858 - Capstone Experience I **Credits:** 1
- AAI 859 - Capstone Experience II **Credits:** 2

Professional Skills (9)

Professional Skills Electives – 9 credits selected from the following courses (or other graduate professional skills courses as approved by the student's supervisory committee):

- AAI 795 - Topics in Applied and Interdisciplinary Studies **Credits:** .5-6
- AAI 840 - Regulatory Aspects of Drug and Vaccine Development in the Animal Health Industry **Credits:** 2
- AAI 842 - Strategies in the Stewardship of Licensed Pharmaceuticals and Biologics in Animal Health **Credits:** 1
- AAI 843 - Regulatory Development of Animal Pharmaceuticals - FDA **Credits:** 2
- AAI 844 - Regulatory Development of Animal Pesticides - EPA **Credits:** 2
- AAI 845 - Regulatory Development of Animal Biologicals and Diagnostics - USDA **Credits:** 2
- AAI 846 - Special Topics: Regulatory Affairs in Animal Health **Credits:** 1
- AAI 870 - Seminar in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 880 - Problems in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 895 - Advanced Topics in Applied and Interdisciplinary Studies **Credits:** 5-6
- AAI 899 - Research in Applied and Interdisciplinary Studies. **Credits:** 1-6
- ACCTG 810 - Foundations of Accounting **Credits:** 3
- AGEC 710 - Comparative Food and Agriculture Systems **Credits:** 3
- AGEC 750 - Agricultural Economics and Agribusiness Problems **Credits:** 1-18
- COT 703 - Project Management for Professionals **Credits:** 3
- COT 704 - Managerial Finances, Metrics, and Analytics **Credits:** 3
- COT 706 - Informatics and Technology Management **Credits:** 3
- DMP 815 - Multidisciplinary Thought and Presentation **Credits:** 3
- DMP 816 - Trade and Agricultural Health **Credits:** 2
- DMP 888 - Globalization, Cooperation, & the Food Trade **Credits:** 1
- EDACE 832 - Interpersonal and Intrapersonal Dynamics in Adult Learning and Leadership **Credits:** 3
- EDACE 834 - Leading Adults in a Globalized and Diverse World **Credits:** 3
- EDACE 835 - Developing Teams and Adult Leaders **Credits:** 3
- EDACE 836 - Group Dynamics in Adult Learning and Leadership **Credits:** 3
- EDACE 886 - Seminars in Adult Learning and Leadership **Credits:** 1-18

- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 880 - Business Strategy **Credits:** 3
- POLSC 708 - Public Personnel Administration **Credits:** 3
- POLSC 710 - Policy Analysis and Evaluation **Credits:** 3
- POLSC 735 - Public Organization Theory **Credits:** 3
- POLSC 737 - Public Budgeting **Credits:** 3

STEM (15)

Statistics Electives (3)

Statistics Electives – 3 credits selected from the following courses (or another graduate statistics course as approved by the student's supervisory committee):

- STAT 701 - Fundamental Methods of Biostatistics **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 713 - Applied Linear Statistical Models **Credits:** 3
- STAT 720 - Design of Experiments **Credits:** 3

Students choose the remaining 12 credit hours of STEM electives from their chosen track:

Animal Health Track

The courses in the animal health track provide students with knowledge of diseases that affect animals, as well as the interconnections among animals, humans, and the environment. When paired with the professional skills courses, students will be prepared to lead and manage in commercial, governmental, or nonprofit organizations related to the animal health industry.

Animal Health Track - STEM Electives (12)

STEM Electives – 12 credits selected from the following courses (or graduate STEM courses within the disciplines indicated below, as approved by the student's supervisory committee):

- AAI 795 - Topics in Applied and Interdisciplinary Studies **Credits:** .5-6
- AAI 840 - Regulatory Aspects of Drug and Vaccine Development in the Animal Health Industry **Credits:** 2
- AAI 841 - Strategies in Pre-Clinical and Clinical Research for Regulatory Affairs in Animal Science **Credits:** 2
- AAI 843 - Regulatory Development of Animal Pharmaceuticals - FDA **Credits:** 2
- AAI 844 - Regulatory Development of Animal Pesticides - EPA **Credits:** 2
- AAI 845 - Regulatory Development of Animal Biologicals and Diagnostics - USDA **Credits:** 2
- AAI 870 - Seminar in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 880 - Problems in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 895 - Advanced Topics in Applied and Interdisciplinary Studies **Credits:** 5-6

- AAI 899 - Research in Applied and Interdisciplinary Studies. **Credits:** 1-6
- AP 788 - Basic and Applied Pharmacokinetics **Credits:** 3
- AP 873 - Physiologically Based Pharmacokinetic Modeling **Credits:** 4
- AP 896 - Introduction to Responsible Conduct of Biomedical Research **Credits:** 2
- ASI 671 - Meat Selection and Utilization **Credits:** 2
- ASI 675 - Monogastric Nutrition **Credits:** 1
- ASI 678 - Equine Nutrition **Credits:** 1
- ASI 776 - Meat Industry Technology **Credits:** 3
- BAE 815 - Graduate Seminar in Agricultural Engineering **Credits:** 1
- BAE 820 - Topics in Biological & Agricultural Engineering **Credits:** 1-18
- DMP 710 - Introduction to One Health **Credits:** 2
- DMP 754 - Introduction to Epidemiology **Credits:** 3
- DMP 770 - Emerging Diseases **Credits:** 3
- DMP 802 - Environmental Health **Credits:** 3
- DMP 806 - Environmental Toxicology **Credits:** 2
- DMP 814 - Veterinary Bacteriology & Mycology Lecture **Credits:** 3
- DMP 851 - Veterinary Virology **Credits:** 3
- DMP 844 - Global Health Issues **Credits:** 3
- DMP 846 - Foundations of Biosecurity **Credits:** 3
- DMP 850 - Immunology of Domestic Animals **Credits:** 3
- DMP 870 - Pathobiology Seminar (MS) **Credits:** 1
- DMP 880 - Problems in Pathobiology (MS) **Credits:** 1-6
- DMP 888 - Globalization, Cooperation, & the Food Trade **Credits:** 1
- DMP 893 - Principles of Biosafety and Biocontainment **Credits:** 2
- DMP 895 - Topics in Pathobiology (MS) **Credits:** 0-18
- MPH 818 - Social and Behavioral Bases of Public Health **Credits:** 3

Complimentary STEM Courses - a maximum of 6 credits

(as part of the 12 STEM electives) can be selected from the following courses:

- IMSE 605 - Advanced Industrial Management **Credits:** 3
- IMSE 802 - Advanced Topics in Industrial Engineering **Credits:** 1-18
- IMSE 806 - Engineering Project Management **Credits:** 3
- IMSE 991 - Advanced Topics in Decision Theory **Credits:** 3

Food and Security Track

The courses in the food safety and security track provide students with knowledge and skills in the areas of food science, food safety, horticulture, nutrition, and consumer science. When paired with the professional skills courses, students will be prepared to lead and manage in commercial, governmental, or nonprofit organizations related to the food industry.

Food Safety and Security Track - STEM Electives (12)

STEM Electives – 12 credits selected from the following courses (or graduate STEM courses within the disciplines indicated below, as approved by the student's supervisory committee):

- AAI 795 - Topics in Applied and Interdisciplinary Studies **Credits:** .5-6
- AAI 840 - Regulatory Aspects of Drug and Vaccine Development in the Animal Health Industry **Credits:** 2
- AAI 870 - Seminar in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 880 - Problems in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 895 - Advanced Topics in Applied and Interdisciplinary Studies **Credits:** 5-6
- AAI 899 - Research in Applied and Interdisciplinary Studies. **Credits:** 1-6
- ASI 671 - Meat Selection and Utilization **Credits:** 2
- ASI 776 - Meat Industry Technology **Credits:** 3
- BAE 815 - Graduate Seminar in Agricultural Engineering **Credits:** 1
- BAE 820 - Topics in Biological & Agricultural Engineering **Credits:** 1-18
- DMP 710 - Introduction to One Health **Credits:** 2
- DMP 754 - Introduction to Epidemiology **Credits:** 3
- DMP 802 - Environmental Health **Credits:** 3
- DMP 844 - Global Health Issues **Credits:** 3
- DMP 888 - Globalization, Cooperation, & the Food Trade **Credits:** 1
- FDSCI 600 - Food Microbiology **Credits:** 2
- FDSCI 601 - Food Microbiology Lab **Credits:** 2
- FDSCI 630 - Food Science Problems **Credits:** 0-18
- FDSCI 690 - Principles of HACCP and HARPC **Credits:** 3
- FDSCI 695 - Quality Assurance of Food Products **Credits:** 3
- FDSCI 961 - Graduate Problem in Food Science **Credits:** 1-18
- FNDH 700 - Global Health and Nutrition **Credits:** 3
- FNDH 701 - Sensory Analysis **Credits:** 3
- FNDH 841 - Consumer Research - Fundamentals **Credits:** 1
- FNDH 843 - Consumer Research - Qualitative **Credits:** 1
- FNDH 844 - Nutritional Epidemiology **Credits:** 3
- FNDH 846 - Consumer Research – International and Special Populations **Credits:** 1
- FNDH 848 - Consumer Research – Quantitative **Credits:** 1
- FNDH 881 - Seminar in Sensory Analysis and Consumer Behavior **Credits:** 1
- HORT 725 - Postharvest Technology and Physiology of Horticultural Crops **Credits:** 3
- HORT 780 - Health-Promoting Phytochemicals: Fruits and Vegetables **Credits:** 2
- HORT 790 - Sustainable Agriculture **Credits:** 2
- HORT 791 - Urban Agriculture **Credits:** 2
- HORT 793 - Farm to Fork Produce Safety **Credits:** 2
- HORT 794 - Urban Food Systems **Credits:** 2
- HORT 795 - Urban Agriculture Study Tour **Credits:** 1
- MPH 818 - Social and Behavioral Bases of Public Health **Credits:** 3

Complimentary STEM Courses - a maximum of 6 credits

(as part of the 12 STEM electives) can be selected from the following courses:

- IMSE 605 - Advanced Industrial Management **Credits:** 3
- IMSE 802 - Advanced Topics in Industrial Engineering **Credits:** 1-18
- IMSE 806 - Engineering Project Management **Credits:** 3
- IMSE 991 - Advanced Topics in Decision Theory **Credits:** 3

Graduate Certificate

Professional Interdisciplinary Sciences Graduate Certificate

Offered by the School of Applied and Interdisciplinary Studies (Olathe Campus), this 12-credit program delivers scientific and technical skills in food, animal health, and related areas. After completion of the program, students will be able to 1) demonstrate ability to use information, concepts, analytical approaches, and critical thinking skills to transform ideas or solutions into entirely new forms, and 2) demonstrate the ability to perform in one or more disciplines. Students will take a foundation course in Interdisciplinary Process and courses in at least two disciplines. The Interdisciplinary Process course integrates methods and analytical frameworks to enable students to gain a more comprehensive understanding of complex issues and enhanced ability to address broad and multi-faceted challenges. Courses are offered online, face-to-face, and in combination.

Foundation Course

- AAI 801 - Interdisciplinary Process **Credits:** 3

Electives

9 credits from at least two disciplines, determined by the course prefix. Elective courses can be included up to 3 credits per course selected from the following courses (or equivalent courses as approved by the student's supervisory committee for PSM students, or as approved by the PSM Program Director for certificate-only students):

- AAI 795 - Topics in Applied and Interdisciplinary Studies **Credits:** .5-6
- AAI 840 - Regulatory Aspects of Drug and Vaccine Development in the Animal Health Industry **Credits:** 2
- AAI 841 - Strategies in Pre-Clinical and Clinical Research for Regulatory Affairs in Animal Science **Credits:** 2
- AAI 842 - Strategies in the Stewardship of Licensed Pharmaceuticals and Biologics in Animal Health **Credits:** 1
- AAI 843 - Regulatory Development of Animal Pharmaceuticals - FDA **Credits:** 2
- AAI 844 - Regulatory Development of Animal Pesticides - EPA **Credits:** 2
- AAI 845 - Regulatory Development of Animal Biologicals and Diagnostics - USDA **Credits:** 2
- AAI 846 - Special Topics: Regulatory Affairs in Animal Health **Credits:** 1
- AAI 858 - Capstone Experience I **Credits:** 1
- AAI 859 - Capstone Experience II **Credits:** 2
- AAI 870 - Seminar in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 880 - Problems in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 895 - Advanced Topics in Applied and Interdisciplinary Studies **Credits:** 5-6
- AAI 899 - Research in Applied and Interdisciplinary Studies. **Credits:** 1-6
- ACCTG 810 - Foundations of Accounting **Credits:** 3
- AGEC 710 - Comparative Food and Agriculture Systems **Credits:** 3
- AGEC 750 - Agricultural Economics and Agribusiness Problems **Credits:** 1-18
- AP 788 - Basic and Applied Pharmacokinetics **Credits:** 3
- AP 873 - Physiologically Based Pharmacokinetic Modeling **Credits:** 4
- AP 896 - Introduction to Responsible Conduct of Biomedical Research **Credits:** 2

- ASI 671 - Meat Selection and Utilization **Credits:** 2
- ASI 675 - Monogastric Nutrition **Credits:** 1
- ASI 678 - Equine Nutrition **Credits:** 1
- ASI 776 - Meat Industry Technology **Credits:** 3
- BAE 815 - Graduate Seminar in Agricultural Engineering **Credits:** 1
- BAE 820 - Topics in Biological & Agricultural Engineering **Credits:** 1-18
- COT 703 - Project Management for Professionals **Credits:** 3
- COT 704 - Managerial Finances, Metrics, and Analytics **Credits:** 3
- COT 706 - Informatics and Technology Management **Credits:** 3
- DMP 710 - Introduction to One Health **Credits:** 2
- DMP 754 - Introduction to Epidemiology **Credits:** 3
- DMP 770 - Emerging Diseases **Credits:** 3
- DMP 802 - Environmental Health **Credits:** 3
- DMP 806 - Environmental Toxicology **Credits:** 2
- DMP 814 - Veterinary Bacteriology & Mycology Lecture **Credits:** 3
- DMP 815 - Multidisciplinary Thought and Presentation **Credits:** 3
- DMP 816 - Trade and Agricultural Health **Credits:** 2
- DMP 822 - Veterinary Virology **Credits:** 3
- DMP 844 - Global Health Issues **Credits:** 3
- DMP 846 - Foundations of Biosecurity **Credits:** 3
- DMP 850 - Immunology of Domestic Animals **Credits:** 3
- DMP 870 - Pathobiology Seminar (MS) **Credits:** 1
- DMP 880 - Problems in Pathobiology (MS) **Credits:** 1-6
- DMP 888 - Globalization, Cooperation, & the Food Trade **Credits:** 1
- DMP 893 - Principles of Biosafety and Biocontainment **Credits:** 2
- DMP 895 - Topics in Pathobiology (MS) **Credits:** 0-18
- EDACE 834 - Leading Adults in a Globalized and Diverse World **Credits:** 3
- EDACE 835 - Developing Teams and Adult Leaders **Credits:** 3
- EDACE 836 - Group Dynamics in Adult Learning and Leadership **Credits:** 3
- EDACE 886 - Seminars in Adult Learning and Leadership **Credits:** 1-18
- FDSCI 600 - Food Microbiology **Credits:** 2
- FDSCI 601 - Food Microbiology Lab **Credits:** 2
- FDSCI 630 - Food Science Problems **Credits:** 0-18
- FDSCI 690 - Principles of HACCP and HARPC **Credits:** 3
- FDSCI 695 - Quality Assurance of Food Products **Credits:** 3
- FDSCI 961 - Graduate Problem in Food Science **Credits:** 1-18
- FNDH 700 - Global Health and Nutrition **Credits:** 3
- FNDH 701 - Sensory Analysis **Credits:** 3
- FNDH 841 - Consumer Research - Fundamentals **Credits:** 1
- FNDH 843 - Consumer Research - Qualitative **Credits:** 1
- FNDH 844 - Nutritional Epidemiology **Credits:** 3
- FNDH 846 - Consumer Research – International and Special Populations **Credits:** 1
- FNDH 848 - Consumer Research – Quantitative **Credits:** 1
- FNDH 881 - Seminar in Sensory Analysis and Consumer Behavior **Credits:** 1
- HORT 725 - Postharvest Technology and Physiology of Horticultural Crops **Credits:** 3
- HORT 780 - Health-Promoting Phytochemicals: Fruits and Vegetables **Credits:** 2

- HORT 790 - Sustainable Agriculture **Credits:** 2
- HORT 791 - Urban Agriculture **Credits:** 2
- HORT 793 - Farm to Fork Produce Safety **Credits:** 2
- HORT 794 - Urban Food Systems **Credits:** 2
- HORT 795 - Urban Agriculture Study Tour **Credits:** 1
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 880 - Business Strategy **Credits:** 3
- MPH 818 - Social and Behavioral Bases of Public Health **Credits:** 3
- POLSC 708 - Public Personnel Administration **Credits:** 3
- POLSC 710 - Policy Analysis and Evaluation **Credits:** 3
- POLSC 735 - Public Organization Theory **Credits:** 3
- POLSC 737 - Public Budgeting **Credits:** 3
- STAT 701 - Fundamental Methods of Biostatistics **Credits:** 3
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3
- STAT 705 - Regression and Analysis of Variance **Credits:** 3
- STAT 713 - Applied Linear Statistical Models **Credits:** 3
- STAT 720 - Design of Experiments **Credits:** 3

Professional Skills for STEM Practitioners Graduate Certificate

Offered by the School of Applied and Interdisciplinary Studies (Olathe Campus), this 15-credit program provides the management, communication and critical thinking skills necessary for professionals in leadership roles in science, technology, engineering and mathematics fields. After completion of the program, students will be able to 1) understand the basics of project or program management, 2) demonstrate appropriate oral and written communication skills in a professional environment, and 3) synthesize professional skills in order to accurately implement innovative solutions. Students will take 12 credits of interdisciplinary professional skills courses and three credits of capstone experience courses, (Professional Science Master's degree-seeking students) or a *Topics in Applied and Interdisciplinary Studies* course (PSSP certificate-seeking students), which will provide opportunities to apply and integrate knowledge and methods to solve problems. Courses are offered online, face-to-face, and in combination.

Required Courses (3 credits)

- AAI 858 - Capstone Experience I **Credits:** 1
  and
- AAI 859 - Capstone Experience II **Credits:** 2
  or
- AAI 795 - Topics in Applied and Interdisciplinary Studies **Credits:** .5-6
  Note: Only students in the Professional Science Master's program may enroll in AAI 858 and AAI 859 since both courses require a supervisory committee. Students may not use AAI 795 to fulfill the Professional Science Master's capstone requirement.

Program Electives

12 credits of electives selected from the following courses (or equivalent courses as approved by the student's supervisory committee for PSM students or as approved by the PSM Program Director for certificate-only students):

- AAI 795 - Topics in Applied and Interdisciplinary Studies **Credits:** .5-6
- AAI 801 - Interdisciplinary Process **Credits:** 3

- AAI 840 - Regulatory Aspects of Drug and Vaccine Development in the Animal Health Industry **Credits:** 2
- AAI 842 - Strategies in the Stewardship of Licensed Pharmaceuticals and Biologics in Animal Health **Credits:** 1
- AAI 843 - Regulatory Development of Animal Pharmaceuticals - FDA **Credits:** 2
- AAI 844 - Regulatory Development of Animal Pesticides - EPA **Credits:** 2
- AAI 845 - Regulatory Development of Animal Biologicals and Diagnostics - USDA **Credits:** 2
- AAI 846 - Special Topics: Regulatory Affairs in Animal Health **Credits:** 1
- AAI 870 - Seminar in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 880 - Problems in Applied and Interdisciplinary Studies **Credits:** 1-6
- AAI 895 - Advanced Topics in Applied and Interdisciplinary Studies **Credits:** 5-6
- ACCTG 810 - Foundations of Accounting **Credits:** 3
- AGEC 710 - Comparative Food and Agriculture Systems **Credits:** 3
- AGEC 750 - Agricultural Economics and Agribusiness Problems **Credits:** 1-18
- COT 703 - Project Management for Professionals **Credits:** 3
- COT 704 - Managerial Finances, Metrics, and Analytics **Credits:** 3
- COT 706 - Informatics and Technology Management **Credits:** 3
- DMP 815 - Multidisciplinary Thought and Presentation **Credits:** 3
- DMP 816 - Trade and Agricultural Health **Credits:** 2
- DMP 888 - Globalization, Cooperation, & the Food Trade **Credits:** 1
- EDACE 832 - Interpersonal and Intrapersonal Dynamics in Adult Learning and Leadership **Credits:** 3
- EDACE 834 - Leading Adults in a Globalized and Diverse World **Credits:** 3
- EDACE 835 - Developing Teams and Adult Leaders **Credits:** 3
- EDACE 836 - Group Dynamics in Adult Learning and Leadership **Credits:** 3
- EDACE 886 - Seminars in Adult Learning and Leadership **Credits:** 1-18
- MANGT 810 - Operations and Supply Chain Management **Credits:** 3
- MANGT 880 - Business Strategy **Credits:** 3
- POLSC 708 - Public Personnel Administration **Credits:** 3
- POLSC 710 - Policy Analysis and Evaluation **Credits:** 3
- POLSC 735 - Public Organization Theory **Credits:** 3
- POLSC 737 - Public Budgeting **Credits:** 3

Regulatory Affairs in Animal Health Graduate Certificate

Regulatory Affairs requires a specialized skill set, which combines the knowledge of animal science and veterinary medicine, with skill in navigating governmental processes and regulations.

Students in the Graduate Certificate in Regulatory Affairs in Animal Health will be able to 1) Demonstrate comprehensive understanding of the regulatory process and strategy for products approved by the FDA/EPA/USDA, 2) Identify the extent to which clinical research protocols establish the efficacy and safety of products compliant with regulatory guidelines for product development, and 3) Synthesize regulatory requirements with effective business practices while operating in a compliant manner. This certificate is offered by the School of Applied and Interdisciplinary Studies (Olathe Campus).

Required Courses (15 Credits)

- AAI 840 - Regulatory Aspects of Drug and Vaccine Development in the Animal Health Industry **Credits:** 2
- AAI 841 - Strategies in Pre-Clinical and Clinical Research for Regulatory Affairs in Animal Science **Credits:** 2
- AAI 842 - Strategies in the Stewardship of Licensed Pharmaceuticals and Biologics in Animal Health **Credits:** 1
- AAI 843 - Regulatory Development of Animal Pharmaceuticals - FDA **Credits:** 2
- AAI 844 - Regulatory Development of Animal Pesticides - EPA **Credits:** 2
- AAI 845 - Regulatory Development of Animal Biologicals and Diagnostics - USDA **Credits:** 2
- AAI 846 - Special Topics: Regulatory Affairs in Animal Health **Credits:** 1
- STAT 703 - Introduction to Statistical Methods for the Sciences **Credits:** 3

The courses for the certificate can be applied to other Master's programs such as the Professional Science Master's degree or the M.S. in Veterinary Biomedical Science, after a student is accepted to the Master's program.

Courses

AAI 795 - Topics in Applied and Interdisciplinary Studies

Credits: .5-6

Selected topics in applied and interdisciplinary studies.

Note:
100% Lecture

Typically Offered
Fall, Spring, Summer

AAI 801 - Interdisciplinary Process

Credits: 3

The overall goal of this course is for students to develop an understanding of and practice in interdisciplinary and multidisciplinary thinking, problem solving, and team based leadership, using models that allow interdisciplinary and cross-function teams to work together and to generate imaginative and creative solutions to complex challenges and problems.

Note:
100% Studio

Typically Offered
Fall, Spring

AAI 840 - Regulatory Aspects of Drug and Vaccine Development in the Animal Health Industry

Credits: 2

This course explores the topic of regulations associated with animal health product development and manufacturing. Topics for discussion will include an overview of the regulatory affairs process in the U.S. and other countries, drug and vaccine classifications and the approval process, GCP/GLP guidelines, drug and vaccine efficacy and safety testing, human and environmental safety issues, and future challenges and current industry needs.

Note:
100% Lecture

Typically Offered
Fall, Spring

AAI 841 - Strategies in Pre-Clinical and Clinical Research for Regulatory Affairs in Animal Science

Credits: 2

In this course, students will review the history of regulations as well as gain an understanding of the integration of science into successful product approval outcomes. Students will learn how to achieve target claims for developing new products while ensuring safety. Students will also be introduced to the planning, design, and conduct of preclinical and clinical studies. The topics covered include protocol design and the evaluation and assessment of regulatory submissions. The course will consider practical issues in regulatory affairs. Students may participate in case study exercises.

Typically Offered
Fall, Spring, Summer

AAI 842 - Strategies in the Stewardship of Licensed Pharmaceuticals and Biologics in Animal Health

Credits: 1

In this course, students will learn about the role of regulatory affairs in the stewardship of animal health products. The topics covered include expected activities primarily post product approval, compliance, strategies for supply management, product life cycle management, risk management, and the role of industry in policy development. Communication with various stakeholders, including regulatory agencies, research and development, manufacturing, and marketing and sales are covered. The course will consider practical issues in regulatory affairs. Students may participate in case study exercises.

Typically Offered
Fall, Spring, Summer

AAI 843 - Regulatory Development of Animal Pharmaceuticals - FDA

Credits: 2

In this course, students will focus on the regulatory strategies that support product development and

maintenance regulated by the Food and Drug Administration (FDA) Center for Veterinary Medicine (CVM). This includes product development strategies based on clinical and nonclinical data, key manufacturing and supply chain regulations, and post approval product life cycle management, including pharmacovigilance. Variances between food animal and non-food animal targets in developing regulatory strategies will be reviewed. Special topics, current topics and FDA enforcement actions will be covered.

Requisites:
Prerequisite: AAI 840, STAT 703

Typically Offered
Summer

AAI 844 - Regulatory Development of Animal Pesticides - EPA

Credits: 2

In this course, students will focus on the regulatory strategies for the development of products deemed to be regulated by the Environmental Protection Agency (EPA). This course will focus on product development strategies, manufacturing and supply chain regulations, and post marketing product life cycle management, including pharmacovigilance. Environmental laws and risk assessment will also be covered.

Requisites:
Prerequisite: AAI 840, STAT 703

Typically Offered
Fall

AAI 845 - Regulatory Development of Animal Biologicals and Diagnostics - USDA

Credits: 2

In this course, students will focus on the structure and detailed approach for developing animal biologicals and diagnostics regulated by the United States Department of Agriculture (USDA). Students will gain solid understanding of the critical pathway to successful product development, manufacturing, compliance, and product life cycle management, including post marketing surveillance. The course also addresses adapting new technology to emerging and re-emerging diseases.

Requisites:
Prerequisite: AAI 840, STAT 703

Typically Offered
Fall

AAI 846 - Special Topics: Regulatory Affairs in Animal Health

Credits: 1

This course will be used as the final culminating experience in the Animal Health Regulatory Affairs (AHRA) graduate certificate program, where it will require the completion of a final project that integrates learning following the completion of program courses.

Requisites:
Prerequisites: AAI 840, AAI 841, AAI 842, AAI 843, AAI 844, AAI 845, and STAT 703 or advisor approval.

Typically Offered
Fall, Spring, Summer

AAI 852 - Vaccinology

Credits: 3

This multidisciplinary course is designed to provide the student with an understanding of vaccine development (including technology) from conceptualization through development, testing, and utilization. This course will specifically cover topics on the principles of pathogenesis of infectious diseases, immune protection, and eliciting protective immunity by vaccination; application of traditional and new technologies to vaccine development; principles of pre-clinical development, manufacturing, and clinical evaluation of a vaccine; importance of the regulatory process to vaccine development; and utilization of epidemiology to measure vaccine need and effectiveness.

Typically Offered
Spring, Summer

AAI 858 - Capstone Experience I

Credits: 1

This course provides students the opportunity to synthesize and integrate knowledge in its application to professional practice. It is designed for students who intend to work in

an applied professional setting where they are expected to critically apply existing knowledge and methods to solve problems. Students will complete a project proposal on a topic of interest and related assignments, in consultation with the instructor.

Note:
100% Individual Instruction

Requisites:
Prerequisite: Only Professional Science Master's degree students may enroll in this course.

Typically Offered
Fall, Spring, Summer

AAI 859 - Capstone Experience II

Credits: 2

This course provides students the opportunity to synthesize and integrate knowledge in its application to professional practice. It is designed for students who intend to work in an applied professional setting where they are expected to critically apply existing knowledge and methods to solve problems. Students will produce written reports and oral presentations on their project of focus.

Note:
100% Individual Instruction

Requisites:
Prerequisite: AAI 858. Only Professional Science Master's degree students can enroll in AAI 859. Instructor approval is required.

Typically Offered
Fall, Spring, Summer

AAI 870 - Seminar in Applied and Interdisciplinary Studies

Credits: 1-6

Student presentations and discussion of current topics and recent findings in applied and interdisciplinary studies.

Note:
100% Seminar

Typically Offered
Fall, Spring, Summer

AAI 880 - Problems in Applied and Interdisciplinary Studies

Credits: 1-6

Opportunity for advanced independent study of a specific problem or technique in applied and interdisciplinary studies. Topics selected jointly by student and instructor.

Note:
10% Independent Study

Typically Offered
Fall, Spring, Summer

AAI 895 - Advanced Topics in Applied and Interdisciplinary Studies

Credits: 5-6

Focus on advanced topics in applied and interdisciplinary studies.

Note:
100% Lecture

Typically Offered
Fall, Spring, Summer

AAI 899 - Research in Applied and Interdisciplinary Studies.

Credits: 1-6

Research with a focus on applied science and interdisciplinary studies.

Note:
100% Research

Typically Offered
Fall, Spring, Summer

ACCTG 631 - Accounting Internship

Credits: 0-3

Provides a full semester of practical accounting experience prior to entering graduate accounting program.

Typically Offered
Fall, Spring, Summer

ACCTG 641 - Intermediate Accounting and Analytics III

Credits: 3

Builds on the second intermediate class. Enhances the understanding of investments, accounting for income taxes, pensions and post-retirement benefits, leases, accounting changes (including errors), the statement of cash flows, and disclosures. These topics will be enhanced using analytics.

Requisites:
Prerequisite: ACCTG 433.

Typically Offered
Fall, Spring

ACCTG 642 - Accounting Research and Communication

Credits: 3

Use of the sources of authoritative guidance in resolving complex, professionally oriented problems that include auditing, financial reporting, and tax reporting. Students analyze numerous unstructured cases and present their conclusion with written reports and oral presentations.

Note:
For accounting majors only.

Requisites:
Prerequisite: ACCTG 342, ACCTG 433, and ACCTG 442. Students may enroll concurrently with ACCTG 442.

Typically Offered
Fall, Spring, Summer

ACCTG 810 - Foundations of Accounting

Credits: 3

A study of business transactions, including identification of relevant economic events and how those events are recorded in financial statements, and a study of managerial accounting information for decision making, planning, and control.

Note:
Not open to Master of Accountancy students.

Requisites:
Prerequisite: MATH 205.

Typically Offered
Fall

ACCTG 811 - Advanced Financial Reporting

Credits: 3

An examination of the reporting requirements of large (often multinational) corporations, e.g., foreign currency translation, interim and segment reporting, and business combinations.

Requisites:
Prerequisite: ACCTG 433.

Typically Offered
Fall, Spring

ACCTG 831 - Fraud and Forensics

Credits: 3

This is a full semester course focused on the tools needed to conduct a fraud-sensitive audit or to conduct a fraud investigation. As a part of this course, the student will learn numerous techniques used by fraudsters to deceive their victims as they misappropriate resources. In addition, the student will learn how to investigate accusations or suspicions of fraud from the initial gathering of evidence to the ultimate resolution of the investigation which could include criminal and/or civil lawsuits. Such understandings are important to the practicing auditor. Given the recent scandals in financial reporting, the auditor needs to be alert to signals of fraud in order to discharge his or her responsibilities to the profession, client, and public.

Requisites:
Prerequisite: Must have graduate school status.

Typically Offered
Summer

ACCTG 832 - Advanced Auditing

Credits: 3

An in-depth exposure to authoritative auditing pronouncements and specialized topics, e.g., statistical methods, EDP auditing, internal auditing, operational auditing, and audit management.

Requisites:

Prerequisite: ACCTG 442 and ACCTG 642.

Typically Offered
Fall

ACCTG 833 - Corporate Taxation

Credits: 3

A study of the federal taxation of corporations with emphasis on tax planning.

Requisites:
Prerequisite: ACCTG 342 and ACCTG 642.

Typically Offered
Fall, Spring

ACCTG 834 - Partnership Taxation

Credits: 3

Intensive study of the federal taxation of partnerships.

Requisites:
Prerequisite: ACCTG 342 and ACCTG 642.

Typically Offered
Fall

ACCTG 835 - Advanced Management Accounting

Credits: 3

A study of traditional management accounting systems and their limitations with emphasis on newly developed systems.

Requisites:
Prerequisite: ACCTG 432.

Typically Offered
Spring

ACCTG 841 - Advanced Accounting Theory

Credits: 3

A critical examination of accounting theory with emphasis upon information economics, agency theory, and capital market information.

Requisites:
Prerequisite: ACCTG 641.

Typically Offered
On sufficient demand

ACCTG 842 - Advanced Topics in Taxation

Credits: 3

Intensive examination of selected topics in taxation.

Requisites:
Prerequisite: ACCTG 342 and ACCTG 642.

Typically Offered
On sufficient demand

ACCTG 843 - Management Accounting and Behavior

Credits: 3

An investigation of human behavior effects on the collection and use of management accounting information.

Requisites:
Prerequisite: ACCTG 432.

Typically Offered
On sufficient demand

ACCTG 844 - Design of Accounting and Business Information Processes

Credits: 3

This course focuses on understanding and designing contemporary business and information processes in organizations, providing an introduction to database systems, project management and information systems controls and technology.

Requisites:
Prerequisite: ACCTG 810, MANGT 830 and instructor permissions for MBA students or ACCTG 331 for Masters of Accountancy students or instructor permission.

Typically Offered
Fall

ACCTG 845 - International Accounting

Credits: 3

An examination of comparative international accounting systems, efforts to harmonize accounting standards internationally, problems of international financial analysis, accounting and tax issues of particular relevance to U.S. multinational enterprises.

Requisites:
Prerequisite: ACCTG 342 and ACCTG 641.

Typically Offered
On sufficient demand

ACCTG 846 - International and Multijurisdictional Taxation

Credits: 3

To explore the fundamental principles underpinning the US tax law with regard to multijurisdictional activity (international, interstate). At the conclusion of the course, students should be able to identify, analyze and evaluate the following: The theoretical basis of the U.S. approach to international taxation; the U.S. tax treatment of the foreign activity of U.S. citizens, residents and domestic corporations; the U.S. tax treatment of foreigners engaged in business or investment activity in the U.S.; the key issues surrounding state and local taxation.

Requisites:
Prerequisite: ACCTG 342.

Typically Offered
Spring, Summer

ACCTG 847 - Merger and Acquisition Taxation

Credits: 3

A study of the federal taxation of corporations, with an emphasis on tax planning related to mergers and acquisition.

Requisites:
Prerequisite: ACCTG 342 and ACCTG 642.

Typically Offered
Fall

ACCTG 852 - Accounting Research and Communication

Credits: 3

This is a team taught course that focuses on developing skills at the higher levels of Bloom's Taxonomy (analysis, synthesis and evaluation) to conduct technical research and communicate the results of that research in both oral and written forms.

Requisites:
Prerequisite: ACCTG 342 and ACCTG 443. May be taken currently with ACCTG 442.

Typically Offered
Fall, Spring, Summer

ACCTG 855 - Financial Statement Analysis and Business Valuation

Credits: 3

This course is about the analysis of financial information for making decisions to invest in businesses. The methods of fundamental analysis will be examined in detail and applied in cases and projects involving listed companies. Topics include models of shareholder value, a comparison of accrual accounting and discounted cash flow approaches to valuation, the analysis of profitability, growth and value generation in a firm, diagnosing accounting quality, forecasting earnings and cash flows, pro-forma analysis for strategy and planning, and the determination of price/earnings (P/E) and market-to-book (P/B) ratios.

Requisites:
Prerequisite: Must have graduate school status.

Typically Offered
Fall, Spring, Summer

ACCTG 856 - Accounting Analytics

Credits: 3

This course will develop in-depth knowledge of the use of Microsoft Excel and other technology to analyze complex accounting information. The course will focus on using large volume data sets to simulate real world analytical problem solving.

Requisites:
Prerequisite: Must have graduate school status.

Typically Offered
Spring, Summer

ACCTG 857 - Accounting for Not-For-Profit Entities

Credits: 3

An introduction to the source of authoritative guidance, rules and regulations that govern current reporting to external entities by not-for-profit entities.

Requisites:
Prerequisite: ACCTG 641.

Typically Offered
Summer

ACCTG 860 - Management Accounting and Business Problem Solving

Credits: 3

A study of managerial accounting information for decision making, planning, and control.

Note:
Not open to Master of Accountancy students.

Requisites:
Prerequisite: ACCTG 810, ECON 815, FINAN 815, MANGT 810, MANGT 820, MANGT 830, MKTG 810 and STAT 702.

Typically Offered
Fall

ACCTG 870 - Problems in Accounting

Credits: 3

An in-depth study of specified topics in accounting.

Requisites:
Prerequisite: Consent of instructor and department head.

Typically Offered
On sufficient demand

ACCTG 884 - Enterprise Information Systems Assurance

Credits: 3

This course focuses on types of assurance available in an enterprise-wide information systems environment and methods for providing assurance from the view of management, external auditors and consultants. Assurance topics discussed include assurances related to systems security, fraud, business and information process integrity, and operational efficiency. Focus is on designing systems to increase the level of inherent assurance as well as auditability. This course also includes a service learning component.

Requisites:
Prerequisite: ACCTG 810, MANGT 830 for MBA students or ACCTG 331 for Masters of Accountancy students or instructor permission.

Typically Offered
Spring

ACCTG 890 - Seminars in Professional Accounting

Credits: 1-3

Master of Accountancy students are required to take this seminar course during two regular semesters (Fall and Spring). The course will cover current topics relevant to Professional Accountants in both public and private practice. Seminars are designed to improve students technical accounting knowledge and professional skills and abilities. Seminars will be led by a variety of faculty and practicing accountants. As part of the class, students will be expected to complete written and oral assignments and may be assessed on their technical, oral, written, critical thinking, interpersonal and other skills.

Note:
Students should enroll for one credit hour in the first semester they complete the seminar and two credit hours during the second semester they complete the seminar.

Typically Offered
Fall, Spring

ACCTG 895 - Accounting Internship

Credits: 3

This course provides an opportunity for students to experience firsthand the work performed by typical accountants on a day to day basis.

Requisites:
Prerequisite: Must have graduate school status.

Typically Offered
Fall, Spring, Summer

ACCTG 896 - Accounting International Experience

Credits: 3

Students will experience a faculty supervised travel abroad experience that will expose them to international issues related to accounting and general business.

Requisites:
Prerequisite: Must have graduate school status.

Typically Offered
On sufficient demand

AFRI 501 - Seminar I

Credits: 3

Economics of Poverty and Wealth Creation in Africa (social science component). Explores opportunities for breaking the cycle of poverty across the continent using strategic wealth creation techniques that overcome poverty. Focusing on the agriculture and food system, the environment and natural resources, and the health of the African people.

Typically Offered
Fall

AFRI 502 - Seminar II

Credits: 3

African Development. Introduction to current political and economic conditions facing Africa from historical, social, economic, political, and human context. Solutions to the current problems confronting the African continent are analyzed.

Typically Offered
Spring

AGCOM 550 - Internship in Agricultural Communications

Credits: 1-3

The intern works in a professional capacity in areas such as print journalism, electronic media, advertising, photography, and public relations. Student is supervised by a professional and a faculty member. One hour of credit for each four weeks of supervised work. Internship report and presentation required.

Requisites:
Prerequisite: AGCOM 300 AND instructor permission.

Typically Offered
Fall, Spring, Summer

AGCOM 590 - New Media Technology

Credits: 3

This course focuses on the study and application of emerging "new media" technologies to effectively communicate information and market products and programs to general and targeted audiences. Students will study underlying communication theories such as Roger's Theory of Innovation Diffusion to provide a context of how society adopts and incorporates new technology.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: Junior standing AND AGCOM 110 or concurrent enrollment.

Typically Offered
Fall

AGCOM 600 - Capstone Seminar in Agricultural Communications

Credits: 3

A capstone experience and project for agricultural communications and journalism students. Includes analysis

of trends and issues in the field and discussion of communications planning.

Note:
Three hours lecture a week

Requisites:
AGCOM 310, AGCOM 435, and AGCOM 590

Typically Offered
Spring

AGCOM 610 - Crisis Communication

Credits: 3

Focus is placed on the application of effective crisis communication practices and techniques. Students will learn relevant interpersonal and organizational communication theory, assess/evaluate organizational risks, and develop a crisis communication plan. Students will partner with a community business to create and deliver a comprehensive crisis communication plan.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: Junior standing AND AGCOM 110 OR Concurrent Enrollment OR instructor permission.

Typically Offered
Spring

AGCOM 635 - Advanced Multimedia Production in Agriculture and Food

Credits: 3

Provides an understanding and application of advanced digital media production techniques. This is a "practicum-based" course focused on creating multimedia products for educational purposes. Students will create short-format, multi-media pieces on both agricultural research and activities conducted at Kansas State University and the Kansas agriculture industry.

Requisites:
Prerequisite: AGCOM 435 or MC 301 and Instructor permission.

Typically Offered
Fall, Spring

AGCOM 650 - Study Experience in Agricultural Communications and Journalism

Credits: 3

Seminar and travel course to prepare students before and after the experience and for students to analyze, critique and report their experiences associated with study tours and short courses.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor permission

Typically Offered
Fall, Spring, Summer

AGCOM 712 - Environmental Communication

Credits: 3

Combines theoretical discussions with practical experience regarding communication about environmental issues and provides introduction to natural and applied science topics related to the communications plan.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: Senior standing.

Typically Offered
Spring

Crosslisted:
MC 712

AGCOM 786 - Topics in Agricultural Communications

Credits: 1-3

Examination of current topics in agricultural communications.

Note:
Varied specialized topics will be offered so course may be repeated.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

AGCOM 810 - Scientific Communication

Credits: 3

Written, visual, and oral communications for scientists. Attention is focused on literature reviews, scientific papers, graphics, poster presentations, and oral paper presentations. Grant applications, ethics, and communications with non-science audience are discussed.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: Graduate standing and instructor permission.

Typically Offered
Fall

AGCOM 814 - Graduate Studies in Leadership Communication

Credits: 3

This course examines the intersections of community-engaged scholarship and leadership through practices of relationship, story, strategy, and action. Students are introduced to resources and opportunities for pursuing public engagement, community-engaged scholarship, and successful program completion.

Typically Offered
Fall, Spring

Crosslisted:
COMM 814, LEAD 814

AGCOM 815 - Seminar in Leadership Communication

Credits: 1

This seminar provides doctoral students opportunities for collaboration and mentorship with peers, faculty, and visiting scholars, and exploration of career pathways in public engagement.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

Crosslisted:
COMM 815, LEAD 815

AGCOM 820 - Communicating Ethical Issues in Agriculture

Credits: 3

This course provides an introduction to communicating ethical theories in the context of agriculture. Ethical theory and current research are used to critique contemporary issues in agriculture.

Note:
Three hours of lecture a week.

Typically Offered
Spring

AGCOM 830 - New Media Technology

Credits: 3

This course focuses on the study and application of emerging "new media" technologies to effectively communicate information and market products and programs to general and targeted audiences. Students will study underlying communication theories such as Roger's Theory of Innovation Diffusion to provide a context of how society adopts and incorporates new technology.

Typically Offered
Fall

AGCOM 840 - Diffusion of Innovations

Credits: 3

This course introduces a structured approach for dealing with the organizational and human aspects of technology transition, including the key concepts of resistance and change management, organizational change, communications, and processes by which professional change agents influence the introductions, adoption, and diffusion of technological change.

Note:
Great Plains Ag*IDEA Course Delivery.

Typically Offered
Fall, Spring, Summer

AGCOM 844 - Theory in Agricultural Communications

Credits: 3

The study of major communication theories and theorists in the context of agricultural communications.

Typically Offered
Fall

AGCOM 845 - Approaches to Public/Community Engagement

Credits: 3

The course will provide students a survey of key concepts and theoretical frameworks associated with deliberative democracy and public engagement. A specific focus will be given to how forms of community-engaged scholarship intersect course content in both theory and practice.

Typically Offered
Fall, Spring

Crosslisted:
COMM 845, LEAD 845

AGCOM 850 - Knowledge Management in Agriculture and Natural Resources

Credits: 3

Knowledge Management is a discipline that takes a comprehensive, systematic approach to the information assets of an organization by identifying, capturing, collecting, organizing, indexing, storing, integrating, retrieving and sharing them. This strategy turns an agricultural and natural organization's intellectual assets into greater productivity and increased competitiveness. It encourages collaboration for the sharing of expertise and knowledge of the best practices. This course examines knowledge management as it is emerging and being applied in agriculture and natural resources.

Typically Offered
Spring

AGCOM 890 - Master's Project

Credits: 1-2

The project is designed for students to complete a practitioner-based scholarly project that integrates theory, research and application in relationship to a current need or issue approved by the student's supervisory committee. While research is included in this project, the focus will be on demonstrating an ability to apply the knowledge and skills learned within the context of a for-profit or not-for-profit enterprise, school, community, organization or policy process.

Typically Offered
Fall, Spring, Summer

AGCOM 899 - Master's Thesis

Credits: 1-6

Students investigate an academic problem in their chosen area of interest and document this investigation in a thesis. The investigation integrates and applies knowledge from courses in the program to address unstructured problems. The thesis is a practice in applying scientific criteria on a problem or topic approved by the student's supervisory committee and also is practice in applying scientific methods.

Typically Offered
Fall, Spring, Summer

AGCOM 916 - Communication Theories and Engagement

Credits: 3

Focusing on the intersections of communication theory and engagement, this course reviews the paradigmatic evolution of communication theories as they relate to culture, organizations, leadership, social influence, emerging media technologies and other pertinent areas. Additionally, students will be exposed to philosophical and theoretical work pertaining to community engaged research.

Typically Offered
Fall, Spring

Crosslisted:
COMM 916, LEAD 916

AGCOM 945 - Social Science Research for Public Problem Solving

Credits: 3

This course is a rigorous and applied exploration of the fundamentals of social science research, social sector evaluation, and knowledge mobilization.

Typically Offered
Fall, Spring

Crosslisted:
COMM 945, LEAD 945

AGCOM 999 - Research in Leadership Communication

Credits: 1-15

Doctoral research demonstrates the candidate's ability to conduct significant original research related to leadership and communication, to analyze the information obtained from the research, and to present the results in a dissertation format appropriate to the field.

Typically Offered
Fall, Spring, Summer

Crosslisted:
COMM 999, LEAD 999

AGEC 500 - Production Economics

Credits: 3

Application of economic principles to problems of agricultural production. Analysis of consumer demand for agricultural products and input and output decisions of the agricultural firm. AGEC 505 is a continuation of this course and they are intended to be taken in consecutive semesters.

Note:
Three hours of recitation a week.

Requisites:
Prerequisite: AGEC 120 or AGEC 121 or ECON 120 and MATH 205.
Rec Prerequisite: AGEC 115.

Typically Offered
Fall, Spring

AGEC 501 - Data Analysis and Optimization

Credits: 3

Analysis of agricultural business and economic data and optimization for decision making. Study applications of regression, time series analysis and forecasting to agricultural and economic data. Introduction to mathematical programming to model optimization of problems commonly encountered in agricultural economics.

Note:
Three hours recitation per week.

Requisites:
Prerequisite: AGEC 115 or AGEC 490, AGEC 120 or AGEC 121 or ECON 120, MATH 205, STAT 350.

Typically Offered
Fall, Spring

AGEC 505 - Agricultural Market Structures

Credits: 3

Theory and application of economic principles to marketing problems in agriculture. Pricing of agricultural output and productive services under various forms of economic organization and competition; regional specialization, location, and trade; determinants of economic change; evaluation of economic and consumer welfare.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Prerequisite: AGEC 120 or AGEC 121 or ECON 120 and MATH 205 and AGEC 500.
Rec Prerequisite: AGEC 115.

Typically Offered
Fall, Spring

AGEC 513 - Agricultural Finance

Credits: 3

Analysis of capital investments, interpretation of financial statements, capital structure considerations for agricultural firms, and farm real estate pricing.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: AGEC 308 or AGEC 318 and ACCTG 231. Recommended Prerequisite: AGEC 115.

Typically Offered
Fall, Spring

AGEC 515 - Food and Agribusiness Marketing

Credits: 3

A broad view of marketing; food markets and consumption; marketing functions and institutions; prices, competition, and marketing costs; functional and organizational issues; food marketing regulations; commodity marketing.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: AGEC 120 or ECON 120.

Typically Offered
Fall, Spring

AGEC 516 - Agricultural Law and Economics

Credits: 3

The legal framework for decision making by farm firms, families, and individuals; liabilities, real and personal property, contracts, uniform commercial code, organization of farm firms, intergeneration property transfers, water law, fence law, federal and state regulatory power, insurance, income tax, and social sercurity.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECON 110 or AGEC 120 or ECON 120 and junior standing.

Typically Offered
Spring

AGEC 520 - Market Fundamentals and Futures/Options Trading

Credits: 3

This is an experiential course in the trading of commodity futures and options. Attention is focused on the study of market price determination, the implications of market efficiency notions, and on actual trading of futures and options. Students invest in a commodity educational trading fund. Class approves recommendations by vote, orders are placed with a broker, and the class monitors open trades. The pool balance at the end of the semester is redistributed to students.

Requisites:
Prerequisite: AGEC 420.

Typically Offered
Fall, Spring

AGEC 525 - Natural Resource And Economics

Credits: 3

Emphasis on the application of demand, supply, and price concepts in the study of natural resource use, policies, and management. Interdependence between environmental quality and economic actions are examined through discussion of property rights, economic incentives, externalities, and economic components of environmental policies.

Requisites:
Prerequisite: AGEC 120 or ECON 120 or ECON 110 and junior. Recommended Prerequisite: AGEC 120 or ECON 120.

Typically Offered
Fall

AGEC 535 - Agricultural Sales

Credits: 3

Agricultural Sales will introduce students to the role of sales and sales management in the agricultural industry.

Requisites:
AGEC 120 or ECON 120 or AGEC 121 or ECON 110.

Typically Offered
Fall, Spring

AGEC 541 - Agricultural Economics and Agribusiness Seminar

Credits: 0-18

Seminars of special interest will be offered upon sufficient demand in selected areas relating to agricultural economics and agribusiness.

AGEC 560 - Data Analytical for Agricultural Economics

Credits: 3

Advanced collection and applied analysis of agricultural business and economics data for decision making. Applied communication of results and implications.

Requisites:
AGEC 501

Students who have not completed AGEC 501 may secure instructor consent if they can verify a working knowledge of regression.

Typically Offered
Fall, Spring

AGEC 570 - Food Manufacturing, Distribution, and Retailing Economics

Credits: 3

Advanced study of the economic and business aspects of the food industry from processing to distribution to retailing. Emerging trends in nutrition, food consumption, food safety and supply chain arrangements along with management and marketing issues in the food industry will be studied.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: AGEC 318 or MANGT 420.

Typically Offered
Spring

AGEC 598 - Farm Management Strategies

Credits: 3

A study of management concepts, tools, and decision strategies applied to farm firms. Alternative measures of farm business performances, as well as planning and evaluation techniques for an uncertain environment, are examined.

Requisites:
Prerequisite: AGEC 308, AGEC 500 and AGEC 513 or FINAN 450.

Typically Offered
Fall

AGEC 599 - Food and Agribusiness Management Strategies

Credits: 3

This course integrates the risk, production, marketing, and financial management strategies of agribusiness firms. Special attention is given to the application of economic theory and quantitative analysis to business decision-making processes. In addition to case studies, a variety of analytical techniques will focus on both markets and firms involved in the production and marketing of food commodities.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: AGEC 318, AGEC 500, and either AGEC 513 or FINAN 450. Recommended Prerequisite: AGEC 515.

Typically Offered
Spring

AGEC 605 - Price Analysis and Forecasting

Credits: 3

The analysis of selected agricultural prices; application of regression analysis to price analysis, the role of futures markets and market efficiency, optimal hedging strategies, commodity option pricing, and price forecasting.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: a course in statistics; AGEC 501; AGEC 505 or ECON 520.

Typically Offered
Spring

AGEC 610 - Current Agriculture and Natural Resource Policy Issues

Credits: 3

Current issues in agricultural and natural resource policy from divergent perspectives. Classroom discussion, debate, writing assignments, and student presentations. Current events are analyzed and synthesized from both economic and noneconomic perspectives. Topics may include environmental issues, international agricultural development, the politics of farm programs, and the relationship between technology, agriculture, and society.

Requisites:
Prerequisite: AGEC 505 and either AGEC 525 or AGEC 410.

Typically Offered
Spring

AGEC 615 - Global Agricultural and Economic Development

Credits: 3

This course covers contemporary challenges in global development, with an emphasis on agriculutral issues. Students will analyze problems using economic models, and develop empirical skills by learning key data collection concepts and working with survey data. Topics include poverty, technology adoption, agricultural policy, health, and program evaluation.

Note:
Three hrs lec per week.

Requisites:
Prerequisite: AGEC 315 and AGEC 500.
Prerequisite or Co-requisite: AGEC 501

Typically Offered
Fall

AGEC 623 - International Agricultural Trade

Credits: 3

Applied economics of agricultural trade. Emphasis on why trade occurs, current agricultural trade patterns, the effects of agricultural policy on trade, and the institutions of trade.

Requisites:
Prerequisite: AGEC 505.

Typically Offered
Fall

AGEC 632 - Agribusiness Logistics

Credits: 3

Planning for efficient use of transportation, storage and processing facilities in the handling of raw materials and products for agribusiness firms, controlling shipments and inventory in coordination with warehouse and handling operations, and scientific selection of routes, schedules, and equipment.

Requisites:
Prerequisite: AGEC 120 or ECON 120 and junior standing.

Typically Offered
Fall

AGEC 641 - Agricultural Economics and Agribusiness Seminar

Credits: 1-18

Seminars of special interest will be offered upon sufficient demand in selected areas relating to agricultural economics and agribusinesses.

Requisites:
Prerequisite: Junior standing and instructor permission.

AGEC 680 - Risk Management

Credits: 3

Analytical concepts and quantitative tools to make better decisions in risky situations. Identifying various types of risk an operation faces, measuring the degree of risk, and exploring ways to manage risk. Includes portfolio analysis, futures and options, contracting, and insurance. Emphasis

on computer applications. Topics are focused on agriculture but are applicable to other industries and household decisions.

Requisites:
Prerequisite: AGEC 420, AGEC 513 or FINAN 450, and a course in statistics.

Typically Offered
Spring

AGEC 700 - Applied Agribusiness Economics

Credits: 3

Applications of economic principles to problems of agricultural production and agribusinesses. Demand theory and economic forecasting will be used to examine changes in demand and business trends. Cost minimization and profit maximization will be used to examine firm and market issues.

Requisites:
Prerequisite: MATH 100, ECON 120 or AGEC 120.

Typically Offered
Summer

AGEC 701 - Introduction to Computer Decision Tools for Agribusiness

Credits: 1

Development of decision tools for agribusiness using spreadsheets. Topics include internet as a data source, budget development and analysis, financial calculations, regression, search techniques, and optimization.

Requisites:
Prerequisite: CIS 110.

Typically Offered
Spring

AGEC 710 - Comparative Food and Agriculture Systems

Credits: 3

This course provides a comparative analysis of the business and economic situation of the food and agriculture sector around the world. The course will cover the European Union, the Former Soviet Union, MERCORSUR, and Southeast Asia, Oceania and possibly other regions. The course will focus briefly on the historical development, the current situation, and the future outlook of the food and agriculture sector. Upon completion of this course, students will be able to evaluate the comparative advantage of the United States in the production of food and fiber.

Requisites:
Prerequisite: AGEC 120 or AGEC121 or ECON 120.

Typically Offered
Spring, Summer

AGEC 712 - Optimization Techniques for Agricultural Economics

Credits: 3

Application of optimization techniques including linear programming and nonlinear programming for research and decision analysis in agricultural economics.

Requisites:
Prerequisite: AGEC 500 and AGEC 501, or graduate standing.

Typically Offered
Spring

AGEC 713 - Agribusiness Financial Management

Credits: 3

This course covers financial management, long-term investment analysis, the performance of alternative investments, and the theory of efficient markets. Topics covered include comparative financial analysis, short-term budgeting, and capital budgeting. Applications include agribusiness decision making and project analysis.

Requisites:
Prerequisite: ACCTG 231, AGEC 513.

Typically Offered
Spring

AGEC 720 - Agribusiness Risk Management

Credits: 3

Various forms of risk inherent to firms operating in agricultural and food product markets are explored. Risk management techniques including diversification, insurance, forward contracting, hedging and options are examined through applied problems with the use of simulation. Emphasis is placed on managing risk associated with input prices, output prices, enterprise organization and financial instruments.

Requisites:
Prerequisite: AGEC 713 and AGEC 761.

Typically Offered
Fall

AGEC 730 - Applied Agribusiness Logistics

Credits: 3

A study of agribusiness logistics and the fundamental concepts underpinning logistical decisions and their impact on a firm's sustainability. Topics include supply chain management, transportation and storage, contracting and out sourcing, strategic logistic planning, network analysis, and B2B e-commerce in food and agriculture. Focus will be on agribusiness logistics issues in grain and grain-based food supply chains and in the livestock and meat supply chains, including global logistics.

Requisites:
Prerequisite: AGEC 120 or ECON 120, and AGEC 505.

Typically Offered
Spring

AGEC 735 - Sales and Marketing in the Global Animal Health Industry

Credits: 3

This course is designed to introduce students to marketing and sales in the complex world of animal health industry. Understanding product life cycles; product development; forecasting; planning; positioning and branding; as well as promotion and compliance. Markets addressed include business to business food animal markets and companion animal consumer markets.

Typically Offered
Summer

AGEC 740 - Seminar in Agricultural Economics Analysis

Credits: 0-18

Seminar on methods of economic analysis will be offered upon sufficient demand.

Requisites:
Prerequisite: Consent of instructor.

AGEC 750 - Agricultural Economics and Agribusiness Problems

Credits: 1-18

Requisites:
Prerequisite: Junior standing and consent of the instructor.

Typically Offered
Fall, Spring, Summer

AGEC 751 - Risk Management Fellows Seminar

Credits: 1

This course serves as The Center for Risk Management Education and Research Student Fellows seminar course. Students will conduct a risk management research project.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Junior standing, admitted to the Risk Management Fellows Program, and consent of the instructor.

Typically Offered
Fall, Spring, Summer

AGEC 760 - Applied Econometric Analysis

Credits: 3

Use of econometrics to enhance agribusiness decision making is the focus. Concepts of simple and multiple regression and limited dependent variable models are presented. Econometric issues of functional form, relevant variables, predictive performance, and model diagnostics will be examined. Numerous applications of techniques to

agribusiness problems are used.

Requisites:
Prerequisite: STAT 325 and AGEC 701.

Typically Offered
Spring

AGEC 761 - Optimization Techniques for Agribusiness

Credits: 2

This course is an introduction to optimization techniques designed to provide quantitative support for agribusiness decision making. Upon completion of this course, students will be able to construct and evaluate optimization models useful for evaluating linear problems, integer problems, and nonlinear program.

Requisites:
Prerequisite: STAT 325 and AGEC 701.

Typically Offered
Fall

AGEC 770 - International Agribusiness and Policy Analysis

Credits: 3

Policies affecting agribusiness firms will be examined. These topics may include U.S. agricultural policies, fiscal and monetary policies, international trade agreements, environmental issues, and current policies influencing agribusiness firms.

Requisites:
Prerequisite: ECON 110 and AGEC 701.

Typically Offered
Fall

AGEC 780 - Economics of the Global Animal Health Industry

Credits: 3

Economic Issues in the Global Animal Health Industry (AGEC 780) provides a forum to study the economics and business challenges and opportunities confronting the animal health industry. Policy issues in the various significant animal sectors are examined to provide tools to develop the appropriate responses to ensure sustainable superior performance.

Typically Offered
Summer

AGEC 805 - Agricultural Marketing

Credits: 3

The study of the demand for supply of agricultural commodities, alternative market structures, the dynamics of marketing institutions that affect market structures, governmental intervention in agricultural markets, futures markets in agriculture, and international agricultural commodities trade.

Requisites:
Prerequisite: AGEC 505 or ECON 520.

Typically Offered
Spring

AGEC 810 - Price, Income and Trade Policies in Agriculture

Credits: 3

This course examines the effects of agricultural policies on the welfare of society and the distribution of benefits and costs within the global market. Modern tools are developed to examine the causes and consequences of policies.

Requisites:
Prerequisite: AGEC 500 or ECON 520, ECON 510.

Typically Offered
Spring

AGEC 812 - Advanced Farm Economics

Credits: 3

A study of managerial techniques and processes applied to farm firms involved in production and marketing of agricultural products. This study includes managerial planning, evaluation, and control of farm businesses.

Note:
Three hours recitation a week.

Requisites:

Prerequisite: AGEC 308.

Typically Offered
Fall

AGEC 815 - International Agricultural Development

Credits: 3

To study the principles of economic development when applied to the development of the agricultural sector. This includes the examination of national and international strategies and policies that inhibit and/or encourage the development of the agricultural sectors in low income countries. Individual study is encouraged to meet student interest: (a) in understanding the process and including an appreciation of the interdependence between low and high income countries and (b) receiving an introduction to agricultural project analysis.

Requisites:
Prerequisite: AGEC 500 or ECON 520.

Typically Offered
Spring-Even Years

AGEC 823 - Production Economics II

Credits: 3

Economic theories of choice under conditions of imperfect knowledge (i.e. under risk and uncertainty) and the application of these theories to production decisions.

Requisites:
Prerequisite: AGEC 500 or consent of instructor.

Typically Offered
Fall

AGEC 825 - Natural Resource Policy

Credits: 3

The economic tolls of welfare analysis, non-market valuation, and dynamics are used to evaluate natural resource use, natural resource policies, and conflicts among users, conservationists, and preservationists.

Requisites:
Prerequisite: AGEC 505 or ECON 520; and MATH 205.

Typically Offered
Fall

AGEC 840 - International Markets and Agricultural Trade

Credits: 3

International Markets and Agricultural Trade bridges the fundamental concepts of international trade with the practical analysis of trade policies. The course seeks to develop a solid foundation for future practitioners at industry or public institutions and for those who will undertake more in-depth empirical research involving trade issues.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECON 720.

Typically Offered
Fall

AGEC 880 - Agribusiness Industry Structures

Credits: 3

Applied industrial organization and competitive relationships in agriculture markets. Emphasis on the role of bargaining power, vertical coordination and integration, contracting, and other forms of vertical control. Product differentiation, branding and advertising of commodities and anti-trust laws.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECON 720, ECON 830 (or concurrent enrollment).

Typically Offered
Spring

AGEC 890 - Advanced Food and Agribusiness Management

Credits: 3

The objective of the course is to demonstrate how

economic concepts underscore strategic management principles. Applications to food and agribusiness firms are used to show how managers and firms function when the assumptions of perfect competition are relaxed. Students will complete a market analysis study as part of the course requirements.

Requisites:
Prerequisite: AGEC 599.

Typically Offered
Fall

AGEC 898 - Agricultural Economics Master's Report

Credits: 1-18

Master's report.

Typically Offered
Fall, Spring, Summer

AGEC 899 - Agricultural Economics Master's Research

Credits: 1-18

Research for master's thesis.

Typically Offered
Fall, Spring, Summer

AGEC 901 - Research Methods in Economics

Credits: 3

A study of scientific methodology in economic research including the history of various debates regarding methodology in economics. The course also deals with problem definitions, formulation of hypotheses, listing of hypotheses, and presentation of research results.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring

AGEC 905 - Agricultural Demand and Commodity Marketing

Credits: 3

A study of the demand for and supply of farm products, price information and markets, the causes of price variations and instability, the dynamic analysis of agricultural prices.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: AGEC 805, ECON 930, ECON 945.

Typically Offered
Spring

AGEC 922 - Seminar in Agricultural Marketing

Credits: 0-18

Analysis of special problems and current developments faced by firms and agencies associated with the marketing process for agricultural products

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

AGEC 923 - Economics of Agricultural Production

Credits: 3

A study of agricultural production response to prices; methods of estimating supply response and price expectations; the effects of government and institutions on agricultural supply and the role of risk, technical change, and the number and size of farms on agricultural supply.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECON 830, AGEC 823, ECON 945.

Typically Offered
Fall

AGEC 925 - Advanced Resource and Environmental Economics

Credits: 3

Dynamics analysis of natural resource and environmental problems, including the optimal extraction of nonrenewable resources, optimal management of renewable resources, and the optimal regulation of stock pollutants.

Note:
Three hour recitation a week.

Requisites:
Prerequisite: ECON 905, ECON 945.

Typically Offered
Spring

AGEC 936 - Quantitative Topics in Agricultural Economics

Credits: 3

A study of recent developments reported in the literature concerning quantitative methods of analysis in agricultural economics and economics. The study will include assigned projects to apply selected techniques of analysis.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECON 930.

Typically Offered
Spring

AGEC 940 - Seminar in Agricultural Economics

Credits: 1-18

Problems and current developments in agricultural economics.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

AGEC 955 - Independent Study of Advanced Topics in Agricultural Economics

Credits: 1-18

Advanced independent study of an agricultural economics topic based upon a student proposal approved by the student's supervisory committee

Requisites:
Prerequisite: Completion of 24 credits of graduate study.

Typically Offered
Fall, Spring, Summer

AGEC 999 - Agricultural Economics PhD Research

Credits: 1-18

Research for Ph.D. Dissertation.

Typically Offered
Fall, Spring, Summer

AGED 500 - Methods of Teaching Agriculture in the Secondary and Middle Schools

Credits: 3

Principles of teaching applied to content area instruction in the secondary and middle schools; motivation; organization of subject matter; lesson planning; evaluation and reporting; challenging the levels of ability; organization and management of the classroom; methodology and materials of the secondary schools.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320. Concurrent enrollment required for EDSEC 455, EDSEC 477, AGED 520, AGED 600, and EDCEP 525.

Typically Offered
Fall

AGED 505 - Field Experience in Agricultural Education

Credits: 1

A course for prospective teachers to help bridge the gap between classroom theory and student teaching. Emphasis

will be on observation of and participation in school and community organizations and programs.

Requisites:
Prerequisite: AGED 300 or concurrent enrollment.

Typically Offered
Fall, Spring

AGED 520 - Block II Lab: Content Area Methods and Field Experience

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate agricultural education lessons within a placement at the middle or secondary level., This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320. Conc. enrollment required for EDSEC 455, EDSEC 477, AGED 500 and EDCEP 525.

Typically Offered
Fall

AGED 533 - Educating the Public about Agriculture

Credits: 3

Organization and preparation of materials and methods used in educating public audiences about agriculture through non-formal settings, businesses, and extension disciplines.

Requisites:
Prerequisite: EDSEC 620.

Typically Offered
On sufficient demand

AGED 537 - Planning Programs in Extension & Non-Formal Education

Credits: 3

Principles and procedures used in planning and conducting Extension programs. Including workshops, trainings and 4-H programing.

Typically Offered
Fall or Spring

AGED 600 - Senior Seminar in Agricultural Education

Credits: 1

Discussion and application of Block II learning outcomes in the student to professional educator transition. Topics will include professional development, licensure, professional opportunities and the community of Agricultural and Extension Education.

Requisites:
Prerequisite: AGED 500 - Methods of Teaching Agriculture in the Secondary and Middle Schools.

AGED 615 - Laboratory Instructional Techniques in Teaching AgriScience

Credits: 3

Provides knowledge and skills to design, organize, and conduct programs in agriscience instruction in secondary agricultural education. Experiences in lab planning, safety and student management.

Repeat for Credit
Repeatable

Typically Offered
Fall, Summer

AGED 620 - Principles and Philosophy in Agriculture and Career and Technical Education

Credits: 2

Principles of career and technical education in Kansas and other states and countries; principles and philosophy underlying such education, relation of career and technical education to school objectives and community, state, and national needs.

Typically Offered
Fall, Summer

Crosslisted:
EDSEC 620

AGED 621 - Program Planning in Agricultural Education

Credits: 3

The program development and planning process; development of guides for teaching and evaluating reimbursable secondary programs.

Requisites:
Prerequisite: Agricultural Education majors only.

Typically Offered
Fall

AGED 625 - Inquiry-Based Curriculum in Agricultural STEM and Biotechnology Education

Credits: 2

Provides students with knowledge of inquiry-based techniques related to STEM and Biotechnology in the context of Agriculture. Students will experience activities, labs, and projects developed for inclusion in secondary agriculture classrooms. The learning environment will be grounded in specific agricultural content area, offered on a rotational basis (ex.comprehensive agriculture, animal systems, plant systems, ag power and technology, etc).

Requisites:
Prerequisite: Agricultural Education majors only.

Typically Offered
Fall

AGED 630 - Exploration of Global Agricultural Education

Credits: 3

Education Abroad for the exploration of the agriculture industry and agricultural education system in an international location.Taken in tandem with an international trip.Taken in tandem with an international trip.

Typically Offered
Spring, Summer

AGED 704 - Extension Organization and Programs

Credits: 3

Development and objectives of Cooperative Extension and other university adult education programs; with emphasis on programs and procedures.

Requisites:
Prerequisite: Senior standing.

Typically Offered
On sufficient demand

AGED 705 - Organization Problems in Teaching Agricultural Mechanics

Credits: 2-3

Analysis of the agricultural mechanics course of study; needs and interests of students; learning difficulties; skills and technical knowledge required; correlation with agriculture; application of laws of learning to the teaching process; determination of objectives.

Requisites:
Prerequisite: EDSEC 586.

Typically Offered
On sufficient demand

AGED 706 - Principles of Teaching Adults in Extension

Credits: 3

Methods and principles of adult teaching with emphasis on Cooperative Extension Service; application to various adult education programs.

Requisites:
Prerequisite: Senior standing.

Typically Offered
On sufficient demand

AGED 734 - Practicum in Agriculture-Related Occupations

Credits: 1-6

Related occupational or professional experiences in approved industry, school, Cooperative Extension Service, or similar agency setting under faculty supervision.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

AGED 736 - Practicum in Extension Education

Credits: 1-6

Related occupational or professional experiences in approved industry, school, Cooperative Extension Service, or similar agency setting under faculty supervision.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

AGED 786 - Topics in Agricultural Education

Credits: 1-3

Examination of current topics in agricultural education.

Note:
Varied specialized topics will be offered so course may be repeated.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

AGED 790 - Agricultural Education Methods and Practicum for Teaching and Learning

Credits: 3

Principles of teaching applied to agriculture education instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Requisites:
Must be enrolled in Graduate Certificate for Teaching and Learning or Master of Arts in Teaching

Typically Offered
Fall

AGED 797 - Agricultural Education Colloquium I

Credits: 2

This course explores key concepts within the field of Agricultural Education. Focus will be on advancing the development of disciplinary content knowledge and pedagogical content knowledge.

Requisites:
Enrolled in the Master of Arts in Teaching

Typically Offered
Summer

AGED 798 - Agricultural Education Colloquium II

Credits: 2

This course explores additional key concepts within the field of Agricultural Education. Focus will be on advancing the development of disciplinary content knowledge and pedagogical content knowledge.

Requisites:
Enrollment in the Master of Arts in Teaching. Prerequisite: AGED 797.

Typically Offered
Fall

AGED 799 - Agricultural Education Colloquium III

Credits: 2

Class explores the content knowledge of the candidate in regards to the Agricultural Education content curriculum, identifies areas of strength and weakness in content knowledge, and provides enrichment and remediation to prepare the candidate for the internship experience.

Requisites:
Enrollment in the Masters of Arts in Teaching.
Prerequisite: AGED 798.

Typically Offered
Intersession

AGED 800 - Research Methods in Agricultural Education and Communications

Credits: 3

This graduate-level course will focus on applying the principles, practices, and strategies for conducting research in the social sciences, particularly dealing with the interface of the human dimension in the agricultural and natural sciences.

Note:
Great Plains Ag*IDEA Course Delivery.

Typically Offered
Fall, Spring, Summer

AGED 810 - Social Data Analysis in Communications and Agricultural Education

Credits: 3

A course in measurement and analysis as related to social science research and evaluation. The course takes an applied approach to organizing data, analyzing data according to research and evaluation objectives and/or hypotheses, using descriptive and inferential statistics, and interpreting data. Students gain practical experience in data entry and using SPSS for calculating statistics through laboratory exercises.

Typically Offered
Fall

AGED 820 - History and Philosophy of Agricultural and Extension Education

Credits: 3

The primary purpose of this course is to provide the student with an examined grounding in the seminal events and people in the history of agricultural and extension education (history), principle divisions of thought (philosophies), and decisions made (policy), resulting in the current state of affairs in agricultural and extension education. The convergence of these factors has a notable impact on the current challenges and future direction of agriculture and extension education.

Note:
Great Plains Ag*IDEA Course Delivery.

Typically Offered
Fall, Spring, Summer

AGED 823 - Agricultural Education for Beginning Teachers

Credits: 1-3

Securing and organizing information and planning teaching activities which will help the beginning vocational agriculture teacher.

Requisites:
Prerequisite: Graduation from the curriculum in agricultural education.

Typically Offered
Fall, Spring

AGED 824 - Young Farmer and Adult Farmer Education in Agriculture

Credits: 2-3

Organization, objectives, and procedures of conducting young farmer and adult farmer classes. Designed for teachers in service.

Requisites:
Prerequisite: Experience in teaching vocational agriculture.

Typically Offered
On sufficient demand

AGED 830 - The History and Leadership of the Land Grant University

Credits: 3

The course will provide a historical overview of the evolution and development of land-grant colleges/universities. It will reflect on the fundamental beliefs of those who conceptualized and implemented the land-grant college and university system. The course will

enable students to examine early public mandates and subsequent successes of these special institutions of higher education, as well as evaluate significant education, research, and public service developments and new initiatives needed for land-grants to effectively serve society in the future. It is expected that students will gain an understanding of and benefits derived from the institutions that comprise the land-grant college and university family, as well as envision developments and opportunities that will mold the future of these special institutions that represent the land-grant legacy.

Typically Offered
Fall

AGED 834 - International Agriculture and Extension Education

Credits: 3

This course focuses on a broad range of topic areas in the field of extension education as it impacts agriculture and rural community development. The primary purpose is to further students' understanding about extension systems' influence on agricultural development and the interface of agriculture with rural communities throughout the world. Emphasis will be placed upon research, theory, history and conceptual models of extension for establishing a strong philosophical foundation.

Typically Offered
Spring, Summer

AGED 840 - Advanced Theory and Methods of Teaching Agriculture

Credits: 3

This course will use contemporary and foundational theory and research on teaching and learning processes in the application and organization of instructional methods and techniques in formal and non-formal educational settings particularly in agriculture, food and natural resources disciplines.

Typically Offered
Fall, Spring

AGED 850 - Curriculum Development in Agriculture I

Credits: 2-3

Curriculum problems; planning local programs in agriculture; developing facilities and plans for meeting current and advanced problems in the teaching of agriculture.

Requisites:
Prerequisite: One year of teaching in agriculture.

Typically Offered
Spring

AGED 852 - Curriculum Development in Agriculture II

Credits: 2-3

Continuation of AGED 850.

Requisites:
Prerequisite: AGED 850.

Typically Offered
Summer

AGED 855 - Field Studies in Agricultural Education

Credits: 2-3

Planning, organizing, and coordinating the various phases of the local program of vocational education in agriculture.

Requisites:
Prerequisite: Experience in teaching agriculture.

Typically Offered
On sufficient demand

AGED 858 - Program Planning and Evaluation in Agricultural and Extension Education

Credits: 3

This course is designed for students who are interested in the development and evaluation of agricultural and extension education programs. The course is designed to help students in the following areas: Acquire an understanding of program development from theory to practice; Strengthen their skills in planning, designing,

implementing, evaluating, and accounting for educational programs of targeted audiences; and Provide application of program planning and evaluation concepts through experiential learning and class projects.

Typically Offered
Spring

AGED 859 - Management of Volunteers in Agricultural and Extension Education

Credits: 3

This course is intended to prepare students to be effective managers of volunteer programs, or to challenge those students already engaged in those roles to improve on their existing skills. Theory will be emphasized in the course, only in so much as it is essential to be grounded in theory in order to apply it. Major topics of the course will include, but are not limited to: volunteer recruitment, training, evaluation and reward. This is an active course where students will be required to be active in and outside of class sessions.

Typically Offered
Summer

AGED 860 - Program Evaluation in Agricultural and Extension Education

Credits: 3

Evaluation principles, models, and procedures used in developing and analyzing agricultural, vocational, technical, and extension education programs; role of comprehensive evaluation in needs assessments, program planning, program implementation, and the marketing of outcomes to major stake-holders; designs for evaluating agricultural and extension programs. Evaluation logic model is presented to identify and describe program inputs, activities, outputs, and outcomes.

Note:
Great Plains Ag*IDEA Course Delivery.

Typically Offered
Spring

AGED 890 - Master's Project

Credits: 1-3

Students select and prepare a project designed to improve their professional practice. It may be the construction of a professional portfolio or project to represent the student's learning throughout the master's degree program.

Typically Offered
Fall, Spring, Summer

AGED 899 - Master's Thesis

Credits: 1-6

A master's thesis presents the results of an original investigation or a problem or topic within the student's classroom or educational field approved by the candidate's supervisory committee.

Typically Offered
Fall, Spring, Summer

AGRON 501 - Range Management

Credits: 3

Fundamental ecological principles of production, conservation, and use of grasslands. Application of these fundamental principles to management.

Note:
Three hours recitation a week.

Typically Offered
Fall

AGRON 502 - International Experience in Agronomy

Credits: 0-6

Students will apply knowledge gained in their undergraduate curriculum in a culminating learning experience focused on international crops, soils, and agronomic systems. Topics vary by offering depending on the agronomic systems studied and locations visited.

Requisites:
Prerequisite: 14 hours in AGRON including AGRON 220 and AGRON 305.

Typically Offered
Spring

AGRON 503 - Emerging Topics in Agronomy

Credits: 3

This course will provide a platform for in-depth discussion of emerging topics in the agronomic field. Topics that have immediate relevence in crop production, plant breeding, range science, soil fertility, soil management, and soil and water quality are discussed. Experts in fields outside of agronomy will often be guest facilitators in this course.

Requisites:
Prerequisite: Junior or Senior standing.

Typically Offered
Spring-Odd Years

AGRON 515 - Soil Genesis and Classification

Credits: 3

Factors and processes of soil formation, classification of soils according to soil taxonomy, and use of soil survey information. Practical field experience describing soil properties. Required field trips.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Recommended Prerequisite: GEOL 100 or AGRON 305.

Typically Offered
Spring

AGRON 550 - Forage Management and Utilization

Credits: 3

Production and utilization of forage crops. Development of forage programs for livestock production, including pasture and stored forages.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 220 and junior standing.

Typically Offered
Spring

AGRON 551 - Forage Management and Utilization Laboratory

Credits: 1

Identification of forage species, techniques for estimating forage quality, forage physiology, and field trips.

Note:
One two-hour lab a week.

Requisites:
Prerequisite: Completion of or conc. enrollment in AGRON 550.

Typically Offered
Spring

AGRON 560 - Field Identification of Range and Pasture Plants

Credits: 1

Identification of range pasture plants through exposure to them in their natural environment.

Typically Offered
Fall-Odd Years

AGRON 598 - Undergraduate Research in Agronomy

Credits: 0-18

Independent research experience guided by faculty in crop science, weed science, range science or soil science.

Typically Offered
Fall, Spring, Summer

AGRON 600 - Crop Problems

Credits: 1-18

Studies may be chosen in: genetics, crop improvement, forages, ecology, weed control, plant physiology, or crop production.

Typically Offered
Fall, Spring, Summer

AGRON 602 - Agronomy Capstone Experience

Credits: 3

A culminating learning experience to apply the knowledge gained by the student in the undergraduate curriculum, to apply the skills of problem-solving and critical thinking, and to develop the ability to work in teams and participate in civil discourses. Current issues in Agronomy will be discussed and a team project will be completed.

Note:
Three hours of seminar a week.

Requisites:
Prerequisite: Senior standing.

Typically Offered
Fall, Spring

AGRON 605 - Soil and Environmental Chemistry

Credits: 3

A study of inorganic and organic chemistry of soils with a detailed examination of the solid, liquid, and gaseous phases. Includes discussions of mineral solubility, electrochemical and adsorption phenomena, acidity, salinity, and fertility. Emphasis is placed on the biogeochemical cycling of plant nutrients and important soil contaminants.

Note:
Three hours of recitation a week.

Requisites:
Recommended Prerequisite: AGRON 375 or AGRON 305 and CHM 230.

Typically Offered
Spring

AGRON 610 - Biotechnology

Credits: 3

The use of biotechnology and molecular genetic approaches in plant and animal sciences. Emphasis is on the use of molecular techniques for plant and animal improvement.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: ASI 500 or BIOL 450.

Typically Offered
Fall

Crosslisted:
Same as PLPTH 610.

AGRON 615 - Soil Problems

Credits: 0-18

Studies may be chosen in: chemistry, physics, conservation, fertility, genesis, morphology, or classification.

Typically Offered
Fall, Spring, Summer

AGRON 620 - Applied Crop Physiology

Credits: 3

Study of cultivated crop botany, whole plant and canopy physiology, impact of abiotic (water, temperature, and plant nutrition) and biotic stresses (weeds, insects, and diseases), crop seed physiology, and global climate change effects on crops.

Requisites:
Prerequisite: AGRON 220 or HORT 201.

Typically Offered
Fall

AGRON 625 - Applications of Nutrient Management

Credits: 3

Principles for developing plant nutrient management programs in the Great Plains. Topics include assessing crop nutrient needs, making fertilizer recommendations, applying application technology and products to enhance nutrient use efficiency, using sensing technology to assess in-season nutrient needs, quality control functions, and the use of waste products as nutrient sources.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: AGRON 375.

Typically Offered
Fall

AGRON 630 - Crop Improvement and Biotechnology

Credits: 3

Techniques in basic plant breeding and biotechnology used to genetically improve crops and procedures to increase, distribute, and maintain breeding stocks and varieties.

Note:
Two lecture and one two-hour lab a week.

Requisites:
Recommended Prerequisite: AGRON 220 and ASI 500.

Typically Offered
Spring

AGRON 635 - Soil and Water Conservation

Credits: 3

Principles, prediction, and effects of soil erosion from water and wind. Conservation practices for erosion control and promoting soil, water, and air quality. History of soil and water conservation and the Dust Bowl. Past and present government agencies and policies for soil and water conservation.

Note:
Two hours recitation and one three-hour lab a week.

Requisites:
Recommended Prerequisite: AGRON 305.

Typically Offered
Fall

AGRON 640 - Cropping Systems

Credits: 3

Principles for developing and managing cropping systems in the Great Plains for the efficient use of natural resources, primarily water. Emphasis on dryland cropping systems, management of crop rotations, and the plant/soil/environment interaction. Includes the efficient use of natural resources via an understanding of yield limiting factors, impact of crop rotations and cultural practices, climate, plant growth, and development.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 375.

Typically Offered
Fall

AGRON 642 - Bioenergy Feedstock Production

Credits: 3

Overview of production and characteristics of cultivated crops, perennial grasses, and woody species as feedstocks for bioenergy. Fundamentals of plant growth factors, culture, harvest and storage, quality and improvement, and introduction to environmental impact, modeling, and resource utilization. Knowledge of Microsoft- 10 compatible word processing and spreadsheet programs including graphing is required.

Note:
Three hours lecture a week.

Typically Offered
Spring

AGRON 645 - Soil Microbiology

Credits: 3

The nature and function of soil microorganisms in the soil ecosystem. The role of soil microbial activity to soil organic matter, mineral transformations, plant nutrition, and environmental quality.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 305 or BIOL 455.

Typically Offered
Fall

AGRON 646 - Soil Microbiology Laboratory

Credits: 1

Discuss and perform laboratory procedures for enumerating soil microorganisms, quantifying soil biological activities, and nutrient cycling.

Note:
Three hours lab a week.

Requisites:
Prerequisite: AGRON 645 or conc. Enrollment.

Typically Offered
Fall

AGRON 650 - Integrated Weed Management

Credits: 3

The development of weed management systems based on diagnosis of weed and crop problems, understanding crop-weed associations and interactions with the environment, and integrating weed control tactics such as chemical, biological, cultural, and mechanical practices into recommendations.

Note:
Three hours of recitation per week.

Requisites:
Prerequisite: AGRON 330.

Typically Offered
Spring

AGRON 655 - Site Specific Agriculture

Credits: 3

Introduction to spatial analysis and management of agricultural and environmental resources using Geographic Information Systems (GIS) technology. Emphasis on collecting, displaying, and analyzing spatial or georeferenced soil, crop, or other land surface data.

Note:
Two hours lecture, two hours lab, and one hour by appointment per week.

Requisites:
Required prerequisite: AGRON 202
Recommended Prerequisite: AGRON 375 and GEOG 508 and GEOG 605.

Typically Offered
Spring

AGRON 660 - Grassland Monitoring and Assessment

Credits: 2

Vegetation sampling techniques used in rangeland research and for grassland monitoring and assessment. Use of statistics for sampling, analysis, and presentation of data.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: AGRON 501 and STAT 340.

Typically Offered
Fall-Even Years

AGRON 661 - Grassland Monitoring and Assessment Lab

Credits: 1

A field laboratory course designed as a companion to AGRON 660. Labs will consist of methods used for determination of biomass, basal cover, frequency, and density. Additional time will be spent on basic statistics, experimental design, and use of the microcomputer in analyzing data sets.

Note:
Meets during the first half of the semester. One hour recitation and two hours lab a week.

Requisites:
Prerequisite: AGRON 660 or concurrent enrollment.

Typically Offered
Fall-Even Years

AGRON 662 - Rangeland Watershed Management

Credits: 3

Study of the management of physical/biological settings and processes along with human activities on water and watersheds considering preventative and restorative

strategies in a natural resource rangeland setting.

Note:
Web-based distance AG*IDEA course.

Typically Offered
Spring

AGRON 670 - Range Management Problems

Credits: 1-18

Typically Offered
Fall, Spring, Summer

AGRON 680 - Plant Genetics

Credits: 3

Concepts and application of basic genetic principles in higher plants.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ASI 500 or BIOL 450. Recommended Prerequisite: AGRON 610 and AGRON 630.

Typically Offered
Spring

AGRON 681 - Range Ecology

Credits: 3

Application of ecological principles to range ecosystem management. Study of plant-soil-animal interactions with rangelands, and discussion of plant succession, environmental influences, and ecological concepts.

Note:
Two hours recitation a week and one lab credit consisting of field trips to representative range areas.

Requisites:
Recommended Prerequisite: AGRON 501 and BIOL 529.

Typically Offered
Spring-Even Years

AGRON 682 - Grassland Fire Ecology

Credits: 3

The course is designed to describe the ecological effects of fire on grassland ecosystems. It also provides insight into the history of fires, the people who use them and why, the parts of a fire, how fires behave in relation to fuel and weather, and the conducting and safety of prescribed burns.

Note:
Web-based distance AG*IDEA course.

Typically Offered
Fall-Odd Years

AGRON 685 - Tropical Soil Management

Credits: 3

Characteristics of agriculture in tropical conditions with a focus on the environment and soils. Includes discussion of soil management systems in tropical agriculture that use coventional methods as well as methods that emphasize sustainability including notill, crop rotations and cover crops.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 375.

Typically Offered
Spring-Even Years

AGRON 695 - Climate Change and Agriculture

Credits: 3

Impact of climate and climate change on agricultural systems and soil and water resources at global and regional scales. Discussion on adaptation and mitigation strategies including economics and policies that affect agriculture.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: Junior or senior standing.

Typically Offered
Spring-Odd Years

AGRON 700 - Agricultural Meteorology

Credits: 3

Fundamental concepts of meteorology and climatology and their applications to agriculture. Use of weather data to study meteorological variables and to estimate relevant parameters and processes, such as crop growth, development, yield, evapotranspiration, and soil water budget.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: PHYS 113.

Typically Offered
Fall-Even Years

AGRON 720 - Nutritional Improvement of Food Crops

Credits: 3

Discussion of current genetic and breeding efforts to improve the nutritional value of food crops, focusing on vitamins, minerals, amino acids, fatty acids, and phytonutrients. Impact of nutritionally-improved crops in food security.

Requisites:
Prerequisite: Senior standing.

Typically Offered
Spring-Even Years

AGRON 732 - Introduction to Plant Resistance to Pests

Credits: 2

Introduction to Plant Resistance to Pests. Basic concepts of the biology, ecology, genetics and breeding for pest resistance in plants.

Note:
Four hours lecture and discussion a week. To meet the first half of semester.

Requisites:
Prerequisite: ENTOM 300 or PLPTH 500 or ENTOM 312 and ENTOM 313, and one course in plant or animal genetics.

Typically Offered
Fall-Even Years

Crosslisted:
PLPTH 732, ENTOM 732

AGRON 746 - Environmental Soil Physics

Credits: 3

A conceptual and quantitative introductory study of vadose zone soil physical properties and processes in relation to the main components of the hydrologic cycle and the soil surface energy balance.

Note:
Three hours of recitation a week.

Requisites:
Recommended Prerequisite: AGRON 305 and PHYS 113

Typically Offered
Spring

AGRON 762 - Range Grasses

Credits: 2

Field and laboratory study of range and pasture plants, with special emphasis on grasses and their distinguishing characteristics.

Note:
One hour recitation and two hours lab a week.

Typically Offered
Fall-Even Years

AGRON 781 - Ecology of Invasive Species

Credits: 3

Ecological principles and their application to invasive species. Discussion of population, community and ecosystem level characteristics affecting a wide variety of invasive plant and animal species. Discussions will include current global consequences and governmental policies/programs designed to limit the spread of invasives.

Note:
Web-based distance AG*IDEA course.

Typically Offered
Fall-Odd Years

AGRON 790 - Range Management Planning

Credits: 3

Inventory and analysis of rangeland resources and development of detailed management plan. Emphasizes range management principles and practices useful in maximizing production from rangelands.

Note:
Two hours recitation a week and one lab credit including field trips to ranch operations.

Requisites:
Recommended Prerequisite: AGRON 501.

Typically Offered
Spring-Odd Years

AGRON 800 - Advanced Problems in Agronomy

Credits: 1-3

Independent study of a specific problem in agronomy under the guidance
of a member of the department's graduate faculty. For non-thesis or
non-dissertation studies. Topic is selected jointly by student and
instructor. Course format and number of credit hours are determined by
the instructor.

Requisites:
Prerequisite: Consent of Instructor

Typically Offered
Fall, Spring, Summer

AGRON 810 - Agronomy Seminar

Credits: 1

A discussion of agronomic developments.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring

AGRON 816 - Soil Physics

Credits: 3

A study of the transport of water, heat, gases, and solutes in soil. Examples are presented that related to both agricultural and engineering land uses. Emphasis is given to understanding how soil physical properties and soil management practices influence transport processes.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 746 and MATH 220.

Typically Offered
Spring

AGRON 820 - Plant Water Relations

Credits: 3

Properties of water, terminology in plant and soil water relations, environmental aspects of plant-water relations, soils as a water reservoir, water as a plant component, water movement through the plant, special aspects of transpiration, development and significance of internal water deficits, drought resistance mechanisms, water consumption by crop plants.

Requisites:
Recommended Prerequisite: BIOL 500.

Typically Offered
Spring

AGRON 821 - Principles of Forage Quality

Credits: 3

The course provides an indepth study of the chemical characteristics of forage components and the interactions with ruminant physiology and digestion that influence forage feeding value and the laboratory procedures used to evaluate forages for grazing livestock. Students should have knowledge of the basic principles of chemistry, ruminant nutrition, and plant physiology so that they can develop an understanding of the chemical characteristics of forages and how they affect the value of forages to grazing

livestock.

Note:
Web-based distance AG*IDEA course.

Requisites:
Recommended Prerequisite: AGRON 501 or AGRON 550, and ASI 320, and STAT 325, or equivalents.

Typically Offered
Summer-Even Years

AGRON 822 - Herbicide Interactions

Credits: 3

Herbicide fate in plants and soils. Physiological and biochemical processes in plants and soils as affected by herbicides. Molecular biochemistry of herbicide resistance that have developed in the field. Biotechnologically derived herbicide-resistant crops.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 650 or BIOL 500.

Typically Offered
Spring-Odd Years

AGRON 824 - Advanced Weed Ecology

Credits: 3

A study of advanced weed ecology topics including weed/crop interference, weed growth and development, herbicide resistance, biological control, spatial and temporal population dynamics, and ecological approaches to weed management.

Note:
Three lectures per week.

Requisites:
Recommended Prerequisite: AGRON 650.

Typically Offered
Fall-Odd Years

AGRON 825 - Soil and Plant Analysis

Credits: 3

Theories and procedures for the chemical analysis of soils and plant materials. Applications of analysis in soil fertility evaluations and in research work are discussed.

Note:
One hour recitation and six hours lab a week.

Requisites:
Recommended Prerequisite: CHM 271.

Typically Offered
Fall-Odd Years

AGRON 832 - Grassland Plant Identification

Credits: 2

Study of plants that have ecological and/or agricultural importance in the Great Plains. Emphasis on plant identification, grassland ecosystems, and plant forage value, palatability, and utilization by both domestic livestock and wildlife. Cultural and historical uses of grassland.

Note:
Web-based distance AG*IDEA course.

Requisites:
Recommended Prerequisite: AGRON 501 and BIOL 198 or equivalents.

Typically Offered
Spring

AGRON 835 - Nutrient Sources, Uptake and Cycling

Credits: 3

An examination of the behavior of plant nutrients in soils emphasizing nutrient sources, the interaction of nutrient with soils, and the role of plant root as nutrient sinks. Includes processes used in the formulation of chemical fertilizers and the assessment of available nutrients in non-commercial plant nutrient sources.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 375.

Typically Offered
Fall-Odd Years

AGRON 840 - Crop Physiology

Credits: 3

Principles of nitrogen metabolism, mineral nutrition, photosynthesis, growth substances, and hardiness applied to crop production.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: BIOL 500.

Typically Offered
Spring-Odd Years

AGRON 843 - Advanced Forage Management

Credits: 3

Examines the integrated management of forages, livestock, soil, water, pests, and the environment.

Typically Offered
Spring-Even Years

AGRON 845 - Reproducible Research and Scientific Computing

Credits: 3

Develop skills to handle large datasets, generate reproducible science, and develop creative data analysis and interpretation skills. Focus will be on understanding programming logic by developing and writing computing codes for common tasks and concepts related to environmental science.

Note:
Three hours lecture per week.

Typically Offered
Spring

AGRON 855 - Soil Organic Chemistry

Credits: 3

This course will cover the basic physical-chemical properties and reactivities of soil organic matter and organic chemicals, the fundamental processes controlling the fate of organic chemicals, and the methods for estimating their environmental behavior in the soil-water system.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: CHM 350 and AGRON 605.

Typically Offered
Spring-Even Years

AGRON 860 - Applied Plant Breeding

Credits: 3

This course considers in detail the mechanics of an applied plant breeding program for agronomic crops.

Requisites:
Recommended Prerequisite: AGRON 630 or HORT 740, AGRON 680, and STAT 703.

Typically Offered
Spring

AGRON 880 - Plant Molecular Biology

Credits: 3

A study of plant genes and genome organization, plant gene expression and regulation, and functional analysis of plant genes.

Note:
Three hrs. lec. a week.

Requisites:
Prerequisite: BIOCH 521, PLPTH 610, or BIOL 541.

Typically Offered
Fall-Even Years

Crosslisted:
PLPTH 880

AGRON 881 - Grazing Ecology and Management

Credits: 3

This course discusses the ecological principles of domesticated livestock grazing and their application to manage grazing lands. Theoretical and applied models of plant/animal interactions will be presented. Grazing systems and their management of ecosystem services will be presented as balance between production and conservation outcomes.

Typically Offered
Fall-Even Years

AGRON 893 - Agricultural Simulation Modeling

Credits: 4

Techniques for developing and testing computer simulation models for research, management, and design applications in agriculture.

Note:
Three lectures and one three-hour work session per week.

Requisites:
Prerequisite: STAT 705. Recommended Prerequisite: MATH 211.

Typically Offered
Fall-Even Years

AGRON 898 - Master's Report

Credits: 2

Preparation of a written report either of research or of problem work on a topic in the major field.

Typically Offered
Fall, Spring, Summer

AGRON 899 - Master's Research

Credits: 1-18

Research on a problem which may extend throughout the year and furnish data for a master's thesis.

Typically Offered
Fall, Spring, Summer

AGRON 900 - Micrometeorology

Credits: 3

A comprehensive analysis of interactions between living organisms and their physical environment. Emphasis is placed on characterizing the transport of heat, water, and carbon within the soil-plant-atmosphere continuum. Includes discussions on aerodynamic transfer, surface energy balances, evapotranspiration, trace gas fluxes, and basic micrometeorology. The potential impact of climatic change on biosphere productivity will be considered.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: PHYS 115 and AGRON 746 or BIOL 500.

Typically Offered
Spring-Odd Years

AGRON 902 - International Agronomy Experience for Graduate Students

Credits: 0-6

Students will apply knowledge gained in their graduate curriculum focused on international crops, soils, and agronomic systems. Topics vary by offering depending on the agronomic systems studied and locations visited.

Requisites:
Recommended Prerequisite: AGRON 360 and AGRON 375.

Typically Offered
Fall, Spring

AGRON 905 - Advanced Soil Chemistry

Credits: 3

Application of physical chemistry to soils; cation and anion equilibria, ion activities, sorption, redox reactions, and other physiochemical phenomena in soils.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 605 and CHM 500.

Typically Offered
Fall-Even Years

AGRON 915 - Advanced Plant Genetics

Credits: 3

In-depth treatment of advanced concepts in molecular, quantitative, and cytogenetics of plants.

Note:
Three hrs. lec. a week.

Requisites:
Prerequisite: PLPTH 680/AGRON 680.

Typically Offered
Fall-Odd Years

Crosslisted:
PLPTH 915

AGRON 916 - Advanced Soil Physics

Credits: 3

An advanced study of the transport of water, heat and solutes in soil. The theory of unsaturated water flow, coupled heat and water flow, and the convection and dispersion of reactive solutes will be studied in detail. Spatial variability of soil physical properties will be discussed, solute transport will be presented.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: AGRON 816, MATH 240 and PHYS 113.

Typically Offered
Fall-Odd Years

AGRON 920 - Advanced Topics in Agronomy

Credits: 1-3

Discussion and lectures on important papers and contributions in the field of Agronomy.

Requisites:
Prerequisite: Consent of Instructor

Typically Offered
Fall, Spring, Summer

AGRON 925 - Advanced Soil Genesis and Classification

Credits: 3

An advanced study of processes of soil formation and systems of soil classification including soil taxonomy.

Note:
Two hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 515.

Typically Offered
Spring-Odd Years

AGRON 945 - Soil Mineralogy

Credits: 4

Theory and application of methods for analyzing minerals in soil environments, including X-ray, electron optical, thin section, and wet chemical techniques.

Note:
Two hours recitation and six hours lab a week.

Requisites:
Recommended Prerequisite: AGRON 605.

Typically Offered
Fall

AGRON 950 - Advanced Crop Ecology

Credits: 3

Principles of growth and development of crops in relation to the environment.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: BIOL 500, BIOL 529, STAT 704, and STAT 705.

Typically Offered
Spring-Even Years

AGRON 955 - Soil Microbial Ecology

Credits: 3

Theories and concepts of the ecology and function of microorganisms in the soil environment. Discussions will include factors regulating microbial activity, the flow of energy (carbon), and nitrogen transformations as they relate to plant productivity and environmental quality.

Note:
Three hours recitation a week.

Requisites:
Recommended Prerequisite: AGRON 645 and BIOCH 521.

Typically Offered
Spring-Even Years

AGRON 970 - Advanced Plant Breeding I

Credits: 3

Application of quantitative genetics in plant breeding, heritability, mating designs, selection techniques and theory, marker assisted selection, population improvement, breeding autopolyploid crops.

Requisites:
Recommended Prerequisite: AGRON 860.

Typically Offered
Fall-Odd Years

AGRON 980 - Genomic Analysis for Crop Improvement

Credits: 3

Concepts and applications of genomic analysis in crop improvement, including crop evolution, and origin, germplasm conservation and utilization, population structure and genetic distances, genomic-wide association and linkage studies.

Requisites:
Recommended Prerequisite: AGRON 860 or ASI 500, PLPTH 612.

Typically Offered
Spring-Even Years

AGRON 999 - PhD Research

Credits: 1-18

Research on a problem which may extend throughout the year and furnish data for a doctoral dissertation.

Typically Offered
Fall, Spring, Summer

AMETH 501 - Recitation Leadership

Credits: 1-3

Integrative review of concepts in American ethnic studies under faculty supervision. Preparation for leading discussions, workshops and reviews in American ethnic studies. Students attend two lecture sessions per week concurrent with AMETH 160, one additional seminar session focused on planning and preparation for recitations, and are responsible for leading discussions in one or more recitation sections in AMETH 160 per week.

Repeat for Credit
Repeatable. May be repeated for a maximum of 6 hours credit.

Typically Offered
Fall, Spring

AMETH 550 - Practicing Social Justice

Credits: 3

Students engage in a praxis-based social justice project with an organization, program, creative movement, or research project that engages and supports underrepresented communities. Students enhance their practical experience in ethnic studies by participating in an internship, or doing social justice performance art, or engaging in participatory action research, or conducting intercultural competence training.

Requisites:
Prerequisite: AMETH 160.

Typically Offered
Fall, Spring, Summer

AMETH 556 - Multicultural Psychology

Credits: 3

To introduce and familiarize students with the concept of multicultural.

Typically Offered
Spring

Crosslisted:
PSYCH 556

AMETH 560 - Topics in American Ethnic Studies

Credits: 1-4

Selected topics or special interest in American Ethnic Studies.

Note:
Topic and credit to be arranged if repeating for credit.

Repeat for Credit
Repeatable with change of topic.

Typically Offered
Fall, Spring

AMETH 660 - Independent Reading and Research in American Ethnic Studies

Credits: 1-3

Advanced guided reading and research on a specific topic of student interest, leading to preparation of a research paper or creative work.

Note:
Topic and credit to be arranged.

Requisites:
Prerequisite: Senior or graduate standing and permission of instructor.

Typically Offered
Fall, Spring, Summer

AMETH 700 - Advanced Topics in American Ethnic Studies

Credits: 3

Provides students the opportunity to investigate topics in American Ethnic Studies that enable greater depth and complexity of understanding of field's methodological approaches and specializations.

Typically Offered
Fall, Spring, Summer

ANTH 505 - South Asian Civilizations

Credits: 3

Interdisciplinary survey of the development of civilizations in India, Pakistan, Sri Lanka, Bangladesh, Nepal, Bhutan, and Afghanistan, including geography, philosophy, social, economic, political institution, and historical movements.

Requisites:
Prerequisite: 3 hours of Social Science or junior standing.

Typically Offered
Fall-Even Years

Crosslisted:
GEOG 505, HIST 505, POLSC 505, SOCIO 505, ECON 505

ANTH 506 - Central America: Its Peoples and Problems

Credits: 3

An anthropological perspective of the interactions of indigenous and foreign populations with an examination of the geographic, social, economic, political, and ideological bases of the problems facing Central America today. A look at the seven countries composing Central America in terms of their particular problems and unique solutions.

Requisites:
Prerequisite: ANTH 200.

Typically Offered
Fall

ANTH 508 - Asian Religions

Credits: 3

Explores the beliefs, rituals, and cultural practices of selected major Asian Religions, such as Hinduism,

Buddhism, Jainism, Sikhism, Confucianism, Taoism, and Shinto.

Requisites:
Prerequisite: ANTH 200, ANTH 204, ANTH 210, or ANTH 310.

Typically Offered
Spring-Even Years

ANTH 509 - Cultures of Africa

Credits: 3

Family life, subsistence patterns, exchange systems, languages, religions, and development of the peoples of Africa.

Typically Offered
Fall or Spring

ANTH 512 - Political Anthropology

Credits: 3

Ethnological approaches to politics in societies around the world. Structural-functional, evolutionary, and conflict theories. A comparison of the political systems of small-scale and complex societies: political modernization.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Fall or Spring

ANTH 513 - Immigrant America

Credits: 3

Discussion of post-1965 immigration to the United States with a focus on Asian and Latino newcomers. Immigrant adaptation, economic strategies and the reinterpretation of cultural identity. Implications for American society.

Requisites:
Prerequisite: ANTH 200, ANTH 204, or ANTH 210.

Typically Offered
Fall, Spring

ANTH 515 - Creativity and Culture: The Anthropology of Art

Credits: 3

Explores creativity, aesthetics, and meaning in various visual art subcultures in the U.S. and around the world. Attention is paid to the intersection of art and contemporary social issues including structural racism.

Requisites:
Prerequisite: ANTH 200, ANTH 204, or ANTH 210

Typically Offered
Fall-Even Years

ANTH 516 - Ethnomusicology

Credits: 3

Ethnic, popular, and traditional musics from around the world. The course samples a wide range of stylistic traditions from Africa, Asia, Oceania, Europe, and the Americas. Emphasis is on understanding musical style in cultural context.

Typically Offered
Fall-Even Years

ANTH 518 - Topics in Cultural Anthropology

Credits: 1-4

Intensive exploration of problems in cultural anthropology for both majors and non-majors with adequate background.

Repeat for Credit
Repeatable with change in topic.

Requisites:
Prerequisite: ANTH 200, ANTH 204, or ANTH 210.

Typically Offered
On sufficient demand

ANTH 525 - Language and Culture

Credits: 3

Study of language and dialect as aspects of social and ethnic group identities. Emphasis on analysis of conversational style in diverse cultural settings. Research

project to be determined according to student interests.

Requisites:
Prerequisite: ANTH 220 or consent of instructor.

Typically Offered
Fall, Spring

ANTH 528 - Topics in Linguistic Anthropology

Credits: 1-4

Intensive exploration of problems in linguistic anthropology for both major and non-majors with adequate background.

Requisites:
Prerequisite: ANTH 220.

Typically Offered
On sufficient demand

ANTH 560 - Archaeological Fact or Fiction: Applied Critical Thinking

Credits: 3

Explores and develops practical critical thinking and research skills using archaeological approaches and case studies. Examines impact of interpretation of the human past on past and present populations.

Requisites:
Prerequisite: ANTH 260 or equivalent.

Typically Offered
Fall-Even Years

ANTH 561 - Archaeological Field Methods

Credits: 1-9

Provides hands-on training in archaeological field methods (i.e., data collection and documentation through archaeological survey and excavation) as part of a research project.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor consent (application required)

Typically Offered
Summer

ANTH 562 - Archaeological Laboratory Methods

Credits: 3

Hands-on instruction in and application of professional principles of processing, analyzing, and interpreting artifacts and archeological materials.

Requisites:
Prerequisite: ANTH 260 or equivalent.

Typically Offered
Fall

ANTH 563 - Applied Archaeology

Credits: 3

Training in professional and ethical practice in cultural resource management and public archaeology.

Requisites:
Prerequisite: ANTH 260 or its equivalent.

Typically Offered
Spring

ANTH 565 - North American Archaeology

Credits: 3

The prehistoric of native cultures of North America explored through the archaeological record from the peopling of the continent, to the spread of agriculture and village life, up to contact period.

Requisites:
Prerequisite: ANTH 260.

Typically Offered
Spring-Odd Years

ANTH 568 - Topics in Archaeology

Credits: 1-4

Intensive exploration of archaeological problems for both major and non-majors with adequate background.

Requisites:
Prerequisite: ANTH 260.

Typically Offered
On sufficient demand

ANTH 588 - Topics in Physical Anthropology

Credits: 1-4

Intensive exploration of problems in physical anthropology for both major and non-majors with adequate background.

Requisites:
Prerequisite: ANTH 280 and ANTH 281.

Typically Offered
On sufficient demand

ANTH 602 - Anthropological Theory

Credits: 3

Review and integration of the major theoretical approaches in the principal branches of anthropology.

Requisites:
Prerequisite: ANTH 200 or ANTH 210.

Typically Offered
Fall or Spring

ANTH 605 - North American Indians

Credits: 3

Description and comparison of native cultures of Canada and the United States; culture contact and change among surviving groups.

Requisites:
Prerequisite: ANTH 200 or ANTH 210 or ANTH 260.

Typically Offered
Spring

ANTH 606 - South American Indians

Credits: 3

A survey of the nature and variability of the original cultures of Latin America. Analysis of sample cultures, stressing economic, social, political, and religious structures.

Requisites:
Prerequisite: ANTH 200 or ANTH 210 or ANTH 260.

Typically Offered
On sufficient demand

ANTH 612 - Ethnohistory

Credits: 3

Introduction to ethnohistory as an anthropological research method.

Requisites:
Prerequisite: ANTH 200 or ANTH 204 or equivalent.

Typically Offered
On sufficient demand

ANTH 613 - Gender, Power, and International Development

Credits: 3

Examination of various models of development and their impact on various roles of woman and men in various cultures. Emphasis upon Africa, Asia, and Latin America. Comparisons of public, service, and economics sectors, including agriculture, marketing, and industry. Examination of policy issues.

Requisites:
Prerequisite: SOCIO 211 or ANTH 200 or ANTH 210 and 3 additional hours in sociology or cultural anthropology. SOCIO 633.

Typically Offered
On sufficient demand

ANTH 615 - Race and Culture

Credits: 3

The biological meaning of race; the interrelationships of biological and cultural traits in human evolution; processes of racial formation of man; methods of classifying human

races; cultural inheritance; the distinction of race, culture, personality, and intelligence; a review of modern racism; race as an evolutionary episode.

Requisites:
Prerequisite: ANTH 200, ANTH 210 or ANTH 280.

Typically Offered
On sufficient demand

ANTH 616 - Anthropology of the Future: Apocalypse, Prophecy, and Hope

Credits: 3

This seminar course will explore culturally constructed notion of "the future" by exploring discourses of time, divination, utopia, prophecy, world-ending and world-renewals from various societies around the world.

Requisites:
Prerequisite: ANTH 200, ANTH 204 or ANTH 210.

Typically Offered
Fall

ANTH 618 - Religion in Culture

Credits: 3

The nature of religion in different cultural systems.

Requisites:
Prerequisite: ANTH 200 or ANTH 210 or SOCIO 211.
SOCIO 618.

Typically Offered
Fall

ANTH 651 - Internship in Applied Anthropology

Credits: 3

Supervised field experience of at least three weeks full time or 150 hours part time with an organization or institution in the application of anthropological approaches to problem solving and working in a professional setting. Emphasis is on anthropological skills in relation to the objectives and operations of an institution.

Repeat for Credit
Repeatable. May be repeated once for credit.
Open to anthropology major only.

Requisites:
Prerequisite: ANTH 519 and junior and consent of Program Coordinator.

Typically Offered
Fall, Spring, Summer

ANTH 652 - Internship in Museology

Credits: 3

Practical professional museum experience of at least three weeks full time or 150 hours part time in the processing of collections, conservation, cataloging, archive and library maintenance, and/or planning and preparation of exhibits.

Repeat for Credit
Repeatable. May be repeated once for credit if at a different museum.
Open to anthropology majors only.

Requisites:
Prerequisite: ANTH 200 or ANTH 210 or ANTH 260.

Typically Offered
Fall, Spring, Summer

ANTH 659 - Independent Reading and Research in Anthropology

Credits: 1-3

Guided reading and research on a specific anthropological topic of student interest, leading to preparation of a research paper.

Note:
Topic and credit to be arranged.

Requisites:
Prerequisite: Three hours of anthropology and consent of instructor.

Typically Offered
Fall, Spring

ANTH 663 - Andean Archaeology

Credits: 3

Examines the economic, social, and political development of the region, including the Tawantinsuya (Inca Empire). Covers the adoption of agriculture; the origin of the state; power; and the role of religion, cosmology, ideology, and art.

Requisites:
Prerequisite: ANTH 260.

Typically Offered
Spring

ANTH 665 - European Archaeology

Credits: 3

Survey of human prehistory in Europe from the earliest Paleolithic hominins to evolve in Europe, expansion of Homo sapiens and associated cultural developments, the spread of agriculture, diversity of Bronze Age adaptations, to the development of Celtic societies. Studies of archaeological and related evidence are investigated to interpret the dynamics of past ways of living.

Requisites:
Prerequisite: ANTH 260.

Typically Offered
Spring-Even Years

ANTH 680 - Forensic Anthropology

Credits: 4

Anthropological survey of the predominantly biological areas of forensic science, their methods and techniques, as they pertain to the application of that science to the purpose of the law. Particular emphasis will be given to perspectives about the science itself, its application to anthropology, and the unique ways in which that science may be used by law.

Requisites:
Prerequisite: A life science with laboratory requirement in the College of Arts and Sciences or the consent of the instructor.

Typically Offered
Fall

ANTH 681 - Primatology

Credits: 3

Survey of the primate order including considerations of evolution, morphology, and behavior. Particular emphasis will be given to developing perspectives about the origin and evolution of hominids in the context of the primate order.

Requisites:
Prerequisite: ANTH 280 or consent of instructor.

Typically Offered
On sufficient demand

ANTH 682 - Human Growth and Development

Credits: 3

Provides an anthropological examination of the process of growth and development in humans that emphasizes both the biological, evolutionary, and cultural aspects that have shaped them through time. Emphasis is given to the evolution of the life cycle, as well as the social and environmental conditions that affect human growth.

Requisites:
Prerequisite: ANTH 280 or instructor's permission.

Typically Offered
Fall

ANTH 683 - Osteology

Credits: 4

Detailed study of human skeleton, with special attention to health and demographic conditions in prehistoric cultures and the evaluation of physical characteristics and genetic relationships of prehistoric populations.Laboratory demonstration and exercise in working with skeletal material for analysis of sex, age, stature, and race. Complete metric and nonmetric analysis with consideration given to paleodemography, paleopathology in situ analysis and excavation, and preservation.

Requisites:
Prerequisite: ANTH 280 or consent of instructor.

Typically Offered
Spring-Even Years

ANTH 686 - Bioarchaeology

Credits: 3

Explores how archaeologists and bioanthropologists approach the study of death, mortuary practices and skeletal remains, to reconstruct past lives and understand the associated behavior.

Requisites:
Prerequisite: ANTH 280 or instructor's consent.

Typically Offered
Spring

ANTH 687 - Seminar in Osteology

Credits: 2

Analysis of human and nonhuman skeletal remains including age, sex, stature, race, anomalities, pathologies, trauma, metric and nonmetric traits, cause of death, and time since death. This course allows greater breadth and depth of osteological analysis than either ANTH 694 or ANTH 695, and allows for more concentration on individual methods and techniques and case studies.

Requisites:
Prerequisite: ANTH 694 and ANTH 695.

Typically Offered
On sufficient demand

ANTH 688 - Paleoanthropology

Credits: 3

Human origins and evolution as indicated by fossil evidence; interpretation of man-apes, Pithecanthropus, Neanderthal, Cro-Magnon, and other major fossil groups within the context of evolutionary theory, primate comparisons, and cultural evolution.

Note:
Lecture and Lab.

Requisites:
Prerequisite: ANTH 200 or ANTH 280 or consent of instructor.

Typically Offered
Spring-Odd Years

ANTH 710 - Writing Cultures: Ethnographic Methods

Credits: 3

An introduction to qualitative field methods and research ethics in cultural anthropology. Students will examine issues of truth, representation, and reflexivity in ethnographic writing.

Requisites:
Prerequisite: ANTH 200, ANTH 204, or ANTH 210.

Typically Offered
Spring

ANTH 715 - Research Methods in Digital Ethnography

Credits: 3

A hands-on exploration of the uses of digital technology for ethnographic research and representation.

Typically Offered
Spring

ANTH 720 - Field Methods in Linguistics

Credits: 3

Techniques of collecting and analyzing linguistic data in the field. Work with language consultants in class, on languages such as Swahili.

Requisites:
Prerequisite: ANTH 220 or LING 280 or LING 600.

Typically Offered
On sufficient demand

AP 600 - Introduction to Pharmacology for Health Professionals

Credits: 3

Introduction to Pharmacology for Health Professionals is designed to provide an introduction to the principles of pharmacology and how they apply to health professionals.

Requisites:
BIOL 198 - Principles of Biology; CHM 110 - General Chemistry; BIOCH 571 - Medical Biochemistry
OR ASI 533 - Anatomy and Physiology
OR BIOL 442 - Human Body II

OR KIN 360 - Anatomy and Physiology
OR current standing in Veterinary Medicine
OR instructor consent

Typically Offered
Spring

AP 601 - Cardiorespiratory Physiology

Credits: 3

An examination of the structure and function of the respiratory system and the manner in which oxygen passes from the atmosphere to its site of utilization in the mitochondria. Exercise, disease, and environmental stresses will form the basis for examining the capacity, plasticity, and limitations to respiratory function.

Repeat for Credit
Repeatable as topic varies.

Requisites:
Prerequisite: Six hrs in Kinesiology 500 and above.

Typically Offered
Fall

Crosslisted:
KIN 601

AP 603 - Cardiovascular Physiology

Credits: 3

Study of the structure and function of the cardiovascular system as it pertains to health and disease. Topics include the control of blood pressure, vascular volume, and blood flow during orthostasis, aging and disease.

Requisites:
Prerequisite: KIN 250 and KIN 335.

Typically Offered
Spring

Crosslisted:
KIN 603

AP 711 - Stem Cells and Comparative Biomedicine

Credits: 2

Characteristics of major categories of stem cells. Applicable or potential clinical uses, including their utilization in tissue engineering or targeted delivery of therapeutics.

Typically Offered
Spring, Summer

AP 773 - Bioinstrumentation Laboratory

Credits: 1

Practical experience with and evaluation of laboratory and clinical techniques related to electrodes, transducers, computer-based data acquisition and analysis.

Note:
Three hours lab per week.

Requisites:
Prerequisite: AP 747 or equiv. and concurrent enrollment in ECE 772.

Typically Offered
Fall-Even Years

AP 788 - Basic and Applied Pharmacokinetics

Credits: 3

This course is designed to provide students with fundamental concepts and principles of absorption, distribution, metabolism and elimination of drugs, environmental chemicals, and nanomaterials by the body. The course also covers actual applications of the pharmacokinetic knowledge using case studies of commonly dosed drugs, common environmental contaminants, and nanomaterials.

Typically Offered
Fall-Even Years

AP 790 - Problems in Anatomy and Physiology

Credits: 1-18

Introduction of undergraduate and graduate students to research involving various anatomical and physiological systems.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

AP 796 - Topics in Exercise Physiology

Credits: 1-4

Intensive study of a selected topic in Exercise Physiology involving either great in-depth study, or application of theory presented in a related course.

Repeat for Credit
May be repeated as topic varies.

Requisites:
Prerequisite: KIN 335, KIN 336. Only 6 hours may be counted toward degree.

Typically Offered
Fall, Spring, Summer

Crosslisted:
KIN 796

AP 800 - Advanced Physiology of Exercise

Credits: 3

Study of the structure and function of the cardiovascular system as it pertains to acute and chronic exercise. Topics include the control of blood pressure, vascular volume and blood flow during orthostasis and exercise.

Requisites:
Prerequisite: KIN 250 and KIN 335.

Typically Offered
Spring

Crosslisted:
KIN 603

AP 802 - Advanced Toxicology

Credits: 3-6

An advanced course in toxicology stressing independent problem-solving utilizing data bases and technical resources to identify toxicological concerns, to define the problem, to consider possible remedial alternatives, and to select and implement the most appropriate management and recommendations for correction and future prevention.

Repeat for Credit
Repeatable. May be repeated once per student.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine, or graduate students in toxicology.

Typically Offered
Fall, Spring, Summer

AP 803 - Seminar

Credits: 1

Designed primarily for graduate and senior students enrolled for graduate credit in physiology. Each student is required to give a report on some subject related to physiology. The course is intended to stimulate interest in research and evaluation of data.

Note:
One hour a week.

Requisites:
Prerequisite: Consent of staff.

Typically Offered
Fall, Spring, Summer

AP 804 - Veterinary Physiology I

Credits: 5

Function of the animal body at the cellular level, including nerve and muscle function. Basic pathophysiological mechanisms and intermediary metabolism will be emphasized and correlated with clinical topics.

Note:
Five hours lecture a week.

Requisites:
Prerequisite: First-year standing in College of Veterinary Medicine or consent of instructor.

AP 806 - Gross Anatomy I

Credits: 6

Gross dissection of the dog with comparative aspects of the

cat.

Note:
Two hours lecture and nine hours lab a week.

Requisites:
Prerequisite: First-year standing in College of Veterinary Medicine or consent of the instructor.

Typically Offered
Fall

AP 808 - Introduction to Veterinary Medicine and Biomedical Research: Concepts and Values

Credits: 1

This course is intended to provide first-year students an opportunity to experience the depth of veterinary/biomedical research required to advance the practice of veterinary medicine, and advance the field of medicine in general. The students will examine the challenges of conducting 1) foundational and translation research (genetic/genomic and mechanistic research), 2) foundational and applications to clinical research 3) population and observational research (epidemiology, prospective clinical trials, retrospective studies), 4) pharmacologic research (the impact of pharmacology on the biomedical sciences). The students will examine relevant connections, consider conceptual relationships, and critically evaluate integrative issues germane to both the practice of and the innovative progress of veterinary medicine. Faculty members in the Departments of A&P, DM/P, and CS, will present topical overviews, based on their professional experiences. This will be designed to connect and integrate fundamental principles and relationships between research and clinical application. These presentations provide examples of the fundamental requirements for clinical therapies and also provide examples of how innovative science leads to new therapies for long standing clinical disease. Additionally, students will learn the tools required to search relevant topic to their career paths within the medical literature. Finally, drawing on the multidisciplinary literature presented by faculty, students will explore the challenges in conducting genetic/genomic research, using genomic information, implementing research results to clinical practice, as well as addressing the social, legal, and professional policies that are emerging from new research. Students will be expected to do reading and to complete online worksheets and present their findings/opinions in class. Class time will be devoted to presentations and to discussion of readings and related current events.

Typically Offered
Fall

AP 810 - Microscopic Anatomy I

Credits: 5

Origin, development, and microscopic structure and appearance of the cells and tissues of the animal body.

Note:
Three hours lecture and six hours lab a week.

Requisites:
Prerequisite: First-year standing in College of Veterinary Medicine.

Typically Offered
Fall

AP 816 - Gross Anatomy II

Credits: 5

Gross dissection of the horse and ruminant with comparative aspects of the pig, laboratory animals, and the chicken.

Note:
Three hours lecture and nine hours lab a week.

Requisites:
Prerequisite: AP 806.

Typically Offered
Spring

AP 818 - Veterinary Physiology II

Credits: 6

Function of the cardiovascular, endocrine, respiratory, renal, digestive, and reproductive systems of domestic animals with emphasis on physiologic control mechanisms, interrelationships of body systems, and criteria for evaluating animal health.

Note:
Five hours lecture and three hour lab a week.

Requisites:

Prerequisite: AP 804.

Typically Offered
Spring

AP 822 - Advanced Muscle Physiology

Credits: 3

Course will examine current topics in muscle physiology. Format to include discussion of scientific papers, oral presentations, and debate of controversial topics.

Requisites:
Prerequisite: KIN 335 or permission of instructor

Typically Offered
Spring

AP 824 - Physiology of Oxygen Transport

Credits: 3

This course is designed to promote critical reading of the literature, particularly with respect to the understanding of exercise physiology and cardiorespiratory, vascular and muscle energetics responses. Activities will include presenting papers, debate and discussion regarding all aspects of science and scientific philosophy.

Requisites:
Prerequisite: KIN 335 or permission of instructor

Typically Offered
Spring

AP 825 - Special Anatomy

Credits: 1-18

The gross and/or microscopic study of any system (or systems) of any domestic animal.

Requisites:
Prerequisite: AP 700 or AP 710 or equivalent and consent of staff.

Typically Offered
Fall, Spring, Summer

AP 826 - Advanced Cardiovascular Physiology

Credits: 3

Discussion and critical examination of cardiovascular control mechanisms, with specific emphasis on regulation of blood pressure during severe challenges such as exercise, heat stress, and upright posture.

Requisites:
Prerequisite: KIN 335 or permission of instructor

Typically Offered
Fall

AP 828 - Electricity in Biological Systems

Credits: 2

This course provides students in the life and/or physical sciences with foundational understanding of electrical concepts that contribute to life processes spanning the molecular, cellular, systems, and ultimately organismal levels. Historical and cultural discussions of bioelectric phenomena introduce essential concepts for further consideration through critical reading of primary literature.

Typically Offered
Fall

AP 830 - Toxins in the Biological System

Credits: 2

An advanced toxicology course concerned with the cellular land subcellular effects of various groups of toxins on the intact animal organism.

Requisites:
Prerequisite: BIOCH 521, CHM 531 or CHM 550, AP 844 or consent of instructor.

Typically Offered
Fall-Odd Years

AP 831 - Current Topics in Toxicology

Credits: 2

An advanced toxicology course providing in-depth examination of toxicological area of current relevance to

and/or controversy on mammalian health.

Note:
Specific topics will change from semester to semester. Student in Ph.D. programs may repeat the course.

Requisites:
Prerequisite: BIOCH 521 and AP 818.

Typically Offered
Other

AP 832 - Problems in Toxicology

Credits: 1-18

Individual investigations into the interactions of chemical compounds with living systems.

Requisites:
Prerequisite: AP 845.

Typically Offered
Fall, Spring, Summer

AP 838 - Anatomy 1

Credits: 2

Part 1 of the comparative anatomy sequence (AP 838, AP 842). An introduction to comparative anatomy with a focus on human clinical anatomy.

Repeat for Credit
No

Requisites:
Enrollment in the One Year Master's (non-thesis M.S. in Veterinary Biomedical Science) program or permission of instructor.

Typically Offered
Summer

AP 839 - Biomedical Methods Laboratory

Credits: 3

An introduction to the theory and practice of advanced biomedical laboratory techniques.

Requisites:
Acceptance into the Veterinary Biomedical Science M.S. non-thesis track ("One Year Master's Program") or permission of instructor.

Typically Offered
Spring

AP 840 - Study Methods and Career Preparation for Health Professional Students

Credits: 1

Introduces and examines research-based study methods that are applicable to advanced study in medical sciences. Challenges students to identify and improve current study habits. Prepares students to prepare an effective application to professional school.

Typically Offered
Fall

AP 841 - Introduction to Histology

Credits: 3

This course is intended to provide 1-year Professional Master of Science students a brief introduction to the microscopic structure of the cells and tissues of a mammalian body. The class format will be a lecture followed by a laboratory session. The lectures will introduce the day's material, which will then be developed through laboratory sessions that include using light microscopy to read and interpret micrographs, drawing, making glass slides.

Typically Offered
Summer

AP 842 - Anatomy 2

Credits: 3

An introduction to comparative human and domestic animal anatomy with a focus on clinical relevance.

Typically Offered
Fall

AP 843 - Physiology

Credits: 4

An introduction to human and domestic animal

physiology. The physiology of each body system will be introduced and important variations in medically relevant species will be compared.

Requisites:
Prerequisites:
CHM350 or equivalent
BIOL198 or equivalent
BIOCH521 or BIOL541 or equivalent
OR permission of instructor

Typically Offered
Summer

AP 844 - Pharmacology I

Credits: 4

The basic principles of pharmacology, the interactions of drugs and living systems including fundamental principles of pharmacokinetics, pharmacodynamics, receptor-coupling, and mechanisms of action. A systems-based approach to drug classes will be emphasized.

Note:
Four hours of lecture a week.

Requisites:
Prerequisite: AP 804 and AP 818 or equivalent.

Typically Offered
Fall

AP 845 - Toxicology

Credits: 2

Effects of harmful substances on the animal body. Emphasis placed on toxicologic principles and management of the poisoned patient.

Note:
Four hours of lecture a week for half of the semester plus three one-to three-hour field trips.

Requisites:
Prerequisite: Second-year standing in the College of Veterinary Medicine, BIOCH 521, and AP 818.

Typically Offered
Spring

AP 846 - Pharmacology II

Credits: 2

The basic principles of pharmacology, the relationship of drug actions and interactions on physiological principles and pathophysiological conditions. Pharmacokinetics, pharmacodynamics, and a systems-based approach to drug classes will be emphasized.

Requisites:
Prerequisite: Student must have a "C" or higher in AP 844 and DMP 712.

Typically Offered
Spring

AP 850 - Stem Cell Techniques

Credits: 2

Cellular and molecular techniques and techniques on tissue culture. Lecture and laboratory hours to be determined.

Typically Offered
Fall, Summer

AP 861 - Ultrastructural Interpretation of the Nervous System

Credits: 3

Study of the fine structure of neurons, axons, synapses, neuroglia and choroid plexus, the interconnections among neurons, the location of specific tracers and antibodies which define synaptic terminals, and a survey of methodologies used with transmission electron microscopy.

Requisites:
Prerequisite: Biol. 541 or AP 710.

Typically Offered
Spring

AP 870 - Advanced Cardiovascular Physiology

Credits: 2

Comprehensive overview of cardiovascular physiology in domestic animals with special emphasis on the dog and horse, including current research.

Requisites:

Prerequisite: AP 747 or equivalent.

Typically Offered
Fall-Odd Years

AP 873 - Physiologically Based Pharmacokinetic Modeling

Credits: 4

This modeling course is designed for life science graduate students with an interest in computational toxicology and pharmacology. Development of physiologically based pharmacokinetic (PBPK) models for environmental chemicals, drugs, and nanomaterials in laboratory animals, food-producing animals, companion animals, and/or humans will be introduced. Applications of PBPK models in food safety, toxicology, risk assessment, and pharmaceutical industry will be discussed. This course will cover theory, application software, experimental design, model development, optimization, validation, evaluation, and extrapolation. The expected outcome is that the student will have PBPK modeling knowledge and skills to develop a PBPK model with some mentoring from an experienced PBPK modeler. Format will include both weekly lectures and hands-on computer lab exercises.

Note:
Course objectives
(1) To provide the student with working knowledge of physiologically based pharmacokinetic models and their applications in toxicology
(2) To provide students with the technical ability to develop PBPK models for use in their graduate research and careers

Course evaluation:
(1) Grades will be determined from two written tests (20% each), computer lab simulation exercises/assignments (20%), a project presentation which demonstrates the development of a PBPK model and the application of the PBPK model in toxicology (40%).
(2) All grading will be administered through K-State online.

Requisites:
Prerequisite: Consent of instructor and 1 semester of calculus, physiology, pharmacology, pharmacokinetics, toxicology or biochemistry.

Typically Offered
Spring

AP 874 - Clinical Pharmacokinetics

Credits: 3

An overview of pharmacokinetics with emphasis on practical implications for the clinician, including bioavailability, bioequivalence, residues in food of animal origin, dosage forms and regimens, therapeutic drug monitoring, drug interactions, interspecies difference, and the effect of disease on the pharmacokinetics of drugs. Background in physiology and statistics strongly recommended.

Typically Offered
Fall

AP 880 - Mechanisms of Drug Action

Credits: 3

Discussion of pharmacologic mechanisms at the molecular and cellular level, including receptors, second messengers, and pharmacokinetics. Specialized areas of pharmacology such as neuropharmacology and drug design will be discussed. Areas of current research interest will be emphasized.

Requisites:
Prerequisite: BIOCH 521.

Typically Offered
Fall-Even Years

AP 890 - Problems in Pharmacology

Credits: 1-18

Individual investigations of the interactions of pharmaceutical compounds with living systems.

Requisites:
Prerequisite: AP 770.

Typically Offered
Fall, Spring, Summer

AP 893 - Introduction to Nanomedicine

Credits: 1

This course is a brief introduction to nanomaterials and nanomedicine with a focus on clinical applications of nanotechnology. The course presents basic principles of nanotechnology; current clinical applications of nanomedicine; future horizons in nanomedicine.

Repeat for Credit
No

Typically Offered
Spring

Crosslisted:
VAP 893

AP 894 - Comparative Embryology

Credits: 1

An overview of development anatomy as it relates to clinically important developmental defects and/or normal structure and function of common domestic animals.

Requisites:
Enrollment in the One Year Master's (non-thesis M.S. in Veterinary Biomedical Science) program or permission of instructor.

Typically Offered
Fall

AP 895 - Equine Exercise Physiology

Credits: 2

Comprehensive overview of the physiology of exercise in the horse with comparison to other species. Emphasis will be on cardiovascular, respiratory, and musculoskeletal systems, including current research.

Requisites:
Prerequisite: AP 747 or equivalent.

Typically Offered
Fall-Even Years

AP 896 - Introduction to Responsible Conduct of Biomedical Research

Credits: 2

This course will focus on providing graduate/professional students an introduction to the regulations, practices, ethical considerations, and professional interactions that define responsible conduct of biomedical research. Investigator responsibilities associated with initiating and establishing a research program, conducting experimental studies, analyzing and reporting data, publishing in peer-reviewed journals, considerations for submitting grant applications, and understanding compliance issues and regulations will be emphasized. Students will learn through reading journal articles and discussion of pertinent topics to identify and consider issues that are germane to the biomedical research environment.

Typically Offered
Fall

AP 898 - Master's Report

Credits: 2

Requisites:
Prerequisite: Consent of staff.

Typically Offered
Fall, Spring, Summer

AP 899 - Research

Credits: 1-6

For graduate students in the field of anatomy or physiology working toward the M.S. Degree.

Requisites:
Prerequisite: Consent of staff.

Typically Offered
Fall, Spring, Summer

AP 925 - Advanced Physiology

Credits: 3-5

The principles and techniques in the investigation of bioelectrical phenomena in relation to: (a) the physiology of the digestive organs, (b) myophysiology, (c) endocrinology, and (d) neurophysiology. Advanced physiological experiments will be conducted to provide an understanding of the applications of electronic equipment.

Note:
recitation and two three-hour labs a week.

Requisites:
Prerequisite: AP 747 and consent of staff.

Typically Offered
Fall, Spring, Summer

AP 995 - Problems in Physiology

Credits: 1-18

Special problem-involving techniques utilized in studying the function of various organ systems of the body.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

AP 999 - Research in Physiology

Credits: 1-6

For graduate students working toward the Ph.D. Degree.

Requisites:
Prerequisite: Consent of staff. Animal science and industry courses. The M.or Ph.D. program of study shall include supportive course work from several departments including statistics, biochemistry, anatomy and physiology, biology, grain science and others. Graduate level courses offered in the Department of Animal Sciences and Industry are listed below.

Typically Offered
Fall, Spring, Summer

ARAB 501 - Arabic V

Credits: 4

Further development of language and culture skills.

Requisites:
Prerequisite: ARAB 282 or equivalent.

ARAB 502 - Arabic VI

Credits: 4

A continuation of Arabic V, with further development of language and culture skills.

Requisites:
Prerequisite: ARAB 501 or equivalent.

ARAB 540 - Special Studies in Arabic

Credits: 1-18

Requisites:
Prerequisite: Consent of the department head and instructor involved.

ARCH 240 - Science, Technology, and Architecture

Credits: 3

An exploration of the interrelationships between architecture and various sciences including the technological applications of selected scientific theories.

Note:
Non-majors may take this course for UGE credit, but it will not fulfill UGE requirements for majors. However, it may be taken as a professional support elective (PSE) by architecture students.

Typically Offered
Fall, Spring, Summer

ARCH 248 - Fundamentals of Architectural Technology

Credits: 3

Instruction in the fundamentals of architectural technology with emphasis on the concepts and principles necessary for developing an integrated approach to building design.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: PHYS 113 or PHYS 115 and admission to a professional program in the college.

Typically Offered
Fall, Spring

Crosslisted:
IARC 248

ARCH 265 - Basic Problems in Architectural Design

Credits: 1-18

Study of specific architectural design problems under the

direction of a member of the architecture faculty.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

ARCH 274 - Digital Architecture I

Credits: 1

This course will introduce students to digital management concepts, basic architectural digital representation, 3-dimensional computer modeling, raster, and vector graphics with an emphasis on conceptual development.

Requisites:
Prerequisites: Second year standing or higher, or permission of the instructor.

Typically Offered
Fall, Spring, Summer

ARCH 290 - Architecture Through the Ages

Credits: 3

An introductory survey of the history of architecture worldwide from its prehistoric beginnings up to the present day.

Note:
May not be taken for credit by students enrolled in the College of Architecture, Planning and Design.

Typically Offered
Fall, Spring, Summer

ARCH 301 - Appreciation of Architecture

Credits: 3

An analysis of the evolution of architectural styles to determine the relation of architectural expression to the needs of society.

Note:
Three hours recitation a week. May not be taken for credit by students enrolled in the architecture, landscape architecture, or interior architecture curricula.

Typically Offered
Fall, Spring, Summer

ARCH 302 - Architectural Design Studio I

Credits: 5

Instruction in architectural design focusing on the application of elements and principles of form and space in design. Instruction in the use of techniques for visually representing design ideas.

Requisites:
Prerequisite: Admission to the architecture program and ENVD 202.

Typically Offered
Fall

ARCH 304 - Architectural Design Studio II

Credits: 5

Instruction in architectural design focusing on the synthesis of basic social, functional, technical, and aesthetic factors in design. Continued instruction in techniques for visually representing design ideas.

Requisites:
Prerequisite: ARCH 302 and no grade lower than a C in an architectural design studio course.

Typically Offered
Spring

ARCH 325 - Environmental Design and Society

Credits: 3

Instruction in behavioral, cultural, and ecological factors that contribute to successful environmental design; considers how the design process is affected by a conceptual point of view. Case studies from architecture, landscape architecture, interior architecture, and interior design.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: Second-year standing or permission of instructor.

Typically Offered
Spring

ARCH 347 - Structural Systems in Architecture I

Credits: 4

Introduction to structure as a building system. Overview of contemporary structural systems and their components, including wood, timber, steel, concrete, masonry, and hybrid structures. Discussion of building code requirements for structure, general guidelines for building structures, including appropriate application, and methods for schematic estimation of structural member sizing. Basic understanding of how gravity and lateral forces are propagated through a structural frame from load to building foundation.

Note:
Three hours lecture, two hours laboratory per week.

This course replaces ARCH 348 and ARCH 449.

Requisites:
Prerequisites: PHYS 113 or PHYS 115, MATH 100 or higher, ARCH 248, and admission to a professional program in the college.

Typically Offered
Spring

ARCH 348 - Structural Systems in Architecture I

Credits: 3

Introduction to statics; force analysis and the study of forces in equilibrium; principles of statics as applied to the study of simple elemental structures; the origin, the nature, and the action of loads on structural systems. Instruction in the use of statics in the preliminary stages of building design. For ARCH and IAPD students.

Note:
Three hours lecture, two hours recitation a week.

Requisites:
Prerequisite: PHYS 113 or PHYS 115, MATH 100 or higher.

Typically Offered
Fall

ARCH 350 - History of the Designed Environment III

Credits: 3

The history of the designed environment from the mid-18th century through present.

Requisites:
Prerequisite: ENVD 251 or permission of instructor.

Typically Offered
Fall

ARCH 373 - Digital Architecture II

Credits: 1

This course will introduce students to methods for digital 3-dimensional visualization, including rendering, animation, compositing and analysis.

Requisites:
Prerequisite: Second year standing or higher, or permission of the instructor.

Typically Offered
Fall, Spring, Summer

ARCH 374 - Digital Architecture III

Credits: 1

This course will introduce students to parametric and associative modeling methods for conceptual development, the design and representation of building assemblies and systems, and architectural documentation.

Requisites:
Prerequisite: ARCH 274, ARCH 373, or permission of the instructor.

Typically Offered
Fall, Spring, Summer

ARCH 401 - Accelerated Architectural Design Studio I

Credits: 5

An introduction to the principles, processes and vocabularies of architectural design; basic architectural concerns (space/light/form and human factors); and techniques for visually representing design ideas (sketching/diagramming/instrument-aided drawings and model making).

Requisites:
Prerequisite: Admission to the post-baccalaureate track of the Master of Architecture Program.

Typically Offered
Fall

ARCH 402 - Accelerated Architectural Design Studio II

Credits: 5

Further development of the ideas skills and methodologies introduced in ARCH 401, and introduction to wider array of architectural concerns including social, functional, technical, contextual, and professional issues. The course will prepare students to enter the third-year architectural design studios.

Requisites:
Prerequisite: ARCH 401, and no grade lower than a C in an architectural design studio course.

ARCH 403 - Architectural Design Studio III

Credits: 5

Relation of structures to their environment; client and community restraint; development of building programs; synthesis of functional, technical, and aesthetic considerations in the design of structures for human use.

Note:
Twelve hours studio a week.

Requisites:
Prerequisite: ARCH 304 or ARCH 402, and no grade lower than a C in an architectural design studio course.

Typically Offered
Fall

ARCH 404 - Architectural Design Studio IV

Credits: 5

Relation of structures to their environment; client and community restraint; development of building programs; synthesis of functional, technical, and aesthetic considerations in the design of structures for human use.

Note:
Twelve hours studio a week.

Requisites:
Prerequisite: ARCH 403 and no grade lower than a C in an architectural design studio course.

Typically Offered
Spring

ARCH 413 - Environmental Systems in Architecture I

Credits: 4

Instruction in environmental and building control systems of architecture, including bioclimatic and ecological design principles. Emphasis on integrated system design approach, with a focus on passive and natural strategies. Contemporary and developing approaches are explored.

Note:
Three hours lecture and one hour recitation a week.

Requisites:
Prerequisite: ARCH 248 or IARC 248 and enrollment in a professional program in the college.

Typically Offered
Fall, Spring

ARCH 433 - Building Construction Systems in Architecture I

Credits: 3

A lecture course that develops an understanding of how materials and systems assembly reinforce and extend the intentions of the designer as well as an understanding of the strategies and techniques for integration and coordination of the building components. For ARCH and IAPD students.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: ARCH 248 and admission to a professional program in the college.

Typically Offered
Fall, Spring

ARCH 434 - Building Construction Systems in Architecture II

Credits: 3

This course develops a more sophisticated level of understanding of how materials and systems assembly reinforce and extend the intentions of the designer. Students will develop their ability to both analyze and employ building construction techniques and assemblies as a design generator in preparation for Architectural Design Studio V.

Requisites:
Prerequisite: ARCH 433.

Typically Offered
Spring

ARCH 448 - Structural Systems in Architecture II

Credits: 4

Instruction in the quantitative analysis of structural systems and the forces they resist, proceeding from the design loads associated with building through the reactions of particular structural elements. Overview of material strengths, and other properties of specific structural systems. Instruction in structural system sizing, by hand calculation and computer analysis.

Note:
Three hours of lecture, two hours laboratory per week. This course replaces ARCH 452 and ARCH 453.

Requisites:
Prerequisite: ARCH 347 and admission to a professional program in the college.

Typically Offered
Fall

ARCH 449 - Structural Systems in Architecture II

Credits: 3

Instruction in strength of materials focusing on the behavior of building materials under loading; their ability to resist deformation and failure. Instruction in sizing simple structural elements. For ARCH and IAPD students.

Note:
Three hours lecture, two hours recitation a week.

Requisites:
Prerequisite: ARCH 348.

Typically Offered
Spring

ARCH 452 - Structural Systems in Architecture III

Credits: 3

Instruction in the design of building structures as whole systems. Instruction in the principles of structural subsystem design; emphasis on the overall structural behavior and subsystems integrity required to achieve a variety of building forms. Instruction in strategies for the use of approximation in the manipulation of key quantitative properties of whole systems and major subsystems in building design.

Note:
Three hours lecture, two hours workshop/test each week.

Requisites:
Prerequisite: ARCH 449.

Typically Offered
Fall

ARCH 453 - Structural Systems in Architecture IV

Credits: 3

Instruction in the design of building structures as whole systems; overall-to-specific systems behavior and manipulative design of major subsystems. Emphasis on the design of subsystems and subsystem components as they are affected by structural material. Instruction in specialized issues associated with the analysis and design of high rise and long-span building structure, including foundation, constructive, and economic factors which affect building design.

Note:
Three hours lecture, two hours workshop/test each week.

Requisites:
Prerequisite: ARCH 452.

Typically Offered
Spring

ARCH 475 - Problems in Architectural Presentation

Credits: 1-18

Study of various methods of graphically representing architectural problems to develop professional office techniques.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Second-year standing and approval of instructor.

Typically Offered
Fall, Spring, Summer

ARCH 503 - Internship Planning Seminar

Credits: 1

Exploration and preparation for an architecture internship in the field of architecture.

Requisites:
Prerequisite: ENGL 200 and 4th Year Standing.

Typically Offered
Fall

ARCH 505 - Architectural Internship, Part A

Credits: 9

Off-campus work study program with an approved professional, building industry, government or non-profit agency sponsor.

Note:
Must be enrolled concurrently with ARCH 506 and each course must be successfully completed before credit is awarded in either. This course is graded credit/no credit.

Requisites:
Prerequisite: ARCH 503, ARCH 605, approval of the internship coordinator, and no grade lower than a C in an architectural design studio course.

Typically Offered
Spring

ARCH 506 - Architectural Internship, Part B

Credits: 3

Preparation of internship journals and employer profiles during the approved off-campus work-study program in ARCH 505.

Note:
Must be enrolled concurrently with ARCH 505 and each course must be successfully completed before credit is awarded in either. This course is letter-graded only.

Requisites:
Prerequisite: ARCH 503, ARCH 605 and no grade lower than a C in an architectural design studio course.

Typically Offered
Spring

ARCH 507 - Architectural Internship, Part C

Credits: 2

A continuation of the approved off-campus internship of ARCH 505 and ARCH 506. Preparation of internship journals, employer profiles, and a final internship analysis paper based on the entire 30-week internship experience. This course must be completed in order for internship to count as an equivalent of ARCH 606.

Requisites:
Prerequisite: ARCH 505 and ARCH 506.

Typically Offered
Summer

ARCH 514 - Environmental Systems in Architecture II

Credits: 3

Instruction in criteria for selection and application of

natural and mechanical environmental control systems in architecture. Focus on the integration of thermal, illumination, sanitary, movement, and acoustical systems within the building and the natural environment. Contemporary and developing approaches are explored.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ARCH 248 or IAPD 248 and enrollment in a professional program in the college.

Typically Offered
Fall, Spring

ARCH 515 - Environmental Systems in Architecture III

Credits: 3

Criteria for selection and application of natural and mechanical environmental control systems in architecture. Focus on the integration of thermal, illumination, sanitary, movement, and acoustical systems with the building fabric and the natural environment. Contemporary and developing approaches are explored.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ARCH 413.

Typically Offered
Fall

ARCH 565 - Problems in Architectural Design

Credits: 1-18

Study of specific design problems under the direct supervision of a member of the architecture faculty.

Requisites:
Prerequisite: Approval of instructor.

Typically Offered
Summer

ARCH 605 - Architectural Design Studio V

Credits: 5

Design and development of an architectural project beyond schematic design.

Note:
Twelve hours studio a week.

Requisites:
Prerequisite: ARCH 404, ARCH 434, ARCH 448, ARCH 514, LAR 500 and no grade lower than a C in an architectural design studio course.

Typically Offered
Fall, Spring, Summer

ARCH 606 - Architectural Design Studio VI

Credits: 5

Design and development of architectural projects on topics proposed by faculty. On or off-campus studio. Department and College approval required for off-campus studios, whether in a domestic or international studies program or university.

Note:
Twelve hours studio a week.

Requisites:
Prerequisites: ARCH 404, ARCH 434, ARCH 448, ARCH 514, LAR 500, and no grade lower than a C in an architectural design studio course.

Typically Offered
Fall, Spring, Summer

ARCH 650 - Architectural Programming

Credits: 3

An introductory course surveying the basic philosophies and methodologies for architectural programming; emphasis on the comparative evaluation of different strategies and their integration within the process of design.

Requisites:
Prerequisite: Senior standing or permission of the instructor.

Typically Offered
Fall, Spring

ARCH 654 - Study Abroad Orientation

Credits: 0-18

Preparation for participation in study abroad with a focus on specific information pertaining to the design professions and the analysis of the built and natural environment.

Typically Offered
Fall, Spring

ARCH 700 - Topics in History of the Designed Environment

Credits: 3

Seminar on topics involving specific periods or subjects in the history of the built environment.

Repeat for Credit
May be repeated with credit for different topics.

Requisites:
Prerequisite: ARCH 350 or MS ARCH standing.

Typically Offered
Fall, Spring

ARCH 703 - Environmental Aesthetics

Credits: 3

Problems involving aesthetics in areas related to student's major field.

Note:
Three hours a week.

Requisites:
Prerequisite: Senior standing or permission of instructor.

Typically Offered
Fall, Spring

ARCH 704 - Topics in Environment and Behavior

Credits: 3

Seminar on topics in human behavior as it relates to physical environments.

Repeat for Credit
May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 304 or IAPD 320 or LAR 320 or M. ARCH standing or junior standing if outside CAPD.

Typically Offered
Fall, Spring

ARCH 705 - Project Programming

Credits: 2

The development of program for ARCH 707, Architectural Design VIII under direction of a faculty member.

Requisites:
Prerequisite: ARCH 606, or ARCH 505/ARCH 506, and approval of the faculty committee.

Typically Offered
Fall, Spring

ARCH 706 - Architectural Design Studio VII

Credits: 5

Integration of the physiological, psychological and sociological parameters in the design of environments. Analysis, programming, and planning problems, increased complexity of function and space definition systems. Relating environmental technology to total design.

Note:
Twelve hours studio a week.

Requisites:
Prerequisite: Either ARCH 507 or ARCH 606; ARCH 434, ARCH 448, ARCH 515, and no grade lower than a C in any architectural design studio course.

Typically Offered
Fall, Spring

ARCH 707 - Architectural Design Studio VIII

Credits: 5

Development of the student's project programmed in ARCH 705, under the direction of a faculty committee. Project must demonstrate a high level of achievement in systematic and comprehensive thinking, application of

resources and communication of total process.

Note:
Twelve hours studio a week.

Requisites:
Prerequisite: ARCH 705, ARCH 706, and no grade lower than a C in an architectural design course.

Typically Offered
Fall, Spring

ARCH 711 - Topics in Architectural Design Methods

Credits: 3

Intensive review of selected design methodologies, including systematic and computer-based approaches to problem definition and project design; emphasis upon the comparative evaluation of problem-solving strategies within the architectural design process.

Repeat for Credit
May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 403 or IAPD 435 or LAR 320 or MS ARCH standing.

Typically Offered
Fall, Spring

ARCH 715 - Topics in Architecture Seminar

Credits: 3

Seminar on topics in architecture with readings, class discussion, student presentations, research papers or projects.

Repeat for Credit
Repeatable with different topics.

Requisites:
Prerequisite: ARCH 403 or permission of instructor.

Typically Offered
Fall, Spring

ARCH 716 - Topics in Environmental Systems in Architecture

Credits: 3

A concentrated study of a particular subject related to the environmental systems of the built environment.

Repeat for Credit
May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 413 or MS ARCH standing.

ARCH 720 - Environment and Behavior

Credits: 3

Investigates the relationship between human behavior and design of the physical environment. Includes identification of psychological, social, cultural concepts which influence and are influenced by the built environment. Emphasizes applying this knowledge in design.

Note:
Three hour seminar per week.

Requisites:
Prerequisite: ARCH 325 or equivalent or permission of instructor.

Typically Offered
Fall, Spring

ARCH 725 - Architecture Research Methods

Credits: 3

An introductory course surveying the basic philosophies and methodologies of science and research as they apply to the field of architecture.

Note:
Special emphasis will be placed on those methods appropriate for investigating human response to the built environment.

Typically Offered
Fall, Spring

ARCH 735 - Topics in Building Construction Systems in Architecture

Credits: 1-4

Advanced study of the relationship of conceptual and/or

technological factors of building construction to architecture.

Repeat for Credit
May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 434 or MS ARCH standing.

Typically Offered
Fall, Spring

ARCH 750 - Writing Intensive Architecture Seminar

Credits: 3

A writing intensive seminar shall be an Architecture Seminar where over half of the course grade is based on written assignments (including papers, assignments, quizzes & exams).

Requisites:
Prerequisite: ENGL 200 and ARCH 403.

Typically Offered
Fall, Spring

ARCH 752 - Topics in Structural Systems in Architecture

Credits: 3

Study of the relationship of conceptual and/or technological factors of structure to architectural design.

Repeat for Credit
May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 448 or MS ARCH standing.

Typically Offered
Fall, Spring

ARCH 753 - Professional Practice

Credits: 3

Studies of conventional and newly developing methods of professional design practice. Instruction in the relationships of architects, landscape architects, interior architects and other professions to users, clients, construction industry, society, government, and one another.

Note:
Two hours lecture and one hour recitation.

Requisites:
Prerequisite: ARCH 433.

Typically Offered
Fall

ARCH 765 - Advanced Problems in Architecture

Credits: 1-18

Study of specific architectural problems under the direct supervision of a member of the architecture faculty.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

ARCH 790 - Practicum

Credits: 1-18

Practical application of studies related to a student's area of focus.

Note:
For Master of Architecture and Master of Science in Architecture students. May be taken with departmental permission only.

Typically Offered
Fall, Spring, Summer

ARCH 801 - Topics in History of the Designed Environment

Credits: 3

Seminar on topics involving specific periods or subjects in the history of the built environment.

Repeat for Credit
Repeatable. May be repeated for credit with different

topics.

Requisites:
Prerequisite: ARCH 350.

Typically Offered
Fall, Spring

ARCH 803 - Environmental Aesthetics

Credits: 3

Problems involving aesthetics in areas related to student's major field.

Typically Offered
Fall, Spring

ARCH 804 - Topics in Environment and Behavior

Credits: 3

Seminar on topics in human perceptions, reactions, and behavior as they relate to physical environments.

Repeat for Credit
Repeatable. May be repeated for credit with different topics.

Typically Offered
Fall, Spring

ARCH 805 - Comprehensive Design Preparation

Credits: 3

Scholarly and design-based research, intended to deeply inform architectural decision-making, culminating in a program for an architectural project to be undertaken in ARCH 808.

Requisites:
Prerequisite: ENGL 200, ARCH 605, and ARCH 606.

Typically Offered
Fall

ARCH 809 - Architectural Design Communication

Credits: 3

Instruction in design communication with emphasis on concepts, principles, strategies and skills for effectively combining writing with images and other products of design; focuses on ideas, processes and proposals developed during the final year of architectural design studio.

Requisites:
Corequisite: ARCH 818.

Typically Offered
Spring

ARCH 811 - Topics in Architectural Design Methods

Credits: 3

Intensive review of selected design methodologies, including systematic and computer-based approaches to problem definition and project design; emphasis upon the comparative evaluation of problem-solving strategies within the architectural design process. May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 304.

Typically Offered
Fall, Spring

ARCH 815 - Topics in Architecture

Credits: 3

Seminar on topics in architecture with readings, class discussion, student presentations, research papers or projects.

Repeat for Credit
Repeatable. May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 304.

Typically Offered
Fall, Spring

ARCH 816 - Topics in Environmental Systems in Architecture

Credits: 3

A concentrated study of a particular subject related to the environmental systems of the built environment.

Repeat for Credit
Repeatable. May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 413.

Typically Offered
Fall, Spring

ARCH 817 - Architectural Design Studio VII

Credits: 5

Advanced design and development of architectural projects on topics proposed by faculty.

Note:
Twelve hours studio a week.

Requisites:
Prerequisite: ARCH 605, ARCH 606, and no grade lower than a C in an architectural design course.

Typically Offered
Fall

ARCH 818 - Architectural Design Studio VIII

Credits: 5

Advanced design and development of an architectural project using the program developed in ARCH 805. Students must demonstrate the ability to achieve a comprehensive, integrated design from site- to detail-scale.

Requisites:
Prerequisite: ARCH 805, ARCH 817, and no grade lower than a C in an architectural design studio course.

Typically Offered
Spring

ARCH 820 - Environment and Behavior

Credits: 3

Investigates the relationship between human behavior and design of the physical environment. Includes identification of psychological, social, cultural factors which influence and are influenced by the built environment. Emphasizes applying this knowledge in design.

Note:
Three hour seminar per week.

Typically Offered
Fall, Spring

ARCH 830 - Advanced Architectural Studies

Credits: 1-18

Studies related to the area of focus of a M.S. Arch. student in the non-thesis option. Preparation of a non-thesis proposal and a non-thesis project which may include a design project, synthesis paper, portfolio of written work, series of case studies, or other project. May be taken by M. Arch. student with departmental permission only.

Repeat for Credit
Repeatable. Three hours recitation a week.

Typically Offered
Fall, Spring, Summer

ARCH 835 - Topics in Building Construction Systems in Architecture

Credits: 1-4

Advanced study of the relationship of conceptual and/or technological factors of building construction to architecture.

Repeat for Credit
Repeatable. May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 433.

Typically Offered
Fall, Spring

ARCH 852 - Topics in Structural Systems in Architecture II

Credits: 3

Study of the relationship of conceptual and/or technological factors of structure to architectural design.

Repeat for Credit
Repeatable. May be repeated for credit with different topics.

Requisites:
Prerequisite: ARCH 453.

Typically Offered
Fall, Spring

ARCH 853 - Professional Practice: Professional Responsibility

Credits: 1

Interdisciplinary course addresses the connections between allied design professions and the larger community. It helps students to understand and appreciate their professional legal and ethical responsibilities.

Typically Offered
Fall, Spring

ARCH 854 - Professional Practice: Office Practices

Credits: 1

Interdisciplinary course addresses practice-based issues concerning professional relationships in the design and delivery process, management of projects, communication practices, and fiscal concerns.

Typically Offered
Fall, Spring

ARCH 855 - Professional Practice: Discipline-Specific Topics

Credits: 1

Covers discipline-specific concerns, focusing on issues specific to architecture, interior architecture and product design, landscape architecture or regional and community planning.

Typically Offered
Fall, Spring

ARCH 865 - Advanced Problems in Architectural Design

Credits: 0-18

Study of specific architectural design problems under the direct supervision of a member of the architecture faculty.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

ARCH 870 - History of American Architecture and Allied Design I

Credits: 3

The history of American architecture including aspects of interior architecture, landscape architecture, urban planning, and preservation. This course investigates how the built forms of various colonial settlers in America responded to a new environment and how a distinctive American culture eventually took shape by the end of the 1800s.

Requisites:
Prerequisite: ARCH 350.

Typically Offered
Fall

ARCH 899 - Thesis

Credits: 1-18

Study in architecture and related fields leading to thesis.

ARE 521 - Computer Aided Architectural Engineering

Credits: 2

An introduction to the use of computer software for the design and integration of building systems. The course is intended to complement and enhance the content of the concurrent system courses (Mechanical II, Electrical II, and Structures II). The computer software used will represent the standard practices of the building construction industry.

Note:

4 hours lab per week

Requisites:
Prerequisite: ARE 551, ARE 552, or ARE 553.

Typically Offered
Fall, Spring

ARE 537 - Acoustic Systems

Credits: 2

Hearing and the ear, sound generation, acoustical correction, noise reduction, and sound transmission all as integral parts of architectural design.

Note:
Two hours recitation a week.

Requisites:
Prerequisite: PHYS 113 or PHYS 213.

Typically Offered
Fall, Spring

ARE 551 - Electrical Systems I

Credits: 3

An introduction and study of the basic concepts and components of building electrical distribution systems, including circuit design.

Note:
3 hours recitation per week

Requisites:
Prerequisite: PHYS 214 and ARE 295. Must be taken concurrent with ARE 552, and ARE 553. Architectural Engineering Majors only.

Typically Offered
Fall, Spring

ARE 552 - Mechanical Systems I

Credits: 3

An introduction to building HVAC and plumbing system terminology, principles, and practices of design and layout specifically for applications of human comfort and safety.

Note:
3 hours recitation per week

Requisites:
Prerequisite: ME 513. Must be taken concurrent with ARE 551, and ARE 553. Architectural Engineering Majors only.

Typically Offered
Fall, Spring

ARE 553 - Structural Systems I

Credits: 3

An introduction to building structural system terminology, principles, and practices of design and layout specifically for applications of buildings.

Note:
3 hours recitation per week

Requisites:
Prerequisite: CE 533 and prerequisite or concurrent CE 537. Must be taken concurrent with ARE 551 and ARE 552. Architectural Engineering Majors only.

Typically Offered
Fall, Spring

ARE 561 - Electrical Systems II

Credits: 3

The study and application of luminaires, lighting systems design and control, circuit and utilization component design, and design of building electrical systems distribution and service equipment.

Note:
3 hours recitation per week

Requisites:
Prerequisite: ARE 551

Typically Offered
Fall, Spring

ARE 562 - Mechanical Systems II

Credits: 3

The study of building HVAC system selection and application including load calculations, space coordination, system design and layout, and scheduling of equipment and

materials.

Note:
3 hours recitation per week

Requisites:
Prerequisite: ARE 552

Typically Offered
Fall, Spring

ARE 563 - Structural Systems II

Credits: 3

Introduction to design of reinforced concrete structures. Theoretical and practical bases for proportioning members, layout specifically for applications of buildings and characteristic as a construction material.

Note:
3 hours recitation per week.

Requisites:
Prerequisites: ARE 553, CHM 210, and CE 537.

Typically Offered
Fall, Spring

ARE 571 - Systems Integration & Design

Credits: 3

An analysis of structural, mechanical, electrical and plumbing systems design processes, budgeting and constructability that supports the Conceptual Design and Schematic Design phases of building projects.

Note:
2 hours recitation & 4 hours lab per week

Requisites:
Prerequisites: ARE 421, ARE 460, ARE 521, ARE 561, ARE 562, and ARE 563.

Typically Offered
Fall, Spring

ARE 620 - Problems in Architectural Engineering

Credits: 1-18

A study of specific design problems under the direct supervision of a member of the architectural engineering faculty.

Requisites:
Prerequisite: Approval of the department head.

Typically Offered
Fall, Spring, Summer

ARE 630 - Introduction to LEED

Credits: 0-18

Introduction to green building design and construction principles and practices based on the Leadership in Energy and Environmental Design (LEED) Green Building Rating System of the United States Green Building Council (USGBC).

Note:
One or Two hours recitation a week.

Requisites:
Prerequisite: Professional Program standing

Typically Offered
On sufficient demand

ARE 671 - ARE Capstone

Credits: 4

In a studio fashion, student working individually or as part of a small team will prepare and present a design project of appropriate scope and complexity with emphasis on structural or mechanical/electrical/plumbing building systems.

Note:
2 hours recitation & 6 hours lab per week.

Requisites:
Prerequisite: ARE 571

Typically Offered
Fall, Spring

ARE 711 - Building Energy Codes and Standards

Credits: 2

Study of the background, importance, impact, and application of the energy codes to the mechanical and electrical systems design process.

Note:
Two hours recitation a week.

Requisites:
Prerequisite: ARE 562.

Typically Offered
Spring

ARE 712 - Energy Modeling Lab

Credits: 1

Study of current building energy sources and trends, basic engineering economics applied to building energy use, energy calculations for building systems, and software-based whole building energy simulation using eQUEST.

Note:
Two hours lab a week.

Requisites:
Prerequisite: ARE 562.

Typically Offered
Spring

ARE 715 - Problems in Architectural Engineering

Credits: 0-18

Participation in student design competition teams under the direct supervision of a member of the architectural engineering faculty.

Requisites:
Prerequisite: Approval of the department head.

Typically Offered
Fall, Spring

ARE 720 - Topics in Architectural Engineering

Credits: 1-18

A study of specific design problems in architectural engineering.

Requisites:
Prerequisite or concurrent enrollment: ARE 590.

Typically Offered
Fall, Spring, Summer

ARE 722 - Building Loads and Computer Aided Structural Analysis and Design

Credits: 3

Fundamentals of building structural systems and design with the emphasis on building loads and load paths. Review of International Building Code's structural loading requirements, applications, and determination of design loads by ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures. Introduction of building design and analysis software basics. Students will learn how to generate building structural models, and conduct analysis, design, and simulation using software applications.

Requisites:
Prerequisite or concurrent: ARE 563

Typically Offered
Fall

ARE 723 - Timber Structures

Credits: 3

Analysis and design of timber structures including dimension lumber, glu-lam members, and engineered wood products.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 537.

Typically Offered
Spring

ARE 724 - Advanced Steel Design

Credits: 3

Structural design computations for beams, girders, columns and beam-columns. Design of connections (bolted &

welded). Structural working drawings (plan, elevation and connection details). Overview of failure mechanisms and design procedures for plate girders. AISC requirements for prevention of various failure mechanisms.

Note:
Three hours recitation per week.

Requisites:
Prerequisite: ARE 553 or CE 542.

Typically Offered
Fall

ARE 725 - Cold-Formed Steel Design

Credits: 3

Principles of behavior, design, fabrication, and construction of cold-formed steel structures.

Note:
Two or three hours recitation a week.

Requisites:
Prerequisite: ARE 553 or CE 542.

Typically Offered
On sufficient demand

ARE 726 - Masonry Structural Design

Credits: 3

Introduction to masonry materials, specifications, testing and construction methods. The design of unreinforced and reinforced masonry structures according to applicable building codes.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ARE 563 or CE 544.

Typically Offered
Fall

ARE 729 - Building Seismic Design

Credits: 3

Continuation of ARE 553 and ARE 563 with special emphasis on seismic design as applied to a complete structure.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ARE 553 or CE 542, Prerequisite or concurrent ARE 563 and ARE 722.

Typically Offered
On sufficient demand

ARE 731 - Advanced Lighting Design

Credits: 3

Design and application of lighting systems for commercial buildings, using current industry practices and computer-assisted analysis.

Note:
Two hours recitation and two hours lab a week.

Requisites:
Prerequisite: ARE 561.

Typically Offered
Spring

ARE 733 - Advanced Mechanical Hydronic Systems Design

Credits: 3

Design and application of mechanical systems for buildings, focusing on hydronic and steam systems, expanding on the material and topics presented in prior HVAC courses.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ARE 562.

Typically Offered
Spring

ARE 734 - Advanced Mechanical Air Systems Design

Credits: 3

Design and application of mechanical systems for buildings, focusing on air systems, expanding on the material and topics presented in prior HVAC courses.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ARE 562.

Typically Offered
Fall, Spring

ARE 735 - Electrical Systems Design

Credits: 3

Design and application of various electrical distribution system for commercial buildings. The course uses the National Electrical Code in conjunction with current industry practices.

Note:
Two hours recitation and two hours lab a week.

Requisites:
Prerequisite: ARE 561.

Typically Offered
Fall, Spring

ARE 736 - Advanced Plumbing Design

Credits: 3

Design and application of domestic water and waste systems, storm water systems, fuel gas systems, medical gas systems and fire protections systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ARE 552.

Typically Offered
Fall

ARE 741 - Building Communication Systems

Credits: 3

Detailed design and analysis of special electrical systems for buildings including, fire alarm, and communication systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ARE 561.

Typically Offered
Fall

ARE 890 - Problems in Architectural Engineering

Credits: 0-18

A study of a specific problem under the direct supervision of a member of the architectural engineering faculty.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Approval of Major Professor.

Typically Offered
Fall, Spring, Summer

ARE 898 - Master's Report

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

ARE 899 - Master's Thesis

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

ART 523 - Digital/Experimental Media Special Topics

Credits: 3

Specialized studio art course exploring technology and experimental media in the context of contemporary fine art production. Topics may include community art practice, systems art, ecology-based art, interactive media, code-based art, and locative media. This course will engage grant writing for the arts as well as both formal and experimental models for contemporary art exhibition. Topics include: New Media & Community; Systems Art; DX Media Lab; Code Electronics and Sensors; Interactive Time-Based Media.

Repeat for Credit
Repeatable for up to 9 credit hours

Requisites:
Prerequisite: ART 330 or permission of instructor.

Typically Offered
Fall, Spring

ART 529 - Color Printmaking Workshop: Creative Process and Investigation

Credits: 3

Individual and collaborative studio work in intaglio (etching), lithography, relief printing (woodcut), screen printing, digital, or monoprint printmaking processes. Emphasis on multi-color intermedia print development through creative process and material investigation.

Repeat for Credit
Repeatable for maximum of 12 credits

Requisites:
Prerequisite: ART 335

Typically Offered
Fall, Spring

ART 530 - Color Printmaking Workshop: Experimental Techniques and Vision

Credits: 3

Individual and collaborative studio work in intaglio (etching), lithography, relief printing (woodcut), screen printing, digital, or monoprint printmaking processes. Emphasis on multi-color intermedia print development through experimental techniques and artistic vision.

Repeat for Credit
Repeatable for maximum of 12 credits

Requisites:
Prerequisite: ART 335

Typically Offered
Fall, Spring

ART 531 - Advanced Studies in Ceramic Studio

Credits: 3

Introduction to sculptural concepts in ceramics through a variety of hand-building techniques. Non-ceramic elements will also be explored as an aspect of ceramic sculpture.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 365

Typically Offered
Fall, Spring

ART 545 - Twentieth Century Art History I: Post-Impressionism to Cubism

Credits: 3

Origins and development of twentieth century western art from 1880 to 1914.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall

ART 550 - Twentieth Century Art History II: Dada to Surrealism

Credits: 3

Origins and development of twentieth century western art from 1914 to 1950.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Spring

ART 561 - Painting Theme and Variation

Credits: 3

Continuation of Introduction to Oil Painting, with emphasis on subject and concept as catalyst for development. Painting's dialogue will be explored through variations on theme, content, and subject in both historical and contemporary contexts.

Note:
Six hour studio.

Requisites:
Prerequisite: ART 320 and ART 345.

Typically Offered
Fall

ART 563 - Intermediate Photography

Credits: 3

Creative exploration of hybrid digital and analog photographic processes including film, darkroom printing, large format digital ink jet printing, wet scanning, and studio lighting. Cameras are provided.

Requisites:
Prerequisite: ART 295.

Typically Offered
Fall, Spring

ART 565 - Progressive Pots: Subversive Surfaces & Functional Fancy

Credits: 3

Introduction to elements of object design and the pottery wheel as a primary forming method.

Requisites:
Prerequisite: ART 365 or ART 102.

Typically Offered
Fall, Spring

ART 568 - Alternative Processes in Photography

Credits: 3

Introduction to a variety of historic processes in photographic image-making. Course will also include readings concerning history of photography.

Typically Offered
Fall, Spring

ART 570 - Painting Materials Application

Credits: 3

Continuation of oil and water based painting media, with emphasis on materials and process as synergists for subject, representation and content. Painting's dialogue will be explored through conventional and experimental materials and process in both historical and contemporary contexts.

Note:
Six hours studio.

Requisites:
Prerequisite: ART 320, ART 345.

Typically Offered
Spring

ART 572 - Drawing Topics I

Credits: 3

Contemporary approaches to drawing.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 311

Typically Offered
Fall, Spring

ART 575 - Web Art

Credits: 3

Introduction to interactive web and network-based artistic practice. Topics covered: network art, interactive art, locative media, html, and code-based art. Explores the history of web and network-based art practice.

Repeat for Credit
May be repeated for up to 9 credit hours

Requisites:
Prerequisite: ART 330.

Typically Offered
Fall, Spring

ART 576 - Visual Communication Design Capstone I: Research

Credits: 3

Development of a research trajectory to culminate in the planning and execution of the capstone project in the Spring semester.

Requisites:
Prerequisite: ART 400, ART 420.

Typically Offered
Fall

ART 577 - Matrix Studio and Business Practices

Credits: 3

Students are selected by portfolio review, design projects are completed to client specifications. Professional design management, ethics, setting up a business, client/designer relationships, contractual options, billing practices, and operating procedures will be covered.

Note:
Six hours lab.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 400 and must be a major.

Typically Offered
Fall, Spring

ART 580 - Visual Communication Design Capstone II: Project

Credits: 3

Conduct research, planning, and execution of a capstone project in visual communication design.

Requisites:
Prerequisite: ART 420, ART 576.

Typically Offered
Fall, Spring

ART 582 - Internships in Visual Art & Design

Credits: 0-3

Emphasis on problem solving and related skills in visual art, art history, and graphic design in a professional setting.

Repeat for Credit
May be repeated for up to 6 hours credit

Requisites:
Prerequisite: Instructor consent.

Typically Offered
Fall, Spring, Summer

ART 590 - Design for Digital Media II

Credits: 3

Continues the exploration of designing for dynamic media including developing competencies in the areas of visual narrative, rhythm, space, animation, sound and video.

Requisites:
Prerequisite: ART 390.

Typically Offered
Fall, Spring

ART 599 - Drawing Topics II

Credits: 3

Developing a thematic body of drawings.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 311.

Typically Offered
Fall, Spring

ART 600 - Drawing Workshop I

Credits: 3

Expanded research with emphasis on proposing a self-directed drawing project.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 325.

Typically Offered
Fall, Spring

ART 601 - Graphic Desigh History/Theory/Criticism

Credits: 3

Study of significant works from late nineteenth century to the present to provide understanding of the development and character of graphic design, artists, and designers.

Note:
Three hours lecture.

Typically Offered
Fall, Spring

ART 602 - Twentieth Century Art History III: Abstract Expressionism to Pop Art

Credits: 3

Art movements beginning with abstract expressions and continuing through pop, op, minimal, and conceptual art movements up to 1980.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring, Summer

ART 603 - Twentieth Century Art History IV: Conceptual Art to Contemporary Art

Credits: 3

The art movements of the 1980s beginning with photo-realism and continuing through pattern and decoration, new image art, neo-expressionisms, and neo-abstraction.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring, Summer

ART 604 - Greek Art History

Credits: 3

The art of classical Greece, from its Aegean origins through the Hellenistic period.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 606 - Visual Art Administration & Leadership

Credits: 3

Surveys facets of management in the visual arts as preparation for work in non-profit museums, galleries or commercial galleries, and working within communities generating projects of impermanence such as performance, social practice and generosity works, pop-up exhibitions, and on-line art projects.

Requisites:
Preferred prerequisite: Junior or Senior standing

Typically Offered
Spring, Summer

ART 608 - Special Studies in Art

Credits: 3

Specialized workshops or seminars conducted in studio, art therapy, art education, or art history.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Three credit hours in the relevant area.

Typically Offered
Fall, Spring, Summer

ART 610 - Figure Drawing II

Credits: 3

Continuation of Figure Drawing I, with emphasis on individual expression.

Note:
Six hours lab.

Repeat for Credit
May be taken for four semesters

Requisites:
Prerequisite: ART 325.

Typically Offered
Fall, Spring

ART 612 - History of Italian Renaissance Art

Credits: 3

Renaissance art of Italy from the thirteenth through the sixteenth century.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 613 - History of Northern Renaissance Art

Credits: 3

Renaissance Art of Northern Europe from the fourteenth through the sixteenth century.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 614 - Italian Renaissance Architecture: Patronage and Construction

Credits: 3

Renaissance architecture of central Italy. A case-study approach with a focus on aesthetics, construction, function, and patronage.

Requisites:
Prerequisite: Art 195 or Art 196.

Typically Offered
Fall, Spring, Summer

ART 616 - Motion Design

Credits: 3

Specialized training in motion design.

Repeat for Credit
Repeatable. Student may re-enroll to accumulate additional credit.

Requisites:
Prerequisite: Instructor permission. Three credit hours in the relevant area (Graphic Design, Digital Arts, Photography).

Typically Offered
Fall, Summer

ART 621 - Advanced Concepts in Digital Video

Credits: 3

Introduction to digital video and experimental practices related to moving images and storytelling.

Requisites:
Prerequisite: ART 395 is recommended

Typically Offered
Spring

ART 622 - Baroque Art History

Credits: 3

The development of the baroque period in northern and southern Europe, from its beginnings in the early seventeenth century to the rococo style of the eighteenth century.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 623 - Advanced Concepts in Digital/Experimental Media (DX MEDIA)

Credits: 3

Studio exploration of advanced concepts in Digital/Experimental Media artistic practice.

Repeat for Credit
May be repeated for up to 9 credit hours.

Requisites:
Prerequisite: ART 523.

Typically Offered
Fall, Spring

ART 626 - Advanced Study in Photography I

Credits: 3

Advanced work in photography with an emphasis on personal development. This is one of the two capstone courses that students will take in their senior year.

Requisites:
Prerequisite: ART 395, ART 563.

Typically Offered
Fall, Spring

ART 627 - Advanced Study in Photography II

Credits: 3

Advanced work in photography with an emphasis on personal development. Focuses on developing well-researched concrete body of work based on prior experience, and relevant new research in the history, and contemporary practices in art photography.

Note:
This is one of the two capstone courses that students will take in their senior year.

Repeat for Credit
Repeatable

Requisites:
Prerequisites: ART 395, ART 563.

Typically Offered
Fall, Spring

ART 628 - Foreign Studies in Art History

Credits: 3-6

Participation in art history study abroad.

Typically Offered
Fall, Spring, Summer

ART 630 - Foreign Studies in Studio Art

Credits: 3-6

Participation in studio art study abroad.

Requisites:
Prerequisite: instructor permission.

Typically Offered
Fall, Spring, Summer

ART 631 - Contemporary Media Seminar

Credits: 3

A review of trends in contemporary media and visual communication.

Note:
Studio/lecture.

Repeat for Credit

Repeatable - for up to 6 credit hours

Requisites:
Prerequisite: ART 575.

Typically Offered
Fall, Spring

ART 632 - The Development of American Art

Credits: 3

American art from the Colonial period to the beginnings of abstract expressionism in the early 1940s, with major emphasis on the late nineteenth and early twentieth century developments.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 634 - History of Modern Sculpture

Credits: 3

Directions in sculpture since the time of Rodin.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 635 - Advanced Printmaking Workshop: Illustration and Experimentation

Credits: 3

Advanced level individual and collaborative print based studio work in intaglio (etching), lithography, relief printing (woodcut), screen printing, digital, or monoprint printmaking processes. Emphasis on illustration of ideas and technical experimentation.

Repeat for Credit
Repeatable for a maximum of 18 credits

Requisites:
Prerequisite: ART 335

Typically Offered
Fall, Spring

ART 636 - Advanced Printmaking Workshop: Imagination and Innovation

Credits: 3

Advanced level individual and collaborative print based studio work in intaglio (etching), lithography, relief printing (woodcut), screen printing, digital or monoprint printmaking processes. Emphasis on imagination and technical innovations.

Repeat for Credit
Repeatable for a maximum of 12 credits

Requisites:
Prerequisite: ART 335

Crosslisted:
Fall, Spring

ART 642 - Nineteenth Century Art History

Credits: 3

Painting, sculpture, and architecture of the late eighteenth and nineteenth centuries, with emphasis on the art of France.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 645 - Sculpture II

Credits: 3

Emphasis on artistic development through exploratory experiences in the various media. Advanced wood working processes, mold making, foundry techniques and welding processes.

Note:
Six hour lab.

Repeat for Credit
Repeatable up to four semesters.

Requisites:

Prerequisite: ART 230.

Typically Offered
Fall, Spring

ART 650 - Advanced Painting Topics

Credits: 3

Individualized studio work in varied painting media for personal expression. Approaches explored within both contemporary and historical contexts. Seniors will contribute to their cohesive body of work in preparation of BFA exhibition.

Repeat for Credit
Repeatable. May be taken for 12 credits total. Six hours studio.

Requisites:
Prerequisite: ART 320 and ART 345.

Recommended Requisite: ART 561 or ART 570.

Typically Offered
Fall, Spring

ART 652 - Advanced Painting Topics II

Credits: 3

Continuation of ART 650. Individualized studio work in varied painting media for personal expression. Approaches explored within both contemporary and historical contexts. Seniors will contribute to their cohesive body of work in preparation of BFA exhibition.

Note:
6 hours studio.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 320, ART 345.

Recommended prerequisites: ART 561 or ART 570.

Typically Offered
Spring

ART 653 - Advanced Painting Topics III

Credits: 3

Continuation of ART 652. Individualized studio work in varied painting media for personal expression. Approaches explored within both contemporary and historical contexts. Seniors will contribute to their cohesive body of work in preparation of BFA exhibition.

Note:
6 hour studio.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 320, ART 345, ART 652.

Recommended prerequisite: ART 561 or ART 570.

Typically Offered
Fall, Spring

ART 654 - Women in Art

Credits: 3

The work of women artists from early Middle Ages to the twentieth century, with emphasis on the contemporary period.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 655 - Advanced Studio in Metals & Jewelry

Credits: 3

Explore concepts and processes in contemporary metal art and jewelry field. Develop individual research projects through assignments, individual meetings, presentations, and group critiques. Students in capstone section will focus on creating a unique body of work for BFA show and portfolio.

Note:
This course is for senior students. Nine hours lab.

Repeat for Credit
May be taken for three semesters.

Requisites:
Prerequisite: ART 375

Typically Offered
Fall, Spring

ART 660 - Sculpture III

Credits: 3

Continuation of Sculpture II. Further exploration of media and technique, emphasizing the development of individual direction and expression. Primarily for undergraduate sculpture majors.

Repeat for Credit
May be taken for a maximum of 12 credits.

Requisites:
Prerequisite: ART 340 and ART 645.

Typically Offered
Fall, Spring

ART 661 - Advanced Painting Methods II

Credits: 3

Individualized studio work in varied painting media directed toward identifying and developing a personal vision and mode of expression. Working from the primary basis of methods, strategies, materials and process, painting's potential for interpretation of subject, representation, an content will be explored within both contemporary and historical contexts. Emphasis for seniors will be on producing a cohesive body of work in preparation of BFA exhibition.

Note:
6 hours studio.

Repeat for Credit
Repeatable

Requisites:
Prerequisites: ART 320, ART 325, and one semester of ART 653 or ART 650

Typically Offered
Spring

ART 662 - Southwestern Indian Arts and Culture

Credits: 3

The development of southwestern Indian silversmithing, weaving, pottery, basketry, and painting from the prehistoric period through the twentieth century.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 665 - Contemporary Clay & Ceramic Sculpture

Credits: 3

Cultivates understanding of installation and site-specific art as well as abstracted and realist sculpture. Hand-building and mixed media strategies are utilized to explore a dialogue between maker, gesture, and environment. Develops concept-based work for the gallery space and non-traditional settings. Emphasis on process, production, and exploration. The role of ceramics in sculpture, installation and the expanded field are introduced through readings and critical discussions.

Note:
Six hours lab.

Repeat for Credit
May be taken for three semesters

Requisites:
Prerequisite: ART 565.

Typically Offered
Fall, Spring

ART 667 - Ceramic Design Studio

Credits: 3

Explores both analogue and digital approaches to prototyping and production including mold making, slip casting, digital modeling, and clay printing technologies.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 565

Typically Offered
Fall, Spring

ART 675 - History of Ceramics

Credits: 3

History and development of ceramics; study of the use of pottery and other aspects of ceramics from earliest known records to present day. Use of slides and other visual materials.

Requisites:
Prerequisite: ART 195 or ART 196.

Typically Offered
Fall, Spring

ART 679 - Color Experiments, Theory and Application

Credits: 3

Explores the interaction of color through a variety of exercises, both practical and experimental. Emphasis on visual perception and the relative use of color. Color's potential in illusionist structures and visual communication, color systems.

Requisites:
Prerequisite: ART 100.

Typically Offered
Intersession

ART 680 - Topics in Contemporary Metals & Jewelry

Credits: 3

Explores concepts and processes in contemporary metal art and jewelry.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 375

Typically Offered
Fall, Spring

ART 682 - Metals & Jewelry Workshop

Credits: 3

Application of concepts and processes in contemporary metal art and jewelry through individual creative research and making.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 375.

Typically Offered
Spring

ART 685 - Advanced Independent Study Design

Credits: 1-18

Advanced work in design-related subjects.

Requisites:
Prerequisite: Full sequence of courses related to problem subject matter.

Typically Offered
Fall, Spring, Summer

ART 686 - Advanced Studies in Ceramics Studio

Credits: 3

Explores ceramic material processes and characteristics through individual creative research projects. The capstone section is taken in conjunction with the BFA exhibition.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 565.

Typically Offered
Fall, Spring

ART 687 - Ceramics Capstone

Credits: 3

Creation of a cohesive body of work in ceramics around a selected theme. The capstone section is taken in conjunction with the BFA exhibition.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 565.

Typically Offered
Fall, Spring

ART 690 - Techniques in Teaching Art

Credits: 1-18

Lectures and class discussion of methods, consideration of suitable laboratory equipment, use of illustrative material, and preparation of courses of study.

Requisites:
Prerequisite: Twelve hours in art or consent of instructor.

Typically Offered
Fall

ART 692 - Drawing Workshop II

Credits: 3

The senior capstone course, dedicated to refining individually determined drawing portfolio.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ART 572 or ART 599.

Typically Offered
Fall, Spring

ART 695 - Topics in Art History

Credits: 1-18

Independent exploration in selected problems in art history.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: 12 credit hours of art history

Typically Offered
Fall, Spring, Summer

ART 820 - Graduate Graphic Design/Visual Communications

Credits: 1-18

Advanced creative work with emphasis on technical and visual research.

Typically Offered
Fall, Spring, Summer

ART 822 - Graduate Digital Media

Credits: 1-18

Advanced creative work with emphasis on technical and visual research.

Typically Offered
Fall, Spring, Summer

ART 825 - Professional Practices

Credits: 3

Selected topics dealing with career preparation skills such as developing a professional and teaching portfolio, computer techniques for promoting one's art, establishing relationships with galleries/museums, and agencies, basic techniques of exhibition design and installation, techniques of critiquing works of art, etc.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring

ART 826 - Graduate Seminar

Credits: 2

Emphasis upon the exchange of ideas and exploration of critical theory. Direct involvement in critiques, readings, discussions, and field trips. Each semester a different theme will guide a pertinent topic from within the field.

Repeat for Credit
May be taken for three semesters.

Typically Offered
Fall, Spring

ART 830 - Graduate Sculpture Studies

Credits: 1-18

Advanced creative work with emphasis on technical and visual research.

Typically Offered
Fall, Spring, Summer

ART 835 - Graduate Drawing Studies

Credits: 1-18

Advanced creative work with emphasis on technical and visual research.

Typically Offered
Fall, Spring, Summer

ART 845 - Graduate Painting Studies

Credits: 1-18

Advanced creative work with emphasis on technical and visual research.

Typically Offered
Fall, Spring, Summer

ART 855 - Graduate Printmaking Studies

Credits: 1-18

Advanced creative work with emphasis on technical and visual research.

Typically Offered
Fall, Spring, Summer

ART 865 - Graduate Ceramics Studies

Credits: 1-18

Advanced creative work with emphasis on technical and visual research.

Typically Offered
Fall, Spring, Summer

ART 875 - Graduate Metalsmithing and Jewelry Studies

Credits: 1-18

Advanced creative work with emphasis on technical and visual research.

Typically Offered
Fall, Spring, Summer

ART 885 - Graduate Independent Studies

Credits: 1-5

Advanced individual work offered in studio areas of ceramics, graphic design, digital media, drawing, painting, printmaking, sculpture, and metalsmithing and jewelry.

Typically Offered
Fall, Spring, Summer

ART 887 - Contemporary Art Theory and Criticism

Credits: 3

Discussion of the principal theories influencing production and criticism of contemporary art.

Typically Offered
Fall

ART 888 - Graduate Studies in Photography

Credits: 1-10

Focus on the conceptual nature of the photographic medium. Students will be encouraged to produce work useful for their graduate thesis. Course readings will be on photo theory and image relationships.

Note:
This course may be taken after or concurrently with

Graduate Independent Study.

Typically Offered
Fall, Spring

ART 899 - Research in Art

Credits: 1-18

Research which may form the basis for the master's of fine art thesis or report.

Typically Offered
Fall, Spring, Summer

ASI 500 - Genetics

Credits: 3

An introduction to Mendelian, molecular, quantitative, and population genetics.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: BIOL 198, Math 100 and Sophomore Standing.

Typically Offered
Fall, Spring, Summer

ASI 504 - Equine Reproduction Management

Credits: 3

Overview of the physiological mechanisms involved in equine reproduction and the scientific reasoning behind breeding management decisions. Recent advances in equine reproductive technology will be highlighted. Lab exercises focus on learning breeding techniques including semen collection and processing, and artificial insemination.

Requisites:
Prerequisite: Junior standing. Rec. Pr. ASI 400.

Typically Offered
Spring

ASI 505 - Food Science: Chemistry and Application

Credits: 3

Composition, structure and properties of foods. Chemical interactions affecting texture, color, flavor, and stability during processing and storage.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: CHM 350 and CHM 351; BIOCH 521 and BIOCH 522.

Typically Offered
Spring

ASI 510 - Animal Breeding Principles

Credits: 3

The genetic principles of evaluation, selection and mating systems used in beef, dairy, sheep, swine, poultry, horse, and companion animal breeding. Intended for ASI majors.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ASI 102 and ASI 500.

Typically Offered
Fall, Spring

ASI 512 - Bovine Reproductive Technologies

Credits: 2

Reproductive technologies used in management of cattle including the physiology of the estrous cycle, embryo viability, and fetal development. Practical training in reproductive management technique.

Note:
One hour lecture and five hours lab a week.

Requisites:
Prerequisite: ASI 400, senior standing and consent of instructor.

Typically Offered
Fall

ASI 515 - Beef Science

Credits: 3

A comprehensive course covering all phases of the beef cattle industry. Practical application of nutrition, breeding, physiology of reproduction, merchandising, risk management and related areas. Special emphasis on management systems of raising, growing and finishing beef cattle.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: Junior or senior standing.

Typically Offered
Fall, Spring

ASI 520 - Companion Animal Management

Credits: 3

General biology and management of pets in zoos, kennels and at home. Working safely with companion animals. Management of animals in kennels, shelters, research facilities and zoos. Regulatory issues of small animals used as companion pets and in laboratory research. Interactive discussion and written skills will be emphasized.

Note:
Three hours of lecture/recitation a week.

Requisites:
Prerequisite: Junior standing. Recommended Prerequisite: ASI 107.

Typically Offered
Spring

ASI 521 - Horse Science

Credits: 3

A study of the horse industry in the U.S., breed profiles, anatomy and evaluation, nutrition, reproduction, growth and development, health, excercise physiology, facilities and equipment, business considerations.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Spring

ASI 524 - Sheep and Meat Goat Science

Credits: 3

Application of scientific management principles to the sheep and meat goat industries. Breeding, reproduction, nutrition, health, management and economic aspects as related to sheep and meat goat production.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Spring

ASI 533 - Anatomy and Physiology

Credits: 4

General anatomy and physiology of the domestic animals.

Note:
Three hours lecture and two hours lab a week.

Requisites:
Prerequisite: BIOL 198.

Typically Offered
Fall, Spring

ASI 534 - Introduction to Pharmacology of Farm Animals

Credits: 2

The study of the basic principles of pharmacology as related to the proper and safe use of drugs and chemicals by the livestock industry.

Typically Offered
Spring-Even Years

ASI 535 - Swine Science

Credits: 3

Application of basic scientific principles to the economical production of pork. Recommendations are made in breeding, reproduction, nutrition, health, housing, marketing, and management of swine production units of varying sizes.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Prerequisite: Junior or Senior standing.

Typically Offered
Fall, Spring

ASI 540 - Principles of Animal Disease Control

Credits: 3

A study of the factors that influence animal health and disease control for students majoring in agriculture and other fields.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Spring

ASI 561 - Undergraduate Research in Animal Sciences & Industry

Credits: 0-3

Mentored undergraduate research experience in animal or food sciences.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

ASI 580 - Animal Sciences and Industry Career Preparation

Credits: 1

Career exploration and life skill development. Assist students with internship development, interviewing skills and professional communication formats. Open only to junior students majoring in animal sciences and industry.

Note:
One hour recitation a week.

Requisites:
Prerequisite: ASI major and junior standing.

Typically Offered
Fall

ASI 595 - Contemporary Issues in Animal Science and Agriculture

Credits: 3

The development and management of current issues affecting animal agriculture and science in three primary areas: 1) how do issues develop; 2) the political aspects of issues; and 3) the development of expertise based on objective assessment. Current issues such as animal welfare/rights, environment, genetic engineering, etc., will be used to provide students with practical learning experiences.

Requisites:
Recommended Prerequisite: Junior standing.

Typically Offered
Fall

ASI 598 - Bioscience Internship in Animal Science

Credits: 1-6

Supervised professional experience in bioscience realm of animal sciences. One credit hour per one month full-time supervised and evaluated work hours. Internship proposal, evaluation by supervisor, self-assessment, and presentation of internship required.

Note:
Repeatable for a maximum of 6 total credit hours.

Typically Offered
Fall, Spring

ASI 599 - Animal Science Internship

Credits: 1-6

Supervised professional experience in an animal science related field. One credit hour per month full-time supervised and evaluated work hours. Internship proposal, evaluation by supervisor, self-assessment, and presentation of internship required.

Repeat for Credit
Repeatable. Repeatable for maximum of 6 total credit hours.

Requisites:
Prerequisite: Permission of supervising faculty member.

Typically Offered
Fall, Spring, Summer

ASI 600 - Applied Animal Biotechnology

Credits: 3

The objective of this course is to provide insight into the use of large animals in areas of biotechnology. The course will emphasize the use of livestock in food production as well as human medicine applications. A two-hour lecture per week will include topics such as marker assisted selection of livestock, in-vitro fertilization, transgenics, cloning and stem cell technology. A two-hour lab per week will complement material from lectures including PCR, DNA isolation and oocyte collection.

Requisites:
Prerequisite: ASI BI Students, Junior Standing and ASI 500 or BIOL 450, BIOCH 521.

Typically Offered
Spring

ASI 601 - Endocrinology and Lactation

Credits: 3

Provides an overview of the endocrine systems that regulate mammalian lactation and other related physiological processes. Topics
include structure and function of important endocrine glands and their hormones, receptors, target tissues and physiological mechanisms of action. Emphasis will be placed on whole animal hormonal interactions that regulate nutrient availability for production of milk in dairy cattle and other dairy species. Upon completion of the course students should be able to identify important endocrine organs and hormones and apply their understanding to problems in dairy production.

Requisites:
Prerequisite: BIOL 198 and junior standing.
Recommended Prerequisite: ASI 400, ASI 533 OR BIOL 340.

Typically Offered
Fall

ASI 602 - Equine Breeding and Genetics

Credits: 2

Application of genetic and animal breeding principles to the horse. Emphasis on inheritance of color and diseases, as well as selection and mating programs.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: Junior Standing. Recommended Prerequisite: ASI 500 and ASI 510

Typically Offered
Fall-Even Years

ASI 608 - Dairy Foods Processing & Techonology

Credits: 3

The fundamental technologies used to process high quality dairy foods using freezing, heat membrane and pressure technologies. Changes in milk chemistry, microbiology and structure will be emphasized during the processing of butter, soft and hard cheeses, concentrated milks, ice cream and yogurt.

Note:
Two hours of lecture and one three-hour lab a week.

Requisites:
Prerequisite: BIOL 455.

Typically Offered
Spring

ASI 610 - Processed Meat Operations

Credits: 2

An intensive course in processed meats, relating the science, technology and quality control of curing, smoking and sausage manufacture.

Note:
One hour recitation and two hours lab a week.

Requisites:
Prerequisite: ASI 350.

Typically Offered
Spring-Odd Years

ASI 620 - Beef Systems Management

Credits: 2

Development of beef enterprise business plans and analysis of breeding, nutrition, health and management programs for beef operations.

Note:
One hour recitation and five hours lab a week.

Requisites:
Prerequisite: ASI 515.

Typically Offered
Spring

ASI 621 - Dairy Cattle Management

Credits: 3

Integration of biologic and economic aspects of dairy production with dairy farm organization, planning, operation and analysis. Field trips, dairy farm analysis and case studies will be used to supplement lec. Material.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Recommended Prerequisite: Junior or senior standing.

Typically Offered
Fall

ASI 635 - Gamebird Production and Management

Credits: 3

Principles and practices of upland game bird production including incubation and hatching, flight pen construction, nutritional management, predation control, disease management and meat processing.

Note:
2 hours lecture per week and 2 hours lab per week.

Requisites:
Recommended Prerequisite: ASI 106.

Typically Offered
Spring

ASI 640 - Poultry Products Technology

Credits: 3

Emphasis on the technical problems that exist between production and consumption during the processing and marketing of poultry meat and egg products. A study of the microbiology of shell eggs, meat and manufactured products and the basic principles of quality assurance. Food manufacturing and product development are discussed.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: ASI 106.

Typically Offered
Fall-Even Years

ASI 645 - Poultry Management

Credits: 3

A detailed study of the production and management practices involved in commercial poultry and game bird enterprises.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Recommended Prerequisite: Junior or senior standing.

Typically Offered
Fall-Odd Years

ASI 650 - Identification and Data Management of Food Animals

Credits: 2

Procedures and the conventions required to accomplish individual identification for farm animals. Principles of sound data collection and management. Principles of automatic information and data capture technologies for transforming data into information. Guest lectures from allied industry and livestock producers will illustrate various products, services and applications.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall

ASI 655 - Behavior of Domestic Animals

Credits: 3

Students gain knowledge about the behavioral sciences' fields, historical perspectives, and scientific methodologies. Behavior is evaluated from a biological perspective (i.e. physiology, development, adaptation, and genetics). Students refine observational skills and identify methods for quantifying behavior and interpreting results to improve animal health, management, housing, training, and welfare.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Prerequisite: BIOL 198 and junior standing.

Typically Offered
Fall

ASI 658 - Animal Growth and Development

Credits: 3

The molecular and endocrine mechanisms of prenatal and postnatal growth and development of muscle, bone, and adipose tissue will be discussed. Historical and current scientific literature will be reviewed and utilized to reinforce the topics covered.

Note:
Three hours of lecture a week.

Requisites:
Prerequisites: Junior standing and ASI 533
Recommended prerequisite: BIOCH 265 or BIOCH 521

Typically Offered
Spring

ASI 660 - International Study Experience in Animal Science

Credits: 0-6

Seminar and travel course designed to prepare students before the experience and for students to analyze, critique, and report their experience of an international experience associated with study tours or short courses. Course will focus on appropriate oral and written documentation of the student learning objectives for course experience. The academic topics will vary with each international activity.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Fall, Spring, Summer

ASI 661 - Animal Sciences and Industry Problems

Credits: 0-18

Independent guided studies in any of the many fields associated with animals and animal products.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

ASI 662 - Special Topics in Animal Science

Credits: 0-6

Seminars of special interest will be offered upon sufficient demand in selected areas relating to animal science.

Typically Offered
Fall, Spring

ASI 671 - Meat Selection and Utilization

Credits: 2

Emphasis on meat cut identification, muscle and bone anatomy, grades, fabricated meat, institutional cuts, specification writing, processing, meat preparation and shrinkage costs.

Note:
One hour lecture-recitation and two hours lab a week.

Requisites:
Prerequisite: CHM 110 and CHM 111.

Typically Offered
Fall

ASI 675 - Monogastric Nutrition

Credits: 1

An overview of the nutritional principles involved with feeding nonruminants. Topics will include digestive anatomy and the metabolism of carbohydrates, lipids, amino acids, vitamins, and minerals.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 320.

Typically Offered
Fall

ASI 676 - Avian Nutrition

Credits: 1

Nutritional requirements of game birds, caged birds, exotics, and commercial poultry. Interactive discussion will be emphasized.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 675 or concurrent enrollment.

Typically Offered
Fall-Even Years

ASI 677 - Companion Animal Nutrition

Credits: 1

This course is intended to be taken in sequence following Monogastric Nutrition, ASI 675. The course will cover the unique nature of nutrition for companion animals with an emphasis on the nutrition of dogs and cats. Details regarding dentition, digestion, metabolism and nutritional requirements will be covered. In addition, an overview of the nutrition of other minor companion species will be provided. Besides standard assessments methods students will be expected to review current research publications on the topic and provide written and oral presentations germane to the topic.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 675 or conc. enrollment.

Typically Offered
Fall-Odd Years

ASI 678 - Equine Nutrition

Credits: 1

Equine digestive anatomy and physiology. Nutrient requirements of the equine as they relate to growth, work, reproduction and lactation, as well as the relationship of nutrition to disease and environment. Practical management considerations and current equine nutrition research will be reviewed.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 675 or concurrent enrollment.

Typically Offered
Fall-Odd Years

ASI 679 - Swine Nutrition

Credits: 1

A study of the nutrient requirements of swine for various stages of production. Discussion of the interrelationships among nutrition and other factors (environment, management, and health) that affect performance.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 675 or concurrent enrollment.

Typically Offered
Fall

ASI 680 - Ruminant Nutrition

Credits: 1

Advanced study of nutritional management of different species of ruminant livestock. Topics covered include ruminal function, post-ruminal digestion and absorption, utilization of key nutrients, and discussion of select metabolic disorders.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 320.

Typically Offered
Spring

ASI 681 - Dairy Cattle Nutrition

Credits: 1

Nutritional management of dairy calves, replacement heifers, dry and lactating dairy cows. Diet formulation, feeding systems and current concepts in dairy cattle nutrition.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 680 or concurrent enrollment.

Typically Offered
Spring

ASI 682 - Formulation of Livestock and Poultry Diets

Credits: 1

Diet formulation for the major species of livestock and poultry. Major topics include hand formulation of diets: ingredient/nutrient cost comparisons; dry matter manipulation; computerized diet formulation; developing specifications for diets, supplements, basemixes and premixes; projecting animal performance; and feed labeling.

Note:
Three hours lecture per week for five weeks.

Requisites:
Prerequisite: ASI 675 or ASI 680 or concurrent enrollment.

Typically Offered
Fall

ASI 683 - Grazing Livestock Nutrition

Credits: 1

Nutritional management of grazing beef cattle. Nutrition of beef cows and stocker cattle maintained under grazing conditions. Major topics to be covered include nutrient requirements, forage intake, forage quality, and supplementation.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 680 or concurrent enrollment.

Typically Offered
Spring

ASI 684 - Nutrition of Feedlot Cattle

Credits: 1

Nutritional management of growing and finishing beef cattle maintained under confined feeding conditions. Utilization of cereal grains and byproducts in the production of beef. Major topics include nutrient requirements, feed processing, growing-finishing systems, feed additives, metabolic disturbances, and nutrient management.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 680 or concurrent enrollment.

Typically Offered
Spring

ASI 685 - Stored Forage Systems for Ruminant Animals

Credits: 1

A study of nutrient conservation in various stored forage systems including storage facilities and equipment, nutrient loss, aerobic deterioration, chemical and physical analysis. Discussions will also include the impact of stored forage systems on forage quality and the subsequent effects on digestion and utilization in ruminant animals.

Note:
Three hours lecture a week for five weeks.

Requisites:
Prerequisite: ASI 680 or concurrent enrollment.

Typically Offered
Spring

ASI 695 - Principles of Equine Exercise Physiology

Credits: 3

Physiological systems reactions and adaption to exercise and training in the equine athlete. Additional topics addressed will include biomechanics, injury prevention and rehabilitation.

Note:
Two hours lec. and two hours lab a week.

Requisites:
Recommend Prerequisite: ASI 533, BIOL 198, BIOCH 265 or BIOCH 521.
Required Prerequisite: Must have Junior Standing.

Typically Offered
Fall

ASI 710 - Physiology of Reproduction in Farm Animals

Credits: 3

The physiological aspects of reproduction in farm animals including endocrine interrelationships controlling reproductive cycles and gamete production. Periodic demonstrations deal with specialized reproductive anatomy of farm animals, experimental techniques used in animal reproduction, and contemporary animal production practices.

Note:
Three hours of lecture a week.

Requisites:
Prerequisite: ASI 400.

Typically Offered
Spring-Even Years

ASI 720 - Anaerobic Bacteriology

Credits: 2

Study of anaerobic bacteria, anaerobiosis, description of anaerobic techniques, and physiology and biochemistry of anaerobes of natural environment including gastrointestinal tract, and of veterinary, medical, and industrial importance.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: BIOL 455 and BIOCH 521.

Typically Offered
Spring-Even Years

ASI 741 - Quantitative Genetics Applications of Matrix Algebra

Credits: 1

The goal of this course is development of skills in matrix algebra to describe and solve problems in the agricultural and life sciences, with particular focus on quantitative genetics. The course is designed for students with no prior knowledge of matrix algebra, and whose formal training in mathematics may be somewhat limited. It will consider the vocabulary, concepts, application and, to a lesser extent, theory of matrix algebra that is relevant to graduate students in the agricultural and life sciences. Application exercises will consider ecological systems, genotypic transition matrices, selection indices, and the numerator relationship matrix. Application of methods such as least squares and canonical transformation to solve problems in the biological sciences using matrix algebra will also be introduced.

Typically Offered
Fall

ASI 742 - Cybersheep: A Genetic Simulation Game

Credits: 1

The goal of this course is for students to be able to make informed and effective decisions in a livestock breeding program. In order to accomplish this goal, the course will provide hands-on experience with selection and mating decisions, and their consequences through a genetic simulation. Genetic gains require time to achieve and there is very little opportunity for students to witness the consequences of breeding decisions in a course. The simulation is designed to offer an opportunity to see in real-time, the outcome of decision-making, and to experience the stochastic (chance) elements of a breeding program.

Typically Offered
Fall

ASI 749 - Advanced Animal Breeding

Credits: 3

Application of genetic principles to livestock improvement, selection methods, mating systems, heritability estimates and methods of analyzing genetic data.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: ASI 500 and three hours in statistics.

Typically Offered
Spring

ASI 776 - Meat Industry Technology

Credits: 3

Apply concepts and information about meat composition, product safety and spoilage, quality; formulation, processing and evaluation of cured, precooked, and sausage; packaging, troubleshooting, and plant organization. This is a web-based lecture class intended for distance education students.

Requisites:
Prerequisite: ASI 340 or ASI 350.

Typically Offered
Fall, Spring, Summer

ASI 777 - Fresh Meat Technology

Credits: 3

Fresh meat properties, value, marketing, and appropriate handling procedures. Current meat technology and pertinent aspects of the domestic and international meat industries will be discussed.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: ASI 350; senior or graduate standing.

Typically Offered
Fall

ASI 799 - Graduate Internship in Animal Sciences and Industry

Credits: 1-4

In-depth work-study experiences on beef cattle, sheep, dairy cattle, swine, horse or poultry production operations or in animal food products plants.

Requisites:
Prerequisite: Permission of supervising faculty member.

Typically Offered
Fall, Summer

ASI 802 - Gametes, Embryos, and Stem Cells in Farm Animals

Credits: 2

A study of gametes, embryos, pregnancy, and stem cells in farm species including supporting information from laboratory species and humans. Emphasis will be on the regulation of stem cells, gametes, and embryos and on the conceptus-maternal interactions to establish and maintain pregnancy and program conceptus and postnatal development.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: BIOCH 521.

Typically Offered
Fall-Odd Years

ASI 810 - History and Perspectives in Animal Breeding and Genetics

Credits: 1

The goal of this course is to provide students with a historical perspective of the discipline of Animal Breeding and Genetics and an appreciation for the contributions of several scientists that have significantly impacted the discipline. Weekly lectures will consist of pre-recorded interviews with scientists that have had an international impact in the field of animal breeding and genetics.

Typically Offered
Fall

ASI 811 - Primer to Quantitative Genetics

Credits: 1

The goal of this course is to provide students with an introduction to the language and basic principles of quantitative genetics. Its purpose is to develop foundational knowledge for students entering a graduate program in animal breeding and genetics. Topics included will be the basic model for quantitative genetics (additive and non-additive genetic effects, including Mendelian sampling, and environmental effects), sources of variation, heritability, family resemblance and repeatability, selection response, and family selection. Expected values and concepts in applied statistics (e.g., linear regression) will also be considered.

Typically Offered
Spring

ASI 812 - Selection Index Theory and Application

Credits: 1

The overall goal of this course is to increase your skills and knowledge related to the design of animal breeding programs. The focus will be on the application of index theory to the definition of breeding objectives in animal agriculture. The course will also introduce approaches for deriving economic weights, which are useful when predicting economic response to selection.

Typically Offered
Spring

ASI 813 - Economic Breeding Programs

Credits: 1

The primary goal of this course is to provide a survey of methodology for developing an economic basis for multiple trait selection to improve the profitability of production. Much of the material is abstracted from the scientific literature, from which a sampling of relevant references will be provided. Therefore, an overarching goal of this course is to instill the capacity to critically analyze relevant literature as an aid to solving future problems. Specific topics included are: a review of concepts relevant to selection index, an introduction to the concept of systems analysis, linear programming, and simulation with emphasis on economic values useful for selection index.

Typically Offered
Spring

ASI 814 - Heterosis and Crossbreeding Systems

Credits: 1

The goal of this course is to provide students with an introduction to the principles of heterosis and mating systems utilizing crossbreeding. Students completing this course should be able to evaluate and compare various crossbreeding mating schemes through predicted performance of the potential progeny and overall system performance.

Typically Offered
Spring

ASI 815 - An Introduction to "R" Programming

Credits: 1

The goal of this module is to familiarize students the R

environment for statistical computing. Part of the course will be devoted to the use of R as a high-level programming language and a gateway for more formal low-level languages. No prior exposure to the language is necessary.

Typically Offered
Spring

ASI 820 - Rumen Metabolism

Credits: 3

Metabolism, absorption, digestion, and passage of nutrients in the rumen; factors affecting the environment of the rumen; certain aspects of rumen function and dysfunction; techniques used in rumen research.

Note:
Three one-hour lecture A week.

Requisites:
Prerequisite: ASI 318 and BIOCH 521 or BIOCH 755.

Typically Offered
Spring-Even Years

ASI 825 - Stress Physiology of Livestock

Credits: 3

Integrative physiology of livestock during environmental, management, and pathological stresses.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ASI 533 and BIOCH 521.

Typically Offered
Fall-Even Years

ASI 826 - Nutritional Physiology

Credits: 3

The course focuses on the structures and function of the gastrointestinal tract, with an emphasis on digestive physiology in the small intestine. Details of gastrointestinal tract secretion, regulation, digestion, and absorption of the major nutrient groups are emphasized with species comparisons.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: BIOCH 521.

Typically Offered
Spring-Odd Years

ASI 830 - Neuroendocrine Physiology

Credits: 1

Neuroendocrine regulation of reproduction, growth, and metabolism, with an emphasis on neuroendocrinology of domestic livestock.

Note:
Three hours recitation per week for 5 weeks.

Requisites:
Recommended Prerequisite: BIOCH 521 and ASI 710.

Typically Offered
Spring-Odd Years

ASI 831 - Molecular Reproductive Endocrinology

Credits: 1

A study of molecular mechanisms that control gene expression in mammals, with an emphasis on genes and their products that control reproduction.

Note:
Three hours recitation per week for 5 weeks.

Requisites:
Recommended Prerequisite: BIOCH 521, ASI 710 and ASI 830.

Typically Offered
Spring-Odd Years

ASI 832 - Ovarian Physiology

Credits: 1

Endocrine and physiologic control of ovarian functions in domestic livestock.

Note:
Three hours recitation a week for 5 weeks.

Requisites:
Recommended Prerequisite: BIOCH 521, ASI 710 and ASI 830.

Typically Offered
Spring-Odd Years

ASI 840 - Techniques in Domestic Animal Behavior

Credits: 2

A combined seminar and laboratory type course. Current and classical studies reported and discussed, relationships between behavior and other disciplines explored and methods of data collection examined. Small-scale demonstration experiments planned, executed and reported orally and/or in scientific written style.

Note:
One hour recitation and two hours lab a week.

Requisites:
Prerequisite: ASI 655 and STAT 325.

Typically Offered
Spring-Even Years

ASI 860 - Analytical Techniques--Sample Preparation and Beginning Analyses

Credits: 1

Sample collection, processing and handling methodologies will be addressed as they pertain to research methods in the animal sciences. Basic laboratory techniques, sample collection, and analyses of moisture and nitrogen will be covered.

Note:
Two hours lecture, eight hours lab and one hour recitation a week for three weeks.

Requisites:
Prerequisite: CHM 350.

Typically Offered
Fall

ASI 861 - Analytical Techniques--Mineral Analyses

Credits: 1

This course focuses on the analysis of minerals in common feedstuffs. This course will cover sample preparation and atomic absorption, emission, utraviolet/visible and fluorimetric spectrophotometric methods of analysis of feedstuffs and biological fluids.

Note:
Two hours lecture, eight hours lab and one hour recitation a week for three weeks.

Requisites:
Prerequisite: CHM 350.

Typically Offered
Fall

ASI 862 - Analytical Techniques--Carbohydrate and Lipid Analyses

Credits: 1

This course covers the analysis of carbohydrate and lipid components of feedstuffs and biological materials using conventional as well as HPLC and gas chromatographic methods.

Note:
Two hours lecture, eight hours lab and one hour recitation a week for three weeks.

Requisites:
Prerequisite: CHM 350.

Typically Offered
Fall

ASI 863 - Analytical Techniques--Radioisotope Use

Credits: 1

Study of radioisotope use in physiological applications of research in domestic animals including radioactive decay, detection methodology, and isotope dilution.

Note:
Two hours lecture, eight hours lab and one hour recitation a week for three weeks.

Requisites:
Prerequisite: BIOCH 521.

Typically Offered
Fall-Even Years

ASI 864 - Analytical Techniques-Immunoassays

Credits: 1

Study of measurement of biological substances and hormones utilizing enzyme-linked immunoassays (ELISA) and radioimmunoassays (RIA).

Note:
Two hours lecture, eight hours lab and one hour recitation a week for three weeks.

Requisites:
Prerequisite: BIOCH 521.

Typically Offered
Fall-Even Years

ASI 865 - Analytical Techniques: mRNA and Protein Analysis

Credits: 1

The course will provide an overview of techniques commonly used for analysis of mRNA and protein in animal physiology research. Topics will include RNA and protein isolation from tissue, use of sequence databases, polymerase chain reaction-based mRNA analyses, and Western blotting.

Note:
Two hours lecture and eight hours lab a week for three weeks.

Typically Offered
Fall-Even Years

ASI 870 - Linear Models in Animal Breeding

Credits: 1

Students completing this course will learn about linear models used in Animal Breeding. These models will be discussed in the context of the random variable that is to be predicted. Specifically, the course will cover animal models, sire/maternal grandsire models, and sire models. Models including a single record, repeated records, and models with both direct and maternal effects will be discussed.

Typically Offered
Fall

ASI 871 - Genetic Prediction

Credits: 1

The goal of this course is to increase student understanding of best linear unbiased prediction and to develop skills in genetic prediction. A wide array of material will be covered with emphasis on real-world datasets designed to develop applied analytical skills relative in animal breeding. Topics will include data integrity diagnosis, contemporary grouping strategies, adjusting for known non-genetic effects, and use of software to perform genetic evaluations. Students will develop procedures for the utilization of various sources of information for the calculations of predictions of genetic merit in the form of estimated breeding values.

Typically Offered
Fall

ASI 872 - Applied Variance Component Estimation in Livestock Genetics

Credits: 1

The goal of this course is to extend upon content covered in linear models and genetic prediction, with specific emphasis on estimation of (co)variance components and genetic parameters required to solve mixed models typical in livestock genetics. Upon successful completion of this module, students should have an applied knowledge of approaches used to estimate the G and R sub-matrices of the mixed model equations. Several tools will be used to demonstrate the models and approaches most commonly used in parameter estimation. Where appropriate, scientific literature that explains their implementation, and some attributes of the solutions obtained will be used.

Typically Offered
Fall

ASI 873 - Prediction and Control of Inbreeding in Breeding Programs

Credits: 1

The goal of this course is for students to be introduced to, and to gain an understanding of, the concepts of inbreeding and genetic diversity, the impact of inbreeding on animal breeding and production populations, and of strategies to control and manage rates of inbreeding in animal breeding and production populations. The use of genomic data to assess and control inbreeding also will be discussed.

Typically Offered
Fall

ASI 874 - Marker Assisted and Gene-Assisted Selection

Credits: 1

The goal of this module is to increase student understanding of potential methods for incorporating marker genetic information into selection decisions. Topics will include but are not limited to recombination, single-gene tests, molecular breeding values, suggested producer guidelines for use of the technologies, and incorporation of genomic information into genetic prediction procedures.

Typically Offered
Spring

ASI 875 - Introduction to Marker Association Analysis and QTL Detection

Credits: 1

The goal of this course is to introduce the basic concepts of using genetic markers to identify QTL and of estimating marker-trait associations, and to expose students to applications of these methodologies. Materials will cover the basics of linkage and linkage disequilibrium, alternate designs or population structures for QTL mapping, and statistical methods for QTL detection, including QTL interval mapping and genome-wide association analyses. Properties, advantages, disadvantages, and requirements of alternate designs and analysis strategies will be discussed.

Typically Offered
Spring

ASI 876 - From Markers to Gene Function: Functional Change

Credits: 1

This course takes the results from association analyses and learns how these markers translate into functional changes in the animal genome and in animal performance. Topics covered in the course include an introduction to the tools used to generate genomic data followed by introduction and application of key bioinformatics websites, databases to identify causative genetic variation, and develop gene pathways and networks.

Typically Offered
Spring

ASI 877 - MCMC Methods in Animal Breeding: A Primer

Credits: 1

The goal of this course is to introduce computational techniques based on simulation that have become a staple in the field of animal breeding (and beyond) over the last 20 years. An overview of the most popular Monte Carlo methods will be provided to the students with an emphasis on hands on reproducible examples developed through the R software. Minimal exposure to the R programming language will be required while no previous exposure to Monte Carlo methods is required. While a few examples in the class will be set in a Bayesian framework, no previous exposure to Bayesian statistics is required

Typically Offered
Spring

ASI 890 - Graduate Seminar in Animal Sciences and Industry

Credits: 1

Discussion of research and technical problems in the discipline. Attendance required of all departmental graduate students. Maximum of two hours may be applied toward an advanced degree.

Typically Offered
Fall, Spring

ASI 898 - Master's Report

Credits: 2

A written report of either research or problem work on a

topic in the major field.

Requisites:
Prerequisite: Consult major professor.

Typically Offered
Fall, Spring, Summer

ASI 899 - Master's Research in Animal Sciences and Industry

Credits: 1-18

Research leading to the completion of a master's thesis.

Requisites:
Prerequisite: Consult major professor.

Typically Offered
Fall, Spring, Summer

ASI 902 - Topics in Animal Science

Credits: 1-6

Discussion and lectures on important areas and contributions in the field of animal science not covered in present courses.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

ASI 905 - Lipids on Food Systems

Credits: 2

Physical and chemical characteristics of lipids with emphasis on their behavior and function in food systems.

Requisites:
Prerequisite: ASI 815.

Typically Offered
Other

ASI 920 - Energy Utilization in Domestic Livestock

Credits: 2

Comprehensive discussion of the development and application of energy systems used to guide livestock feeding, procedures used in energy experimentation, dietary/digestive/environmental factors that influence efficiency of energy utilization, and the efficiencies with which different energy substrates are used to support various maintenance and production functions. Emphasis will be placed upon ruminants.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: BIOCH 521.

Typically Offered
Fall-Odd Years

ASI 921 - Protein and Amino Acid Utilization in Domestic Livestock

Credits: 2

Comprehensive discussion of protein and amino acids and their role in digestion, absorption, metabolism, protein synthesis, and degradation in livestock. Emphasis on techniques and interpretation of results from experiments designed to evaluate protein utilization and factors which influence amino acid metabolism in monogastrics and ruminants.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: ASI 820 or ASI 826.

Typically Offered
Fall-Even Years

ASI 923 - Vitamin and Mineral Nutrition of Domestic Livestock

Credits: 2

A detailed examination of the vitamin and mineral nutrition of domestic livestock. Emphasis will be placed on current literature on the determination of vitamin and mineral requirements, practical considerations for vitamin and mineral supplementation in livestock feeding, and the potential for vitamin and mineral deficiency and toxicity in

domestic livestock.

Note:
One hour lecture and two hour lab a week.

Requisites:
Prerequisite: ASI 820 or ASI 826.

Typically Offered
Spring-Even Years

ASI 925 - Rumen Microbiology

Credits: 3

Three hours lecture a week dealing with the microorganisms of the rumen, their habitat, diversity, structure, interactions, and biochemical activities. Techniques for enumeration, isolation and identification of ruminal microorganisms.

Requisites:
Prerequisite: BIOL 455.

Typically Offered
Spring-Odd Years

ASI 930 - Advanced Meat Science

Credits: 3

Basic biochemical, physiological, and histological properties of muscle and related tissues; muscle contraction, rigor mortis, and muscle hydration; maturation; processing by thermal, dehydration, and cold sterilization techniques; meat flavor chemistry; meat research techniques.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ASI 777 or equiv.; and a course in biochemistry.

Typically Offered
Spring-Even Years

ASI 961 - Graduate Problem in Animal Sciences and Industry

Credits: 1-18

In-depth study of a topic supervised by a member of the graduate faculty.

Requisites:
Prerequisite: Permission of supervising faculty member.

Typically Offered
Fall, Spring, Summer

ASI 990 - Seminar in Animal Sciences Research

Credits: 1

Weekly evaluation of the scientific literature and the reasoning underlying the selection of research problems, the formulation and testing of hypotheses, and the evaluation and presentation of results.

Requisites:
Prerequisite: Approval of major professor.

Typically Offered
Fall, Spring

ASI 999 - Doctoral Research in Animal Sciences and Industry

Credits: 1-18

Research leading to the completion of a Ph.D. Degree.

Requisites:
Prerequisite: Consult major professor.

Typically Offered
Fall, Spring, Summer

AT 645 - Private Label Apparel Product Development

Credits: 3

Capstone course using a team approach to synthesize and perform activities used by apparel retailers to create a line of private label merchandise for a targeted consumer market.

Requisites:
Prerequisite: FASH 460.
Corequisite: FASH 575 or AT 610.

Typically Offered
Spring

AT 675 - Computer Technologies for Merchandising

Credits: 3

Advanced studies in computer-based advertising and promotional strategies for the apparel and textile industry. Students will apply skills to graphic presentation, web design, and current industry technologies.

Note:
Six hours studio a week.

Requisites:
Prerequisite: AT 340

Typically Offered
Fall, Spring

ATM 511 - Agricultural Building Systems

Credits: 3

Environmental control systems for agricultural buildings; structural members and systems for agricultural buildings; farmstead planning concepts.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ATM 160 or PHYS 113 or PHYS 115.

Typically Offered
Fall

ATM 515 - Emerging Topics in Agricultural Technology Management

Credits: 2-3

Topics in the application of technical principles to agricultural technology management offered through collaborative distance education programs such as AG*IDEA.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Approval of instructor.

Typically Offered
Fall, Spring, Summer

ATM 536 - Agricultural Technology Management Capstone Project

A team-oriented laboratory for Agricultural Technology Management students to complete an open-ended project related to the management of technology in agriculture.

Note:
Students that take ATM 536 as a requirement for their ATM degree cannot take take BAE 536 later for an elective credit.

Requisites:
Prerequisites: ATM 331 and senior standing in ATM program.

Typically Offered
Fall

ATM 540 - Introduction to Food Engineering

Credits: 3

Material and energy balances with application to food processing. Fluid flow and heat transfer in food processing. Thermodynamic properties and laws. Conc. enrollment in ATM 541 is urged.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: PHYS 113 or 115, BIOCH 120 or CHM 190, MATH 210 or 205.

Typically Offered
Fall

ATM 541 - Introduction to Food Engineering Laboratory Exercises

Credits: 1

Laboratory experiments supplementing ATM 540.

Note:
Three hours lab a week.

Requisites:
Prerequisite or concurrent enrollment: ATM 540.

Typically Offered
Fall

ATM 545 - Processing and Storage of Grains

Credits: 3

Principles of grain and forage conditioning and storage. Structures and equipment for quality preservation.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ATM 160 or PHYS 113 or PHYS 115 and senior standing.

Typically Offered
Spring

ATM 550 - Precision Agriculture Technologies

Credits: 3

Application of precision technologies for gathering information to assist decision making for prodction systems. Topics will include global positioning systems, vehicle guidance systems, crop yield monitors, variable rate control systems for applicators, and the communication among these devices.

Note:
Two hours recitation and two hours lab a week.

Requisites:
Prerequisite: MATH 150 or equivalent, PHYS 113 or PHYS 115, and STAT 325 or STAT 340 or STAT 350.

Typically Offered
Fall

ATM 558 - Hydrology and Soil Erosion Management

Credits: 3

Watershed hydrology, soil erosion, erosion control, water management, and land surveying and mapping. Includes rainfall-runoff relationships; determination of watershed characteristics; terraces, waterways, vegetative filters, and residue management; ponds, wetlands, non-point source pollution control, and water conservation; profile and topographic surveying.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: AGRON 305.

Typically Offered
Spring

ATM 610 - Problems in Agricultural Technology Management

Credits: 1-3

Current and advanced problems in agricultural technology management.

Repeat for Credit
Repeatable - No more than 3 h of ATM 610 can be applied to the degree.

Requisites:
Prerequisite: Instructor approval

Typically Offered
Fall, Spring, Summer

ATM 620 - Topics in Agricultural Technology Management

Credits: 1-3

Topics for the understanding, management, or application of emerging technologies in agricultural systems. Topics announced when offered.

Repeat for Credit
Repeatable - No more than 9 credit hours can be applied to the degree.

Requisites:
Prerequisite: Instructor approval.

Typically Offered
Fall, Spring, Summer

ATM 653 - Water Management and Irrigation Systems

Credits: 2

Management of water in crop production systems, crop water use, and irrigation scheduling. Fundamentals of water flow in pipe networks, pumping plants, and irrigation systems.

Note:
Two hours recitation

Requisites:
Prerequisite: ATM 558

Typically Offered
Fall

ATM 654 - Water Management and Irrigation Systems Lab

Credits: 1

Laboratory and hands-on activities on soil water balance characteristics, crop water use, water flow in pipe networks, pump hydraulics, sprinkler nozzles, drip irrigation systems, water filtration systems, and chemigation systems.

Note:
Three hour lab each week.

Requisites:
Prerequisite OR Corequisite: Must be taken after or concurrent with ATM 653, and junior standing or higher.

Typically Offered
Fall

ATM 661 - Watershed Assessment and Management

Credits: 3

Overview of water legislation and policies (e.g. Clean Water Act, NPDES, TMDL). Principles of watershed pollutant sources, fate, and transport. Impacts of watershed protection and restoration strategies on water and environmental quality.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHM 110 or CHM 210 and BIOL 198.

Typically Offered
Fall

AVT 560 - Airport Design

Credits: 4

Student teams with faculty and industry advisors prepare to enter their work in the Airport Cooperative Research Program's (ACRP) national design competition for universities addressing issues relating to airports and the National Airspace System. The competition focuses on design solutions in the following broad areas: Airport Operation and Maintenance, Runway Safety/Runway Incursions/Runway Excursions, Airport Environmental Interactions, and Airport Management and Planning.

Requisites:
Prerequisite: AVT 360, AVT 361, and AVT 462.

Typically Offered
Spring

AVT 611 - Aircraft Regulation and Certification

Credits: 3

Provides an overview of the FAA certification process relating how the certification process contributes to a safe National Airspace System. Application of relevant Federal Aviation Regulations. Covers both aircraft type and production certification to include airframe, engine, and component certification. Covers the history of aviation regulaion and corresponding relationshp to aerospace safety.

Typically Offered
Fall

AVT 703 - Project Management for Aerospace Professionals

Credits: 3

This course focuses on applied project management, methodology, tools, and techniques. Topics include career aspects of project management; business factors affecting the project; project organization, planning, execution, and communications; the project life cycle; risk analysis; and best practices in project management. Course will include specific applications in the aviation/aerospace sector.

Typically Offered
Fall

AVT 707 - Research Methods

Credits: 3

Provides students with the skills necessary to perform graduate-level research in the field of technology. Course focuses primarily on quantitative research; however, qualitative and mixed-method research methods are also covered. Statistical Research Software applications are also included.

Typically Offered
On sufficient demand

AVT 722 - Aircraft Type Certification

Credits: 3

A detailed examination of the type conformity certification process leading to the issuance of airworthiness certification. Covers FAA and international conformity standards and regulating bodies as well as relevant Minimum Operating Performance Standards to include DO 160, 178, and 254. Presents the supplemental type certification process, continuing airworthiness process, airworthiness directives, the relationship of manufacturer service bulletins, and the type certification change process.

Requisites:
Prerequisite: AVT 611

Typically Offered
Fall

AVT 734 - Aircraft Production Certification

Credits: 3

A detailed examination of the elements of the aircraft production certification process; including FAA surveillance designations, the application and approval process, the parts manufacturer approval process, production approval procedures, certificate management of production approval holders, and the technical standard order program.

Requisites:
Prerequisite: AVT 611

Typically Offered
Spring

AVT 744 - Aviation Human Factors Analysis and Design

Credits: 3

An in-depth exploration of the history of air safety as related to human error and how system safety has been greatly enhanced by the incorporation of the fundamentals of human factors in design. Students will understand and articulate the major advances in Human Factors research over the past 40 years and identify knowledge gaps yet to be filled.

Requisites:
Prerequisite: AVT 611

Typically Offered
On sufficient demand

AVT 751 - Aerospace Policy

Credits: 3

Students will understand State and Federal legislative processes and appreciate how ideas become law. This course will specifically include a study of the concepts of advocacy, building coalitions, caucuses, theories of statutory interpretation, and drafting legislation. Where possible the course will include meeting with legislators. Students will also understand how to attain, track, and influence Federal legislation affecting the aviation/aerospace industry.

Typically Offered
On sufficient demand

AVT 771 - Leadership in the Aerospace Sector

Credits: 3

An exploration of the theories of leadership and critical issues facing aerospace sector leadership in the coming decades. Concepts of resilience, contingencies, communication, collaboration, ethics, strategic planning, failure/recovery, and cultural transformation will be explored. At the end of this course students will understand and appreciate the differences between effective and ineffective leaders.

Typically Offered
On sufficient demand

AVT 790 - Aerospace Topics

Credits: 3

Variable content as determined by the instructor to address emerging issues and challenges in the aviation/aerospace sector and/or to meet non-standard student needs and opportunities.

Typically Offered
On sufficient demand

AVT 799 - Advanced Topics in Aeronautics

Credits: 3

Advanced topics in Master of Science in Aeronautics.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor consent.

Typically Offered
On sufficient demand

AVT 836 - Master of Science in Aeronautics Capstone Project

Credits: 3

An applied project focused on either aircraft certification or aerospace leadership/policy. This course is designed to improve the demonstration of professional knowledge in the student's technical discipline.

Requisites:
Prerequisite: AVT 611, AVT 707, COT 701, and advisor permission

Typically Offered
Spring

AVT 838 - MSA Thesis

Credits: 3-6

Required research for M.S.A. thesis option students**.**

Repeat for Credit
Repeatable

Requisites:
Prerequisites: AVT 611, AVT 707

Typically Offered
On sufficient demand

AVT 841 - Management of Aerospace Safety

Credits: 3

An in-depth analysis of aviation safety across all elements of the industry from manufacturing to training, to airports. The student will understand the impacts and challenges of balancing operational efficiencies with the maximization of organizational safety. Safety Management Systems (SMS) concepts will be explored, and students will have the opportunity to design an approved SMS program.

Typically Offered
On sufficient demand

BAE 535 - Structures and Environment Engineering

Credits: 3

Environmental control for agricultural buildings and structures; analysis and design of structural systems and members for agricultural structures.

Note:
Three hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: ME 513 and CE 333 or CE 530.

Typically Offered
Fall

BAE 536 - Biological Systems Engineering Senior Design I

Credits: 3

Applies and integrates engineering design principles, verbal and written communications, ethics, project management, social aspects, and economics to design a system, component or process which interfaces with agricultural and other biological systems. Emulates professional environment and provides experience in team dynamics and collaboration through the team-based design project.

Note:
Three 3-hour labs a week.

Requisites:
Prerequisite: BAE 331 and one of the following courses: ME 533, BAE 545, BAE 560.

Typically Offered
Fall

BAE 545 - Biological Process Engineering

Credits: 3

Analysis and design of biological and agricultural processes.

Note:
Three hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: CHE 320 or ME 571.

Typically Offered
Fall

BAE 550 - Hydraulics and Mechatronics

Credits: 3

Basic hydraulic, mechatronic, and hybrid drive system concepts and design. Application of these technologies to agriculture, construction, and other off road equipment applications.

Requisites:
Prerequisite: PHYS 213.

Typically Offered
Fall-Even Years

BAE 560 - Hydrology for Biological Systems

Credits: 3

Components of water cycle including precipitation, infiltration, evapotranspiration. Principles and measures for controlling storm water runoff and soil erosion including hydrology and surface water flow; design of water handling structures for land drainage, flood protection, and irrigation.

Note:
Three hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: ME 571 and either STAT 510 or BAE 460. Not available for credit for students with CE 550.

Typically Offered
Spring

BAE 610 - Problems in Biological Systems Engineering

Credits: 1-3

Current and advanced problems in biological systems engineering.

Note:
No more than 6 h can be applied to the degree.

Requisites:
Prerequisite: Instructor approval

Typically Offered
Fall, Spring, Summer

BAE 611 - Particle Technology

Credits: 3

Science and behavior of airborne particles or aerosols. Technology and methods for measuring, controlling, and utilizing aerosols in the agricultural and food industries. Specific topics include basic particle mechanics; principles of particle measurement; particle statistics; electrostatic precipitation; condensation; evaporation; dust generation;

and filtration.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: BAE 460 or STAT 510, and PHYS 213.

Typically Offered
Spring

BAE 620 - Topics in Biological Systems Engineering

Credits: 1-18

Engineering topics for the design, understanding, and/or application of biological systems. Topics announced when offered.

Requisites:
Prerequisite: Approval of instructor.

Typically Offered
Fall, Spring, Summer

BAE 626 - Bioseparations

Credits: 3

Engineering principles of unit operations such as cell lysis and extraction, precipitation, centrifugation, membrane filtration, and chromatography and analytical methods used in bioprocess development.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: BAE 445 or CHE 531 or instructor permission

Typically Offered
Spring-Even Years

Crosslisted:
CHE 626

BAE 636 - Biological Systems Engineering Senior Design II

Credits: 1-3

A continuation of BAE 536. Completion of a team-oriented design project, with emphasis on construction, evaluation, documentation, and presentation of the design.

Note:
By appointment.

Requisites:
Prerequisite: BAE 536 or other approved capstone design course

Typically Offered
Spring

BAE 640 - Instrumentation and Control for Biological Systems

Credits: 3

Fundamentals of instrumentation and control engineering applied in biological and agricultural systems and processes. Time-domain analysis and frequency response methods. Sensors and actuators in feedback control systems. Control system design. Case studies.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: ECE 410 or ECE 519, and MATH 340.

Typically Offered
Spring

BAE 642 - Fundamentals of Conversion of Biorenewable Resources

Credits: 3

An introduction to the conversion of biorenewable resources into biobased products and biofuels.

Note:
Three hours of recitation a week.

Requisites:
Recommended Prerequisite: Graduate standing or consent of instructor.

Typically Offered
On sufficient demand

Crosslisted:
Colisted with CHE 642

BAE 643 - LifeCycle Assessment

Credits: 3

Examination of the process and methodologies associated with life cycle analysis. Application of the methods developed in the course to a project to gain experience in defining and quantifying uncertainty associated with human perturbation, management and utilization of biofuels and other complex processes.

Note:
Three hours recitation per week.

Requisites:
Prerequisite: Graduate standing or consent of instructor.

Typically Offered
Spring-Even Years

Crosslisted:
CHE 643

BAE 645 - Bioenvironmental Reaction Engineering

Credits: 3

Bioreaction engineering principles with an emphasis on biological and environmental engineering with topics such as mass transfer, homogenous and heterogeneous reactions, enzyme and cell growth kinetics, bioreactor configurations and operation, and sustainable bioprocessing.

Note:
3 hr. lecture per week

Requisites:
Prerequisites: BAE 345 or CHE 354 and CHE 355 and BAE 445.

Typically Offered
Spring-Even Years

BAE 650 - Energy and Biofuel Engineering

Credits: 3

Principles of thermal energy, energy conversion, and bioenergy and biofuel production including biomass feedstocks, processing, and conversion. Energy and material balances of bioenergy production and processing systems.

Note:
Three hours lecture a week.

Requisites:
Prerequisite or concurrent enrollment: ME 513.

Typically Offered
Spring-Odd Years

BAE 651 - Air Pollution Engineering

Credits: 3

Air pollution legislation, standards, measurement, and terminology. Design and economics of particulate pollution control systems including cyclones, fabric filters, wet scrubbers, and electrostatic precipitators. Abatement of gas and vapor pollution using VOC incineration, gas adsorption and gas absorption. Meteorology and atmospheric dispersion modeling.

Note:
Three hours recitation.

Requisites:
Prerequisite: ME 513, ME 571.

Typically Offered
Spring

BAE 660 - Hydraulic Transport in Biological Systems

Credits: 3

Introduction to fluid mechanics, fluid properties, non-Newtonian fluids in biological systems, fluid dynamics, balances of mass, momentum and energy, pipe flow for Newtonian (e.g., water) and non-Newtonian (e.g., blood) fluids, dimensional analysis, and compressible flows. Application to biosystems engineering.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 530 or ME 512.

Typically Offered
Fall

BAE 663 - Environmental and Ecological Risk Assessment

Credits: 3

Examination of processes and methodologies associated with three phases of human environmental and ecological risk assessments. Topics of contaminant release and exposure assessment, environmental transport theory and applications, and risk characterization. Experience in defining and quantifying uncertainty associated with human and ecosystem perturbation, risk management, and restoration of environmental and ecological resources.

Note:
Three hours recitation per week.

Requisites:
Prerequisites: MATH 340 and CHM 230 or CHM 250.

Typically Offered
Spring-Odd Years

Crosslisted:
CHE 663

BAE 664 - Green Stormwater Intrastructure Design and Assessment

Credits: 3

Topics covered including engineering design of green infrastructure systems, including bioretention, stormwater wetlands, permeable pavement, and green roofs; methods for assessing the hydrologic and water quality performance at the site- and watershed scales.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: BAE 560 or CE 550

Typically Offered
Fall-Even Years

BAE 665 - Ecological Engineering Design

Credits: 3

Definition, classification, and practice of ecological engineering. Course describes ecological systems, ecosystem restoration, and the utilization of natural processes to provide societal services and benefits to nature.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: MATH 221 and one of the following courses: BAE 560, CE 563, BIOL 529, BIOL 612, ATM 661.

Typically Offered
Fall-Odd Years

BAE 669 - Watershed Modeling

Credits: 3

Study and evaluation of process equations used in watershed-scale, water-quality models. Use and application of watershed models.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: GEOG 508 and one of the following courses: BAE 560, CE 550, ATM 661.

Typically Offered
Spring-Even Years

BAE 740 - Biomaterials Processing

Credits: 3

Technologies of bio-based material processing including starch extraction (wet milling), plant oil extraction and refining, plant protein extraction and processing, cellulose processing, biofuel production, chemicals bioconversion, and drying technologies or biomaterials.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: BAE 345 or BAE 545 or GRSC 602.

Typically Offered

Fall-Even Years

Crosslisted:
GRSC 740

BAE 750 - Analysis and Design of Off-Highway Vehicles

Credits: 3

Analytical study of design, testing, construction, and operating characteristics of off-highway vehicles and machinery. Includes human factors, mobility, and precision agriculture.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: BAE 536 or ME 574.

Typically Offered
Spring

BAE 760 - Environmental Engineering Seminar

Credits: 0

Discussion of current advances in research and practice of environmental engineering.

Note:
One hour seminar biweekly.

Requisites:
Prerequisite: None.

Typically Offered
Fall, Spring

Crosslisted:
CE 760

BAE 768 - Geoenvironmental Engineering Design

Credits: 3

A capstone design project in geoenvironmental engineering focused on resolving issues related to containment of pollutants and remediation of soil and groundwater.

Requisites:
Prerequisite: one of the following: AGRON 605, AGRON 746, BAE 690, CE 625, CE 654, CHE 531, or GEOL 611.

Typically Offered
Spring

Crosslisted:
CE 768 and CHE 768

BAE 810 - Research in Biological & Agricultural Engineering

Credits: 0-18

Research within the field of biological and agricultural engineering

Requisites:
Prerequisite: Approval of department head.

Typically Offered
Fall, Spring, Summer

BAE 811 - Advances in Particle Technology

Credits: 3

Science and behavior of airborne particles or aerosols. Technology and methods for measuring, controlling, and utilizing aerosols in the agricultural and food industries. Specific topics include basic particle mechanics; principles of particle measurement; particle statistics; electrostatic precipitation; condensation; evaporation; dust generation; and filtration.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: STAT 703 or BAE 460 or STAT 510 or instructor permission.

Typically Offered
Spring

BAE 815 - Graduate Seminar in Agricultural Engineering

Credits: 1

Presentation and discussion of research philosophies, procedures, and results.

Note:
One hour recitation a week. Required of all graduate students in agricultural engineering.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring

BAE 820 - Topics in Biological & Agricultural Engineering

Credits: 1-18

A course reserved for study of current topics in agricultural engineering. Topics announced when offered.

Requisites:
Prerequisite: Instructor approval.

Typically Offered
On sufficient demand

BAE 840 - Measurement Systems

Credits: 3

Theory and application of measurement systems for biological and agricultural systems with emphasis on sensors and data-acquisition systems for measurement of variables related to soils, plants, animals, machines, and processes.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: BAE 640.

Typically Offered
Fall

BAE 842 - Advanced Biomass Thermochemical Conversion

Credits: 3

Thermochemical methods to convert biomass to fuels and chemicals: liquefaction, pyrolysis, gasification, and heterogeneous catalysis. Analysis of the reaction kinetics and mass, heat, and momentum transfer in chemical reactors associated with these methods.

Note:
Three hours of recitation a week.

Requisites:
Prerequisite: CHE 520 or ME 513 and CHE 550 or BAE 545.

Typically Offered
Fall-Odd Years

Crosslisted:
Colisted with CHE 842.

BAE 865 - Advanced Ecological Engineering Design

Credits: 3

Advanced study of ecological engineering, systems and processes.

Note:
Three hours recitation a week. Recommended background: Hydrology and Ecology. Not available for students with credit for BAE 665.

Typically Offered
Fall-Odd Years

BAE 869 - Advanced Watershed Modeling

Credits: 3

Advanced study and evaluation of process equations used in watershed-scale, water-quality models. Advanced application of watershed models.

Note:
Three hours recitation a week. Recommended background: Hydrology and GIS. Not available for students with credit for BAE 669.

Typically Offered
Spring-Even Years

BAE 898 - Master's Report

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

BAE 899 - Master's Thesis

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

BAE 999 - Dissertation Research

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

BIOCH 521 - General Biochemistry

Credits: 3

A basic study of the chemistry and metabolism of carbohydrates, lipids, proteins, and nucleic acids.

Requisites:
Prerequisite: CHM 350 or CHM 531.

Typically Offered
Fall, Spring, Summer

BIOCH 522 - General Biochemistry Laboratory

Credits: 3

A one-semester laboratory course encompassing a connected series of experiments that span biochemical chromatographic techniques, PCR- cloning into plasmids by restriction fragment exchange, protein expression and purification by His-tag affinity chromatography, spectroscopic analysis of ligand binding, enzyme kinetics and inhibition.

Note:
Two hours of lecture and six hours of lab per week.

Requisites:
Prerequisite: CHM 351 or CHM 532 and BIOCH 521 or concurrent enrollment.

Typically Offered
Fall, Spring, Summer

BIOCH 523 - Introduction to Biochemical Methods

Credits: 2

A one-semester virtual laboratory course encompassing a connected series of experiments that span biochemical chromatographic techniques, PCR- cloning into plasmids by restriction fragment exchange, protein expression and purification by His-tag affinity chromatography, spectroscopic analysis of ligand binding, enzyme kinetics and inhibition.

Note:
Two hours of lecture and four hours of virtual laboratory experiments per week.

Requisites:
Prerequisites: CHM 350, CHM 351; BIOCH 521 or concurrent enrollment.

Typically Offered
Fall, Spring, Summer

BIOCH 571 - Medical Biochemistry

Credits: 3

Covers medically related concepts, structures, pathways and mechanisms in biochemistry. Addresses the fundamental biochemistry behind veterinary, medical or dental topics and issues. Instructs in the fundamental principles of protein structure and function, enzymology, carbohydrate and lipid metabolism, hormones, biochemical energetics, membranes, nucleic acid and protein metabolism, information transfer and the genetic code, genomic and proteomic analyses, the interdependence of biochemical pathways, pathogenesis and additional new topics.

Requisites:

Prerequisite: PHYS 114, CHM 350/CHM 351, or CHM 531/CHM 532, BIOCH 521

Typically Offered
Fall

BIOCH 599 - Research Training in Biochemistry

Credits: 1-3

Provides laboratory experience for majors and nonmajors in research techniques contributing to ongoing biochemical research.

Repeat for Credit
May be repeated for up to 8 hours.

Requisites:
Prerequisite: Background adequate for relevant techniques.

Typically Offered
Fall, Spring, Summer

BIOCH 755 - Biochemistry I

Credits: 3

An introduction to physical methods, kinetics, and thermodynamics of biochemical reactions and bioenergetics, chemistry of proteins and amino acids, carbohydrate chemistry, and metabolism. BIOCH 755 and BIOCH 765 are for students interested in a two-semester comprehensive coverage of biochemistry. For a one-semester course, enroll in BIOCH 521.

Requisites:
Prerequisite: *Chemical analysis, one year of organic chemistry, differential and integral calculus.

Typically Offered
Fall

BIOCH 756 - Biochemistry I Laboratory

Credits: 2

An intensive laboratory course to accompany BIOCH 755. BIOCH 756 and 766 are sequential courses for students interested in a two-semester comprehensive coverage of experiments in biochemistry. For a one-semester laboratory course, enroll in BIOCH 522.

Note:
Six hours lab a week.

Requisites:
Prerequisite: *BIOCH 755 or concurrent Enrollment.

Typically Offered
Fall

BIOCH 757 - NMR Laboratory

Credits: 1

Basic methods and strategies of nuclear magnetic resonance used in the study of biological molecules. Principles and applications of simple one-dimensional and two-dimensional NMR experiments.

Note:
Two three-hour laboratories per week. Meets second half of semester.

Requisites:
Prerequisite: BIOCH 755.

Typically Offered
Spring

BIOCH 758 - Protein Structure Laboratory

Credits: 1

Princples and uses of computational and experimental approaches for studying peptide and protein structure and dynamics: computer modeling and simulation techniques, fluorescence and circular dichroism spectroscopies, microcalorimetry, and analytical ultracentrifugation.

Note:
Two three-hour laboratories per week. Meets first half of semester.

Requisites:
Prerequisite: BIOCH 755.

Typically Offered
Spring

BIOCH 765 - Biochemistry II

Credits: 3

Continuation of BIOCH 755; lipid chemistry and

metabolism, amino acid metabolism, nutrition, nucleic acid chemistry and metabolism, integration of biochemical pathways and metabolic control mechanisms.

Requisites:
Prerequisite: *BIOCH 755.

Typically Offered
Spring

BIOCH 766 - Recombinant DNA Laboratory I

Credits: 1

Biochemical manipulation of nucleic acids. Isolation of plasmid and chromosomal DNA, restriction enzyme digestions, gel electrophoresis. In vitro and in vivo plasmid assembly techniques, polymerase chain reaction, and DNA sequencing analysis. CRISPR/Cas gene editing in live cells.

Note:
Two three-hour labs per week. Meets first half of semester.

Requisites:
Prerequisite: BIOCH 522. recommended

Typically Offered
Spring

BIOCH 767 - Recombinant DNA Laboratory II

Credits: 1

Approaches to study genetic interactions and protein-protein interactions using DNA techniques. Genomic integration of exogenous DNA, CRISPR/Cas editing, and screening yeast two-hybrid methods. Site directed mutagenesis, protein domain analysis, and protein interaction detection methodologies.

Note:
Two three-hour labs per week. Meets second half of semester.

Requisites:
Prerequisite: BIOCH 522 and BIOCH 766 are recommended.

Typically Offered
Spring

BIOCH 775 - Molecular Biophysics

Credits: 3

Survey of the biophysical methods most frequently encountered in biochemistry and related disciplines. A summary of concepts and techniques of physical science used in studying the structure and function of biomacromolecules such as proteins and DNA. Applications include classical equilibrium thermodynamics and analytical methods like mass spectrometry and circular dichroism (CD), fluorescence, EPR and nuclear magnetic resonance (NMR) spectroscopy. An emphasis on the underlying principles and techniques used in determining the molecular weight and shape of biopolymers, biochemical mechanisms of action, and observation of conformational changes in macromolecules.

Requisites:
Prerequisite: CHM 350/CHM 351 or CHM 531/CHM 532, MATH 221, PHYS 114, BIOCH 755, BIOCH 756, BIOCH 765.

Typically Offered
Spring

BIOCH 799 - Problems in Biochemistry

Credits: 1-18

Problem may include laboratory and/or library work in various phases of biochemistry, agricultural chemistry, or nutrition.

Requisites:
Prerequisite: *Background adequate for problem undertaken.

Typically Offered
Fall, Spring, Summer

BIOCH 806 - Biochemistry Seminar

Credits: 0-1

Seminar for graduate students in biochemistry.

Typically Offered
Fall, Spring

BIOCH 815 - Nuclear Magnetic Resonance (NMR) Spectroscopy of Macromolecules

Credits: 2

A lecture and laboratory course on 'state-of-the-art' multi-dimensional nuclear magnetic resonance methods and strategies in solving three dimensional structure of peptides, proteins, nucleic acids and other macromolecules.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Intersession

BIOCH 890 - Advanced Topics in Biochemistry

Credits: 1-3

Course to present timely topics in Biochemistry.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

BIOCH 899 - Research in Biochemistry I

Credits: 1-18

Research in biochemistry which may be used for preparation of the M.S. Thesis.

Requisites:
Prerequisite: Sufficient training for research undertaken.

Typically Offered
Fall, Spring, Summer

BIOCH 905 - Advanced Topics in Plant Biochemistry

Credits: 3

An advanced treatment of topics of current interest in plant biochemistry, including photosynthesis and carbon metabolism, nitrogen fixation and nitrogen metabolism, structure and function of the higher plant genome, and production of material of economic interest.

Requisites:
Prerequisite: BIOCH 765.

Typically Offered
Fall-Even Years

BIOCH 907 - Advanced Topics in Insect Biochemistry

Credits: 3

Lectures, readings, and discussion of topics of current interest in insect biochemitry. Topics will include biochemical molecules and processes specific to insects, such as biochemistry of the exoskelton and regulation of metamorphosis, as well as comparison of insect and mammalian biochemistry.

Requisites:
Prerequisite: BIOCH 521.

Typically Offered
Spring-Even Years

BIOCH 910 - Lipids

Credits: 2

Chemistry of plant and animal lipids, their occurrence, metabolism, and industrial uses.

Requisites:
Prerequisite: *BIOCH 765.

Typically Offered
Fall-Odd Years

BIOCH 915 - Biomolecular Modeling

Credits: 2

Lectures on the basic principles and skills involved in computer modeling of biomolecules. Students will carry out projects that focus on practical aspects of utilizing publically available simulations and analysis tools to address questions in biochemical and biophysical research.

Typically Offered
Fall-Even Years

BIOCH 920 - Nucleic Acids

Credits: 2

Structure and function of nucleic acids: structures and

properties of DNA, RNA, and chromatin; recombinant DNA techniques; mutagenesis and carcinogenesis; protein-nucleic acid interactions; structural influences on replication, transcription, translation, and regulation.

Requisites:
Prerequisite: BIOCH 765.

Typically Offered
Spring-Even Years

BIOCH 930 - Proteins

Credits: 2

Lectures and readings on the chemical nature of proteins; fractionation; purification, structure, chemical and physical properties of proteins and amino acids.

Requisites:
Prerequisite: *BIOCH 755 and BIOCH 765.

Typically Offered
Fall-Odd Years

BIOCH 935 - Biochemistry of Cell Regulation

Credits: 3

Integration of biochemical pathways and molecular mechanisms regulating cell growth, movement, differentiation, and death. Emphasis on molecular interactions and signaling cascades controlling gene expression, protein synthesis and folding, proteolysis, cytoskeleton, cell cycle, cell survival, and apoptosis.

Requisites:
Prerequisite: BIOCH 765.

Typically Offered
Spring-Odd Years

BIOCH 950 - Advanced Topics in Protein Science

Credits: 3

Advances in protein biochemistry, including protein structure determination, dynamics, folding, stability, enzyme mechanism and regulation.

Requisites:
Prerequisite: BIOCH 765

Typically Offered
Spring-Even Years

BIOCH 997 - Postdoctoral Research in Biochemistry

Credits: 1-12

Advanced level research in collaboration with a faculty member, involving projects in any area of biochemistry. Post-graduate training in first three years beyond doctorate.

Requisites:
Prerequisite: Ph.D. or equivalent.

Typically Offered
Fall, Spring, Summer

BIOCH 999 - Research in Biochemistry II

Credits: 1-18

Research in biochemistry which may be used for preparation of the Ph.D.Thesis.

Requisites:
Prerequisite: Sufficient training for research undertaken.*Nonmajors lacking these prerequisites should obtain consent of instructor before enrollment.

Typically Offered
Fall, Spring, Summer

BIOL 500 - Plant Physiology

Credits: 3

Detailed consideration of physiological processes of higher plants.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: BIOL 198 and BIOCH 265 or another course in organic chemistry.

Typically Offered
Fall

BIOL 501 - Plant Physiology Lab

Credits: 1

Lab related to physiological processes of higher plants.

Note:
Three hours of lab a week.

Requisites:
Prerequisite: Concurrent or previous enrollment in BIOL 500.

Typically Offered
Fall

BIOL 510 - Developmental Biology

Credits: 3

Introduction to the stages and mechanisms of embryonic animal development. Integrated approach that includes classic experimental embryology and the genetic and molecular regulation of invertebrate and vertebrate animal development.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: BIOL 450.

Typically Offered
Spring

BIOL 511 - Developmental Biology Laboratory

Credits: 1

Note:
One three-hour lab a week.

Requisites:
Prerequisite: BIOL 510 or concurrent enrollment.

Typically Offered
On sufficient demand

BIOL 513 - Physiological Adaptations of Animals

Credits: 4

Integration of physiological mechanisms as the basis for adaptive responses of animals to different environments.

Note:
Three hours lecture and three hours lab a week.

Requisites:
Prerequisite: BIOL 201; and a course in organic chemistry or biochemistry.

Typically Offered
Fall

BIOL 515 - Behavioral Ecology

Credits: 3

Study of the social, environmental, genetic, and evolutionary processes that affect animal behavior. Topics include: evolution of social organization, spacing and group behavior, mating systems and parental care, sexual selection, communication, aggression, habitat selection, and foraging. Research project required.

Requisites:
Prerequisite: BIOL 198.

Typically Offered
Spring

BIOL 520 - Evolution

Credits: 3

A study of the theory of evolution including its historical and social implications.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: BIOL 450 or a course in genetics.

Typically Offered
Spring

BIOL 521 - Evolution of Infectious Diseases

Credits: 3

The interplay of ecological interactions, evolutionary dynamics, and the mechanisms of host-microbe and microbe-microbe interactions shape the emergence and

impact of infectious diseases. An interactive approach examines relationships among these factors. Key topics of discussion will include zoonotic infections, emerging infectious diseases, the spread of antimicrobial resistance, and the impact of public health measures.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: BIOL 450 or BIOL 455 or ASI 500.

Typically Offered
Spring

BIOL 529 - Ecology

Credits: 3

Interdisciplinary examination of organisms and their interaction with the environment, ecosystem structure and function, population ecology and demography, community structure and dynamics, and basic ecological principles and their relevance to contemporary environmental issues.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: BIOL 198 and CHM 210.

Typically Offered
Fall

BIOL 530 - Pathogenic Microbiology

Credits: 3

Etiology and descriptions of major infectious diseases of humans within the perspective of host defenses.

Note:
Two hours lecture and one hour laboratory-demonstration a week.

Requisites:
Prerequisite: BIOL 455.

Typically Offered
Fall

BIOL 541 - Cell Biology

Credits: 3

Structure and function of cells and subcellular components. A molecular understanding of membranes and cellular physiology will be emphasized.

Note:
Three hours lecture.

Requisites:
Prerequisite: BIOL 450 or ASI 500 and CHM 350 or CHM 531.

Typically Offered
Fall, Spring

BIOL 542 - Ichthyology

Credits: 3

Systematics, morphology, physiology, distribution, and natural history of fishes.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: BIOL 401.

Typically Offered
Spring-even years

BIOL 543 - Ornithology

Credits: 3

Classification, morphology, physiology, distribution, and natural history of birds.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: BIOL 201.

Typically Offered
Spring

BIOL 544 - Mammalogy

Credits: 3

Characteristics, evolution, life histories, and ecology of

mammals, especially North American game species.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: BIOL 201.

Typically Offered
Fall

BIOL 545 - Human Parasitology

Credits: 3

Protozoan and helminth parasites of humans with lesser emphasis on ectoparasitic arthropods. Emphasis on life cycles, control, and laboratory diagnosis.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: BIOL 198.

Typically Offered
Spring

BIOL 546 - Human Parasitology Laboratory

Credits: 1

Examination of prepared materials and identification of internal parasites of man.

Note:
Two hours lab a week.

Requisites:
Prerequisite: Conurrent enrollment in BIOL 545.

Typically Offered
Spring

BIOL 551 - Taxonomy of Flowering Plants

Credits: 4

Morphology, taxonomy, and biogeography of the vascular plants.

Note:
Two hours lecture and two three-hour labs a week.

Requisites:
Prerequisite: BIOL 201 or BIOL 210.

Typically Offered
Fall

BIOL 580 - Molecular Biology of Genes and Genomes

Credits: 3

The molecular biology of eukaryotic gene expression and genome function, with an emphasis on gene expression as a regulated process. Selected topics in recombinant DNA and biotechnology, focusing on topics central to a modern understanding of gene regulation.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: BIOL 450 and CHM 350.

Typically Offered
Fall

BIOL 604 - Biology of the Fungi

Credits: 3

An introduction to fungal structure, function, physiology, ecology, and genetics. Importance of fungi as disease organisms, as saprotrophs, and in industry. Techniques of isolation, cultivation, and as experimental organisms.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Prerequisite: BIOL 198 or BIOL 210.

Typically Offered
Fall

BIOL 609 - Cellular and Molecular Biology of Human Diseases

Credits: 3

Fundamental basis of the major common non-infectious diseases and disorders affecting our society, with emphasis

on the biochemical and molecular biological mechanisms by which the structures and functions of specific human tissues, organs and systems are altered.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: BIOL 450 and BIOCH 521

Typically Offered
Fall

BIOL 612 - Freshwater Ecology

Credits: 4

Basic ecological principles of aquatic environments and environmental applications. Plants and animals of local streams, rivers, ponds, and reservoirs are used to demonstrate the interaction of biological processes with the chemical and physical features of natural aquatic environments.

Note:
Three hours lecture, three hours lab a week; two optional weekend field trips.

Requisites:
Prerequisite: BIOL 201 and CHM 110 or CHM 210.

Typically Offered
Fall-Even Years

BIOL 632 - Ecology Laboratory

Credits: 1

Laboratory and field experiences with ecological problems.

Requisites:
Prerequisite: BIOL 529 and STAT 340 or equivalent.

Typically Offered
Spring

BIOL 636 - Cancer Therapy

Credits: 3

Current methods of cancer management with emphasis on the kinetic principles of chemotherapy and radiation therapy; diagnosis; surgical oncology; oncologic emergencies; adverse effects of cancer therapy; and the new therapies.

Requisites:
Prerequisite: BIOL 450 and BIOCH 521.

Typically Offered
Spring

BIOL 640 - Population Biology

Credits: 3

An introduction to the theories of quantitative population biology including dynamics, demography and genetics. Emphasis on spatio-temporal variation within and among populations and species.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: BIOL 450 and BIOL 529 and STAT 340.

Typically Offered
Fall

BIOL 642 - Principles of Conservation Biology

Credits: 3

Biological diversity and the factors contributing to loss of biodiversity. Scientific principles of biological conservation emphasizing the application of ecological theory and population genetics to the conservation of threatened populations, species and ecosystems.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: BIOL 450 and BIOL 529.

Typically Offered
Spring

BIOL 670 - Immunology

Credits: 4

Chemical, genetic, and biological properties of the immune response, acquired immunity, and antibody production.

Requisites:
Prerequisite: BIOCH 521 and BIOL 450 or ASI 500 with a C or better.
Recommended Prerequisite: BIOL 541 and senior standing are highly recommended.

Typically Offered
Spring

BIOL 671 - Immunology Lab

Credits: 2

Laboratory exercises in immunology.

Note:
Three-hour lab a week plus one hour recitation.

Requisites:
Prerequisite: BIOL 670 or concurrent enrollment.

Typically Offered
Spring

BIOL 675 - Genetics of Microorganisms

Credits: 3

The genetics of bacteria, viruses, and other microorganisms. Both the use of genetics in microbiological studies and the use of microbial systems to investigate basic genetic problems will be covered.

Requisites:
Prerequisite: BIOL 450 and BIOL 455.

Typically Offered
Fall

BIOL 676 - Molecular Genetics Laboratory

Credits: 3

An advanced course in the techniques of molecular genetics and recombinant DNA technology, including molecular cloning, library screening, polymerase chain reaction, and RFLP and DNA sequence analysis. A number of projects will be compelted during the semester.

Note:
One-hour lecture and two three-hour labs.

Requisites:
Prerequisite: BIOL 675 or concurrent enrollment.

Typically Offered
Fall

BIOL 682 - Fish Ecology

Credits: 3

The interaction between fish and their environment. Exploring fundamental ecological processes in aquatic systems at individual, population, community and ecosystem scales.

Note:
Two hours lecture and three hours lab per week.

Requisites:
Prerequisite: BIOL 529.

Typically Offered
Spring-Even Years

BIOL 684 - Wildlife Management and Techniques

Credits: 4

Concepts and techniques of wildlife ecology and management with emphasis on North American game species. Applied population dynamics as they relate to historical and recent developments in wildlife management, habitat improvement, and related material.

Note:
Three hours lecture, one hour recitation, and three hours lab a week.

Requisites:
Prerequisite: BIOL 433.

Typically Offered
Spring

BIOL 687 - Microbial Ecology

Credits: 3

The ecology of aquatic, terrestrial, animal and plant host-associated microorganisms in their natural environments.

Requisites:
Prerequisite: BIOL 455 or BIOL 529.

Typically Offered
Spring

BIOL 695 - Internship in Biology

Credits: 1-3

Undergraduate internship in Biology pursued outside Kansas State University, allowing the student to gain experience in career-relevant work. A minimum of 45 hours spent in internship is expected for each credit hour in which a student is enrolled

Note:
This offering is coordinated through Biology's Office of Undergraduate Studies, and arrangements for enrolling and obtaining credit should be made prior to undertaking an internship.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall

BIOL 696 - Fisheries Management and Techniques

Credits: 4

Historical and contemporary issues in the management and conservation of exploited fishes. Methods for managing fisheries resources in streams, lakes, and ponds including estimating abundances, quantifying age and growth, manipulating populations, modeling population dynamics, culturing fishes, and improving aquatic habitat.

Note:
Three hours lecture and three hours lab per week.

Requisites:
Prerequisite: BIOL 201 and BIOL 433.

Typically Offered
Fall-Even Years

BIOL 697 - Topics in Biology

Credits: 1-6

Special course offering in an area of faculty expertise and/or supervised independent study project.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

BIOL 698 - Research in Biology

Credits: 1-8

Undergraduate research project pursued under the direction of a faculty mentor. A minimum of 45 hours of research effort is expected over the semester for each credit hour the student is enrolled.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

BIOL 699 - Undergraduate Seminar in Biology

Credits: 1

Attendance at seminars or journal clubs with topics of a biological nature. A summary and personal reflection on each meeting is submitted for course credit.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

BIOL 702 - Radiation Safety in the Research Laboratory

Credits: 1

Principles of radioactive safety and isotope handling, licensing procedures, and laboratory techniques.

Requisites:

Prerequisite: BIOL 198 or BIOL 455; and CHM 210 or PHYS 113.

Typically Offered
Fall

BIOL 705 - Eukaryotic Genetics

Credits: 3

An integrated exploration of transmission genetics and molecular genetics of eukaryotic organisms. The focus will be on genetic model organisms and their contributions to our understanding of mechanisms of genetic transmission and exchange, mutagenesis, gene expression, and regulation of cell division and development. Modern approaches to genomic analysis will be discussed.

Requisites:
Prerequisite: BIOL 450 and BIOCH 521.

Typically Offered
Fall

BIOL 707 - Advanced Cell Biology

Credits: 3

Selected current topics in cell biology which reflect recent advances in the field. Major topics include membranes and transport, protein sorting, signal transduction, cell adhesion and motility, cell cycle, apoptosis, and specialized cell functions.

Requisites:
Prerequisite: BIOL 541.

Typically Offered
Fall

BIOL 730 - General Virology

Credits: 3

Theoretical and experimental basis of virology, with emphasis on how viruses manipulate cells to insure their own survival, mechanisms of virus replication, principles of virus host interactions including how viruses cause disease, and selected medically relevant viruses.

Requisites:
Prerequisite: Twelve hours of biological sciences, including BIOL 450 and 455; and BIOCH 521 or equivalent; consent of instructor.

Typically Offered
Spring

BIOL 734 - Introduction to Genomics and Bioinformatics

Credits: 4

A problem solving approach to understanding genomics and bioinformatics. Practical use of databases and web-based tools used to study biological problems. Introduction to the algorithms behind these tools.

Requisites:
Prerequisite: BIOL 450 or CIS 575.

Typically Offered
Other

BIOL 805 - Advanced Mycology

Credits: 3

Study of fungi, with emphasis on structure, identification, classification, phylogeny, and economic importance.

Note:
One hour lecture and six hours lab a week.

Requisites:
Prerequisite: BIOL 604.

Typically Offered
Spring-Odd Years

BIOL 808 - Mechanisms of Gene Regulation

Credits: 3

Examines important concepts in the mechanisms of gene regulation at the molecular and atomic levels. Focuses on gene regulation at the level of transcription, splicing and translation and on diverse roles of RNA in catalysis, signaling and innate immunity.

Note:
Composed of a lecture (2 hr) covering important concepts and a student recitation (1 hr) of scientific articles.

Requisites:
Prerequisite: BIOL 541, or BIOL 705, or BIOL 707.

Typically Offered
Spring

BIOL 810 - Analysis of Ecological Gradients

Credits: 3

An introduction to analytical methods and conceptual approaches to evaluate patterns of communities across environmental gradients. Multivariate statistical techniques will be used to analyze data and quantify species abundance patterns in a variety of environments.

Typically Offered
Spring

BIOL 818 - Advanced Aquatic Ecology

Credits: 3

A study of advanced issues adn methodology in limnological sciences, including a workship on algal taxonomy, and an applied group project.

Note:
Two lecture hours, two laboratory hours per week.

Typically Offered
Fall-Odd Years

BIOL 822 - Landscape Ecology

Credits: 4

Effect of spatial pattern on ecological processes. Course will emphasize how spatial complexity emerges and is maintained in ecological systems, the analysis of spatial pattern, scaling issues, the ecological consequences of spatial pattern and applications for conservation and ecosystem management in both aquatic and terrestrial systems.

Note:
Two lecture hours, one discussion hour and three laboratory hours per week.

Requisites:
Prerequisite: BIOL 529.

Typically Offered
Fall-Odd Years

BIOL 823 - Demographic Methods

Credits: 3

Theory and methods of quantitative approaches for the study of population dynamics. Advances in matrix methods and mark-recapture statistics will be emphasized.

Note:
Two hours lecture and one hour studio per week.

Requisites:
Prerequisite: BIOL 684 or BIOL 696.

Typically Offered
Fall-Even Years

BIOL 826 - Nutrient Dynamics

Credits: 3

The cycling of elements in ecosystems with emphasis on macronutrients such as nitrogen, phosphorous, and major cations, and the influence of variables such as acid rain on nutrient dynamics.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Prerequisite: BIOL 529 and CHM 210.

Typically Offered
Spring-Odd Years

BIOL 830 - Advanced Virology

Credits: 3

In-depth readings and discussions of current topics in virology and the impact of viruses in medicine and biotechnology, with emphasis on recent research literature.

Requisites:
Prerequisite: BIOL 730 or consent of instructor.

Typically Offered
Spring-Odd Years

BIOL 835 - Cellular and Molecular Parasitology

Credits: 3

Biochemistry, immunology, and molecular biology of medically important eukaryotic parasites.

Note:
Three hours lecture

Requisites:
Prerequisite: BIOCH 521 or equivalent.

Typically Offered
On sufficient demand

BIOL 840 - Molecular and Cellular Immunology

Credits: 3

Discussions and readings covering the molecular and cellular interactions during innate and adaptive immune responses.

Requisites:
Prerequisite: BIOL 670.

Typically Offered
Fall-Odd Years

BIOL 850 - Advanced Topics in Immunology

Credits: 1-2

Current research in immunology.

Requisites:
Prerequisite: BIOL 670 and consent of instructor.

Typically Offered
On sufficient demand

BIOL 855 - Molecular Biology of Cellular Membranes

Credits: 3

Intensive discussions of molecular interactions between proteins and lipids within cellular membranes, and the impact of these interactions on diverse cellular functions. Format is primarily group discussion of primary literature, with the goal of instilling the ability to think critically and evaluate published studies.

Requisites:
Prerequisite: BIOL 541 and BIOCH 521.

Typically Offered
Fall

BIOL 860 - Modern Molecular Approaches

Credits: 3

An introduction to approaches and techniques used in the molecular analysis of biological systems, with a focus on modern molecular and cellular biological approaches. Format is primarily group discussion of primary literature, with the goal of instilling the ability to think critically and evaluate published studies.

Requisites:
Prerequisite: BIOL 705 and BIOL 707.

Typically Offered
Spring

BIOL 863 - Professional Skills and Ethics

Credits: 3

An introduction for graduate students in the mechanics of becoming a scientist and professional biologist. Students actively participate in learning professional skills such as proposal writing and reviewing, professional oral and poster presentations,communicating science to the general public, abstract and manuscript preparation, and other topics. Ethical conduct in research and professional settings is discussed throughout the course.

Note:
Offered every spring, meets twice a week for 1.5 hours. Required course for biology graduate students.

Typically Offered
Spring

BIOL 864 - Plant Responses to the Environment

Credits: 3

Modern concepts of, and techniques for, measuring the environment and plant ecophysiological responses. Instrument / sensor theory and operation, leaf energy balance, measurement, and interpretation of plant carbon

and water relations in the field.

Repeat for Credit
No

Requisites:
Prerequisite: a course in ecology, a course in plant physiology.

Typically Offered
Fall-Even Years

BIOL 865 - Advanced Plant Ecology

Credits: 4

Advanced study of theory in population and community ecology as applied to higher plants.

Note:
Emphasis on current research in plant population ecology, species interactions, community structure, and four hours lecture/recitation per week.

Requisites:
Prerequisite: BIOL 529 or a plant ecology course.

Typically Offered
Fall-Even Years

BIOL 868 - Advanced Cellular and Developmental Biology

Credits: 3

Chemistry, structure, and function of cellular systems in growth, development, and reproduction.

Requisites:
Prerequisite: BIOCH 755 or equivalent.

Typically Offered
Fall-Odd Years

BIOL 870 - Advanced Plant Systematics

Credits: 4

Taxonomy, phylogenetic inference and major themes in the evolution of vascular plants.

Note:
Two hours lecture, one hour discussion, and three hours lab per week. Lab format will include individual or small group research projects.

Requisites:
Prerequisite: BIOL 551 and consent of instructor.

Typically Offered
Spring-Even Years

BIOL 875 - Evolutionary Ecology

Credits: 3

A study of the evolution of population, community, and ecosystem structure.

Note:
Two hours lecture and one hour recitation a week.

Requisites:
Prerequisite: BIOL 529.

Typically Offered
Spring-Odd Years

BIOL 886 - Confocal, Fluorescence and Light Microscopy

Credits: 3

An introduction to theories, functions and applications of confocal, fluorescence and light microscopy, and fluorescent molecules. Lab emphasis on students working on independent research projects requiring microscopy.

Note:
Two hours of lecture and three hours of lab per week.

Typically Offered
Fall-Odd Years

BIOL 888 - Electron Microscopy Techniques

Credits: 3

Theory and techniques involved in using the transmission electron microscope for the study of biological materials. Includes individualized instruction on the operation of the Philips 201 electron microscope and techniques for processing biological samples.

Requisites:
Prerequisite: Current participation in research requiring

electron microscope.

Typically Offered
Fall-Even Years

BIOL 890 - Advanced Topics in Biology

Credits: 1-6

Advanced biology.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

BIOL 891 - Advanced Problems in Biology

Credits: 1-8

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

BIOL 895 - Graduate Seminar in Biology

Credits: 0

Attendance/participation in departmental research-related seminars.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring

BIOL 898 - Master's Research in Biology

Credits: 1-9

Typically Offered
Fall, Spring, Summer

BIOL 997 - Postdoctoral Research in Biology

Credits: 1-12

Advanced-level research in collaboration with a faculty member, involving projects in any area of biology.

Requisites:
Prerequisite: Ph.D. degree or equivalent.

Typically Offered
Fall, Spring, Summer

BIOL 998 - PhD Research in Biology

Credits: 1-18

Typically Offered
Fall, Spring, Summer

BIOL 999 - PhD Research in Microbiology

Credits: 1-18

Typically Offered
Fall, Spring, Summer

BME 575 - Clinical Systems Engineering

Credits: 3

This course addresses the creation and use of biomedical "systems of systems" as applied in various health care delivery scenarios, including hospitals, home care settings, and environments that employ personalized wearable systems. The material focuses on technical areas typically associated with the field of "clinical engineering," emphasizing the use of design standards that promote system interoperability and reconfiguration. Hardware/software interfacing and information management will be addressed from the sensor level to the level of the clinical enterprise. The course will also address human elements related to such systems (e.g., human factors, safety, medical ethics, training, etc.) as well as global technical, political, and sociological issues that may promote or hinder their use in different countries and cultures.

Note:
Lecture

Requisites:
Prerequisite: ECE 540 or equivalent

Typically Offered
Spring

BME 590 - Senior Design Experience I

Credits: 3

The two-semester BME senior design experience is a culminating design sequence intended for the last two semesters of each BME student's degree program. BME 590 – the first course in that sequence – integrates practice in verbal/written communication skills with the initiation of a collaborative design project to emulate a professional technical environment. The course addresses engineering ethics, design theory, project management, team dynamics, and socio-economic considerations related to design.

Note:
Lecture

Requisites:
Prerequisite: ECE 540, BME 491 and ENGL 415

Typically Offered
Fall, Spring

BME 591 - Senior Design Experience II

Credits: 2

The two-semester BME senior design experience is a culminating design sequence intended for the last two semesters of each BME student's degree program. BME 591 – the second course in that sequence – addresses the implementation and demonstration of the project design initiated in BME 590. The course includes oral presentations for design reviews and technical documentation, where the latter addresses project plans; design operations, analyses, architecture, and requirements; design descriptions; and a user manual.

Note:
Two hours lecture per week.

Requisites:
Prerequisite: BME 590

Typically Offered
Fall, Spring

BME 674 - Medical Imaging

Credits: 3

This course addresses various modalities of medical imaging as an extension of biomedical instrumentation. Methods for image data acquisition, processing, and display form the core for this course, which also addresses industry standards for image storage and transmission. Diagnostic applications for medical images are emphasized along with safety and ethics issues that relate to the acquisition and management of biomedical image data.

Note:
Lecture

Requisites:
Prerequisite: ECE 512

Typically Offered
Spring

BUS 530 - Practices of Industrial and labor Relations

Credits: 3

Basic course in industrial and labor relations. Broad coverage of the institution of collective bargaining and its environment, the goals and operation of labor unions, the impact of unions on management, and labor relations law.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall

BUS 531 - Strategic Human Resource Management

Credits: 3

This course provides an overview of the human resource systems and processes needed to achieve organizational effectiveness and strategic success. All key functional areas including human resource planning, staffing, performance management, employee development, and compensation are addressed.

Requisites:
Prerequisite: BUS 420.

Typically Offered
Spring

BUS 542 - Personal Selling and Sales Management

Credits: 3

Focuses on interpersonal communications between buyers and sellers, both oral and written. The mechanics and intricacies of personal sales presentations, which will be developed through practice.

Requisites:
Prerequisite: Concurrent enrollment in BUS 400.

Typically Offered
Spring

CC 510 - Computer Systems Administration

Credits: 3

Administration of the Windows and Linux operating systems, including installation, configuration, distributed file systems, firewalls and security, shell scripting, and user account management. Introduction to managing cloud computing resources.

Requisites:
Prerequisite: CC 310.

Typically Offered
Fall, Spring, Summer

CC 515 - Full Stack Web Development

Credits: 3

Fundamental principles and best practices of web development, user interface design, web API design, advanced web interfaces, web development frameworks, single-page web applications, web standards and accessibility issues.

Note:
Permission to take this course concurrently with CC 410 may be granted to well-prepared students.

Requisites:
Prerequisites: CC 315, CC 410, and either CC 120 or CMST 135.

Typically Offered
Fall, Spring, Summer

CC 520 - Database Essentials

Credits: 3

Introduction to concepts and techniques in database management. Overview of relational databases, NoSQL databases, and related topics. Database programming and use of databases in applications. Theory and architecture of database management systems (DBMS).

Note:
Permission to take this course concurrently with CC 410 may be granted to well-prepared students.

Requisites:
Prerequisite: CC 315 and CC 410

Typically Offered
Fall, Spring, Summer

CC 535 - Applied Data Science

Credits: 3

An introduction to data science and discovery from data: Data wrangling, feature engineering, feature selection, statistical inference, correlations, principal component analysis, classification, regression, novelty detection, clustering, cross-validation, bootstrapping, class profiling, multidimensional scaling, association rules, visualization, data science & society.

Requisites:
CC 110, CC 210, and experience with the Python programming language.

Typically Offered
Fall, Spring, Summer

CC 590 - Special Topics in Applied Computer Science

Credits: 1-4

Selected topics in applied computer science.

Requisites:
Prerequisite: Permission of instructor

Typically Offered
Fall, Spring, Summer

CDPLN 612 - Indian Country Agriculture and Natural Resources

Credits: 3

An introduction to the historical and contemporary issues related to natural resource management on Native American lands. Study will include a variety of ecological settings across Native American lands, along with an analysis of tribal sovereignty as it relates to land tenure and water rights. Arguments concerning natural resource conservation, preservation and extraction will be explored.

Requisites:
Prerequisite: CDPLN 610.

Typically Offered
Summer

CDPLN 613 - Youth Development in Native Communities

Credits: 1

Focus on contemporary issues impacting native youth including: Demographics (Criminal justice, early parenting, poverty, education, suicide and morbidity), identity formation (risky behavior and achievement opportunities), health care (diabetes, obesity, fetal alcohol), prevention activities (4H, BGC, horse clubs, running strong), and influx of youth leadership (youth-elder connections).

Requisites:
Prerequisite: CDPLN 610.

Typically Offered
Fall, Spring, Summer

CDPLN 614 - Wellness in Native Communities: Challenges and Opportunities

Credits: 1

Healthcare issues challenging Native communities, and strategies and practices to address those challenges. Focus on the impact of the Indian Health System, other bureaucratic systems, and current consumer practices that impact healthcare for Native peoples and the ways tribes are working to create healthier communities and improve the lifestyle of Indian people.

Requisites:
Prerequisite: CDPLN 610.

Typically Offered
Fall

CDPLN 615 - Role of Tribal Colleges in Economic Development

Credits: 1

Focus: the role of tribally-chartered colleges/universities in economic development within Native communities. Topics include the use of bonding/bridging social capital, the historical and contemporary case for tribally-chartered higher education, the economic impact of tribal colleges on their local economies, and opportunities/challenges of broad and diverse collaborative networks.

Typically Offered
Summer

CDPLN 620 - Ecological Economics

Credits: 3

Synthesis across the notion of "utility" as represented in environmental/natural resource economics, as well as the notion of "ecology" in ecological economics. Focus will be on the influence the community and ecosystem have on one another, and the potential for complementarity between the two.

Typically Offered
Fall

CDPLN 622 - Impact Analysis

Credits: 1

The basics of economics and fiscal impact analysis are explored, including the scenario construction, basics of input-output analysis, careful use of multipliers, estimations of local revenues and expenditures and discounting.

Typically Offered
Spring

CDPLN 623 - Local Economic Analysis

Credits: 1

This course teaches economic base theory, a theory of regional economics, multipliers and how local economics are affected by external events. Basic methods for the analysis of a local economy are covered, including trend analysis, location quotients, shift share analysis and retail trade analysis.

Typically Offered
Spring

CDPLN 624 - Community Developer as Community Educator

Credits: 3

A graduate level course on education strategies and tools for use in community development. This course will develop students' identities as community educators and provide knowledge on appropriate methodologies for working with adults in community settings, as well as develop their creativity and critical thinking skills. Students will engage in peer-to-peer teaching and critical analysis of community education activities.

Typically Offered
Fall, Spring, Summer

CDPLN 625 - Participatory Action Research Methods (PAR)

Credits: 3

A graduate level course to develop participatory action research knowledge and skills through real-world applications. PAR is a method of collecting information by community members in collaboration with a researcher that respects, places community central to, and reflects the experiences and culture of the people most directly impacted by the issue under consideration.

Typically Offered
Fall, Spring, Summer

CDPLN 630 - Governance and the Community Development Process

Credits: 3

Course focus is on the understanding of the various levels of government and the diversity of governmental forms across the states, reservations, and among nations. Students will compare roles of governments in international settings in relation to community development, and study strategies of evaluating policies that impact community development opportunities.

Typically Offered
Fall, Spring, Summer

CDPLN 631 - Leadership for Change

Credits: 3

Course focus is on the role of leadership in community development and change, including situating leadership in the community development process, reviewing the effectiveness of different leadership styles, and relating leadership to community. Skills and processes that facilitate effective shared leadership, including facilitation, conflict resolution, use of participatory techniques, etc., are explained.

Typically Offered
Fall, Spring, Summer

CDPLN 633 - Grantwriting

Credits: 3

The intricacies of grantsmanship provide the focus of this course. Topics covered will include identification of fund sources, procedures for proposal preparation, composition of grants, and the effects of organizational and personal linkages. Students will prepare a grant application based upon an RFP or to a continuous funding source.

Typically Offered
Fall, Spring, Summer

CDPLN 650 - Community Economic Development for the 21st Century

Credits: 3

Study of the basic theories, concepts, and skills necessary to be a part of a productive community economic development team. Focus is on the importance of organizational values, mission and vision, as well as six approaches to development. The course will cover the five community functions, development strategies, action planning, and organizing for action.

Typically Offered
Fall, Spring, Summer

CDPLN 655 - Land Development Planning

Credits: 3

An examination of the process of land development in the United States, and its impacts from the perspective of

developers, financial institutions, community planners, and city administrators. Focus is on the understanding of the land development process in meeting community goals, and shaping land development to meet community expectations for the improvement of the community.

Typically Offered
Fall, Spring, Summer

CDPLN 660 - Policy and Politics of Coastal Areas

Credits: 3

One half of the world's population lives on a coast and two-thirds of the world's largest cities are located on a coast. This course addresses the environmental, land use, and other critical issues affecting these areas worldwide.

Typically Offered
Summer

CDPLN 700 - Foundations of Community Development

Credits: 3

This course introduces the online Master of Science degree in Community Development. Initial topics include getting comfortable in the online learning environment and succeeding in graduate school. Students will be expected to develop concrete plans for succeeding in the program and to demonstrate graduate level writing and communication skills in assignments related to community development. The bulk of the course will provide foundations to community development as: (1) an academic discipline; (2) a science-based profession; and (3) a skills and knowledge-based practice.

Typically Offered
Fall, Spring, Summer

CDPLN 701 - Special Studies in Community Development

Credits: 1-3

Independent study on special topics of interest in community development.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

CDPLN 702 - Community Engagement

Credits: 3

This course is designed to help students add to their knowledge base and build their confidence in community engagement so that dialogue and deliberations leading to public decision making can be more productive and positive for everyone involved.

Typically Offered
Fall-Odd Years

CDPLN 703 - Applied Community Development

Credits: 1

This course provides students the opportunity to apply knowledge to professional practice. Students will produce a written report on a project of focus, which they have worked on directly, relating their experience to concepts and skills learned through the community development curriculum. Projects must exist at the time of the course and may consist of activities via internships, coursework or capstones outside of the community development curriculum, or personal interests.

Requisites:
Prerequisite: Admission to the MSCD program and instructor permission. All others contact gpideacc@ksu.edu.

Typically Offered
Fall, Spring, Summer

CDPLN 704 - Community Leadership and Capacity Building

Credits: 3

Explorations of the various approaches to leadership and leadership development, evaluation of leadership projects and the relationship of leadership to community capacity building. Topics include defining leadership and applying it to the workplace, and understanding the potential link between leadership and community capacity, as well as

identifying strategies for leadership development in communities.

Typically Offered
Fall

CDPLN 705 - Organizing for Community Change

Credits: 3

Examination of the role of society in community planning efforts. Focus on change within communities and the roles of government, planners, and citizens in reacting to or shaping change. Dimensions of social capital and the context of change and the implications of economic and demographic shifts on strategies and tactics for change will be explored.

Typically Offered
Fall

CDPLN 706 - Economic Development Strategies and Programs

Credits: 3

Course explores theories of local economic development and addresses the development issues faced by communities in the 21st century. Students will understand and apply concepts from economic development planning, economic analysis, business development, human resource development, community-based development, and high-technology development.

Typically Offered
Fall-even years

CDPLN 707 - Evaluations of Organizations & Programs

Credits: 3

This course is an introduction to philosophy, techniques, and methodologies of organizational and program evaluation. Topics covered in the course include overview of program evaluation and theory, techniques to evaluate program processes and performance, evaluation designs, assessing program efficiency, models to diagnose organizations, and methods to assess organizational performance.

Typically Offered
Spring-Odd years

CDPLN 708 - Government, Politics and Community Development

Credits: 3

Introduction to classical and contemporary concepts of federalism, public administration, public policy, and politics with an emphasis on their bearing on community development activities and outcomes.

Typically Offered
Spring

CDPLN 709 - Housing and Development Programs

Credits: 3

In this course, students review and evaluate historical and current housing issues, production, and financial systems. This includes consideration of racial, ethnic, income, and gender issues as they relate to the role of housing developments and programs in community development.

Typically Offered
Spring-Odd Years

CDPLN 710 - Community Analysis

Credits: 3

An introduction to research methods relevant to community development. Topics include how to formulate and begin a research effort, methods of data collection and how conceptual frameworks are used to develop the questions and analyze data. Also included are strategies for reporting findings and applying findings in community action.

Requisites:
Prerequisite: CDPLN 705 or concurrent enrollment.

Typically Offered
Spring, Summer

CDPLN 711 - Immigrants in Communities

Credits: 3

International migration has historically impacted rural and

urban communities around the world. Taking a comparative approach, this course examines community-immigrant interactions and influences on community development and immigrant inclusion. Readings relate theories of immigrant and community change to case studies. Students will gather primary data to assess the capacity of communities to include new international immigrants.

Typically Offered
Summer-Odd Years

CDPLN 712 - Sustainable Communities

Credits: 3

The management of natural capital as linked to other community-based actions around resource allocation and the impacts on quality of life. The literature on community-based natural resource management will be examined and alternative ways of valuing natural capital will be assessed. Contrasting theories of the role of natural capital in communities.

Typically Offered
Fall

CDPLN 713 - Nonprofit Management

Credits: 3

Managing nonprofits including the role of nonprofit organizations in addressing various social problems. Topics include individual giving/volunteering, board and executive leadership, government and nonprofit relationship, ethics and accountability, and issues and challenges in nonprofit management.Managing nonprofits including the role of nonprofit organizations in addressing various social problems. Topics include individual giving/volunteering, board and executive leadership, government and nonprofit relationship, ethics and accountability, and issues and challenges in nonprofit management.

Typically Offered
Summer-Even Years

CDPLN 714 - Introduction to Native Community Development

Credits: 3

This course develops a basic understanding within the context of community development of the diversity of tribal structures and cultures and the unique history and jurisdictional considerations of these nations.

Typically Offered
Fall-Even Years

CDPLN 715 - Principles and Strategies of Community Change

Credits: 3

An analysis of the principles and practices of community change and development, using case studies and the students' communities of reference. the course will relate Community Development approaches to conceptual models from diverse disciplines. Conceptual models include conflict, neo-classical economic growth, participatory democracy, and others.

Typically Offered
Spring

CDPLN 716 - Building Native Communities and Economic Capacity

Credits: 3

This course will focus on non-western approaches to helping native communities build their capacity. Students will learn to take a participatory, culture-centered, and strength-based approach to development.

Requisites:
Prerequisite: CDPLN 714

Typically Offered
Spring-Even Years

CDPLN 720 - Community and Regional Economic Analysis

Credits: 3

The course introduces concepts of communities and regions, theories of economic growth, drivers of economic growth, the economic base of a community, sources of growth or decline in the community, roles of local government and institutions, analytical tools, and strategies for local economic development.

Typically Offered
Fall

CDPLN 721 - Community and Regional Economic Analysis II

Credits: 3

This course will develop a substantive grounding in the theories and practice of measuring community economic dynamics plus build solid foundation skills for applied community economic analysis. Elements include basic descriptive tools of community economic analysis, such as economic base evaluation, industrial mix analysis, trade area assessment, and industrial and occupational composition analysis, input-output industrial accounting for economic impact analysis and the development of fiscal impact assessment techniques, and measures of public policy effectiveness.

Typically Offered
Summer

CDPLN 725 - Community and Natural Resource Management

Credits: 3

An introduction to the breadth of consideration involved in community resource management. Included are theoretical frameworks, methodological investigation and applied practices to enhance the ability of community development professionals to work with their communities to plan, develop, and monitor the conversion and development of natural resources with multiple functions.

Typically Offered
Fall, Spring, Summer

CDPLN 880 - Topics in Community Development

Credits: 1-3

Independent study of selected concepts and trends in community development. Students electing this course offering will be preparing a specialization paper as their final project.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

CDPLN 897 - Proposal Writing

Credits: 1

Development of a master's report or thesis proposal.

Requisites:
Recommended prerequisite: completion of a minimum of 30 credit hours in the Community Development program.

Typically Offered
Fall, Spring, Summer

CDPLN 899 - Research in Community Development

Credits: 0-18

Original research and advanced study in community development and related fields for the master's report.

Requisites:
Prerequisite: CDPLN 880.

Typically Offered
Fall, Spring, Summer

CE 501 - Project Economic Evaluation

Credits: 1

Provides fundamental concepts of engineering economics and decision-making process among alternative engineering design and construction solutions through study of unit cost determination, cost estimating, and financing procedures.

Note:
Two 50-minute lectures per week for half of an academic semester.

Requisites:
Prerequisite: Junior standing for engineering majors or Senior standing for non-engineering majors.

Typically Offered
Spring

CE 502 - Project Management

Credits: 1

Fundamental concepts of project management. Construction planning and scheduling methodologies will be introduced.

Note:
Two 50-minute lectures per week for half of an academic semester.

Requisites:
Prerequisite: Junior standing for engineering majors or Senior standing for non-engineering majors.

Typically Offered
Fall

CE 503 - Project Delivery

Credits: 1

Fundamental concepts of project administration such as contracts, safety, and delivery methods. Construction project delivery methods such as Design-Bid-Build (DBB), Design-Build (DB), etc. will be discussed in detail and students will be introduced to construction estimating.

Note:
Two 50-minute lectures per week for half of an academic semester.

Requisites:
Prerequisite: CE 501

CE 522 - Soil Mechanics I

Credits: 3

Identification, classification, and engineering properties of soils; theory and application of consolidation, compressibility, and strength of soils; ground water retention and movement; slope stability and lateral earth pressures; stress distribution in soil.

Note:
Two hours of lecture and three hours of lab per week.

Requisites:
Prerequisite: ME 571 and a "C" or better in CE 533.

Typically Offered
Fall, Spring

CE 528 - Foundation Engineering

Credits: 3

Prediction of soil variation, soil investigations; stress distribution and bearing capacity; dewatering analysis and procedures; retaining structures and lateral earth pressures; shallow foundations, pile foundations; underpinning and grouting.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: "C" or better in CE 522.

Typically Offered
Fall

CE 530 - Statics and Dynamics

Credits: 3

A shortened combined course in (1) statics, including a study of force systems, free-body diagrams, and problems in equilibrium, friction, centroids, and moments of inertia; and (2) dynamics, including a study of the kinematics and kinetics of particles and rigid bodies using the method of force-mass acceleration.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: MATH 340 and ECE 512.

Typically Offered
Fall, Spring

CE 533 - Mechanics of Materials

Credits: 3

Elementary theories of stress and strain, behavior of materials, and applications of these theories and their generalizations to the study of stress distribution, deformation, and instability in the simple structural forms which occur most frequently in engineering practice.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: "C" or better in CE 333 or "C" or better in CE 530.

Prerequisite or concurrent enrollment: MATH 222.

Typically Offered
Fall, Spring, summer

CE 534 - Mechanics of Materials Laboratory

Credits: 1

Determination of selected mechanical properties of several engineering materials, including iron-carbon alloys, aluminum alloys, concrete, wood, and plastics; relationship between structure and mechanical properties of these materials; elementary problems in experimental stress analysis and structural behavior; test procedures, instrumentation, and interpretation of results.

Note:
Three hours of lab per week.

Requisites:
Prerequisite or concurrent enrollment: CE 533.

Typically Offered
Fall, Spring

CE 537 - Introduction to Structural Analysis

Credits: 3

Elastic analysis of determinate and indeterminate beams, frames, and trusses; construction of shear and moment diagrams and influence lines; calculation of deflections using conjugate beam and virtual work; solution of indeterminate structures by slope-deflection, moment distribution, and matrix stiffness method; with microcomputer applications.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: "C" or better in CE 533.

Typically Offered
Fall, Spring, Summer

CE 541 - Civil Engineering Materials I

Credits: 3

Properties and behavior of structural metals, timber, portland cement concrete, and bituminous concrete; standard specification and methods of test; inspection and control; long-term protection and durability.

Note:
Two hours of lecture and three hours of lab per week.

Requisites:
Prerequisite: CE 534.

Typically Offered
Fall

CE 542 - Structural Engineering in Steel

Credits: 3

Introduction to design of steel structures. Theoretical, experimental and practical bases for proportioning members and their connections.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: "C" or better in CE 537.

Typically Offered
Spring

CE 544 - Structural Engineering in Concrete

Credits: 3

A study of the theories of reinforced concrete and of its characteristics as a construction material; design of reinforced concrete structures.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: "C" or better in CE 537.

Typically Offered
Fall

CE 550 - Water Resources Engineering

Credits: 3

Introduction to: surface water hydrology, design of water handling structures, flood protection, pipe flow hydraulics, pump selection, and flow in soils.

Note:
Two hours of lecture and three hours of lab per week. Not available for students with credit for BAE 560.

Requisites:
Prerequisite: "C" or better in STAT 510, and PHYS 213.

Typically Offered
Fall

CE 552 - Hydraulic Engineering

Credits: 3

Applications of the principles of fluid mechanics to control and use of water; reservoir, dam, and spillway design; enclosed conduit and open-channel design; hydraulic machinery and hydro-power development; principles of fluid measurement; laboratory-flow and velocity metering, hydraulic models, pipe losses, open-channel flow.

Note:
Two hours of lecture and three hours of lab per week.

Requisites:
Prerequisites: "C" or better in ME 571 and "C" or better in CE 550.

Typically Offered
Spring

CE 560 - Activity Center Traffic

Credits: 3

The planning and design of any activity center (shopping mall, business center, sports stadium) must consider vehicular access/egress and parking. If not properly planned and designed, the impact on the surrounding streets and the center can be chaotic. The course will cover techniques of determining parking needs, parking layout, internal and external circulation design, and design of access/egress and the adjacent street system to minimize the impact on the surrounding street network.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Intersession

CE 563 - Environmental Engineering Fundamentals

Credits: 3

Basic physical, chemical, and biological concepts and the applications to the protection of the environment with emphasis on techniques used in water and wastewater treatment.

Note:
Two hours of lecture and three hours of lab per week.

Requisites:
Prerequisite: "C" or better in CHM 230, and MATH 222.

Typically Offered
Fall, Spring

CE 565 - Water and Wastewater Engineering

Credits: 3

Design of municipal water and wastewater treatment systems.

Note:
Three hours of lecture per week.

Requisites:
Prerequisites: CE 550, "C" or better in CE 563, PHYS 214 and ME 571.

Typically Offered
Spring

CE 571 - Introduction to Transportation Engineering

Credits: 3

Key principles in transportation engineering and their relevance to practice. Consideration of both multi-modal and sustainable solutions to transportation.

Note:
Two 75-minute lectures per week.

Requisites:
Prerequisites: CE 212, MATH 221, and PHYS 213

Typically Offered
Spring

CE 572 - Highway Engineering

Credits: 3

Apply highway design principles first introduced in CE 571. Develop CAAD skills necessary to enter the engineering workforce. Plan and propose multiple alternatives for a highway alignment. Design new highway alignments and intersections. Consider earthwork and how it influences highway design. Introduce pavement design as it applies to highway alignments and intersections.

Note:
Two 50-minute lectures and one two-hour lab per week.

Requisites:
Prerequisite: "C" or better in CE 571, and CE 522.

Typically Offered
Fall

CE 585 - Civil Engineering Project

Credits: 3

A comprehensive civil engineering project. Requires integration of skills acquired in civil engineering elective courses. Students must prepare and present written and oral design reports.

Note:
One hour of lecture and six hours of lab per week. Students take CE 585 during their last planned semester of their B.S. program.

Requisites:
Prerequisite: ENGL 415 and "C" or better in two 3-hour CE design electives.
Prerequisite or concurrent enrollment in the remaining required CE design electives.

Typically Offered
Fall, Spring

CE 625 - Principles of Geoenvironmental Engineering

Credits: 3

Introduction to soil formation, structure, flow and mass transport in soils, mass transfer principles, waste containment and isolation, and physical, chemical, and biological remediation principles.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: CE 522.

Typically Offered
Spring

CE 654 - Design of Groundwater Flow Systems

Credits: 3

Introduction to fundamental, mathematical and physical concepts of groundwater flow; application of simple analytic models; introduction to field methods; application of computer modeling tools to address design with practical significance.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: ME 571.

Typically Offered
Fall

CE 663 - Unit Operations and Processes in Environmental Engineering

Credits: 2

A laboratory study of various physical, chemical and biological operations and processes used in the professional practice of environmental engineering. Topics covered will be selected from reactor hydrodynamics, oxidation-reduction, coagulation-flocculation, chemical precipitation, ion exchange, adsorption processes, biological oxidation, anaerobic digestion and the activated-sludge process.

Note:
Six hours of lab per week.

Requisites:
Prerequisite or concurrent enrollment: CE 565 and CE 552.

Typically Offered
Spring-Even Years

CE 680 - Economics of Design and Construction

Credits: 3

Selection of alternative engineering design and construction solutions through study of unit cost determination, cost estimating, and financing procedures. Introduction to construction scheduling.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: Senior standing in engineering or graduate standing for non-engineering majors.

Typically Offered
Spring

CE 690 - Selected Topics in Civil Engineering

Credits: 0-18

Selected topics within a speciality area of civil engineering that will be offered when there is sufficient demand.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Approval of instructor.

Typically Offered
Fall, Spring, Summer

CE 703 - Responsibility in Engineering: Codes & Professionalism

Credits: 3

Course designed to help engineers, scientists, and technical managers to: understand fundamental "canons" of professional societies, establish or revitalize personal ethical standards using these canons, realize when situations are ethical dilemmas, and to develop a process to solving dilemmas. Key activities are: interviewing peers, analyzing current environment for potential challenges, developing ethics workshops, and writing individual code of ethics.

Requisites:
Prerequisite: Graduate standing or senior with instructor approval.

Typically Offered
Spring

CE 704 - Responsibility in Engineering: Leadership & Diversity

Credits: 3

Course designed to help engineers, scientists, and technical managers to: understand leadership approaches that promote high ethical conduct, and to understand the ethical value and challenges associated with a diverse workplace. Key activities are: interviewing peers; analyzing current environment for potential challenges; developing a workshop related to ethics, leadership and diversity; and writing individual code of ethics.

Requisites:
Prerequisite: Graduate standing or instructor approval.

Typically Offered
Fall

CE 718 - Engineering Photo Interpretation

Credits: 3

Photo interpretation techniques, types of aerial photographic film and their uses; application in land use studies, land surveying, site selection, rainfall runoff and stream flow, location of construction materials, and in the determination of soil properties; other applications.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: Senior standing and consent of instruction.

Typically Offered
Spring

CE 723 - Designing with Geosynthetics

Credits: 3

History of geosynthetics; overview of geosynthetic functions, applications and properties; relationship between testing and applications. Designing with geotextiles, geogrids, geonets, geomembranes, geosynthetic clay liners and geocomposites.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 522.

Typically Offered
Other

CE 725 - Seepage in Permeable Materials

Credits: 3

Analysis of seepage; groundwater movement in slopes, embankments, dams, and earth-supporting structures; construction of flow nets; dewatering systems; filter and drain design.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 522 and CE 552.

Typically Offered
Other

CE 728 - Advanced Geotechnical Design

Credits: 3

Advanced studies of soil investigations; design of retaining structures and reinforced earth walls, sheet piles, anchored bulkheads, underground conduits and tunnels; analysis and repair of failed structures.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: CE 528.

Typically Offered
Spring

CE 732 - Advanced Structural Analysis I

Credits: 3

Plane truss and frame analysis by direct stiffness method; equivalent nodal forces; thermal and settlement effects; stiffness by energy methods; analysis of space frames and trusses; grid structures; advanced topics.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: "C" or better in CE 537.

Typically Offered
Fall

CE 741 - Civil Engineering Materials II

Credits: 3

Advanced study of civil engineering materials including concrete, steel and bituminous concrete.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: CE 641 or CHE 350.

Typically Offered
Spring

CE 742 - Advanced Steel Design

Credits: 3

Plastic design of steel structures; stability problems in plastic design; design of complex steel structures.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 542.

Typically Offered
Spring

CE 743 - Advanced Reinforced Concrete Theory

Credits: 3

Advanced theories and methods of design and analysis of reinforced concrete structures.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 544.

Typically Offered
Spring

CE 745 - Structural Dynamics

Credits: 3

Introduction to fundamental concepts in structural dynamics; free and forced vibration of single and multiple degrees of freedom systems with and without damping, numerical methods for linear and non-linear dynamic analysis, and basics of the earthquake response and design of structures.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: MATH 340, ME 512, CE 537 or equivalent.

Typically Offered
Fall

CE 751 - Hydraulics of Open Channels

Credits: 3

Properties of open-channel flow; types of open channels; conservation of mass, momentum, and energy; critical, uniform, and gradually varied flow; design of erodible channels; rapidly varied flow.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 552.

Typically Offered
Fall

CE 752 - Advanced Hydrology

Credits: 3

Review of basic principles; point and regional rainfall and flood frequency analyses; hydrologic and hydraulic flood routing; drainage and flood control facilities design; hydrologic modeling and simulation flood plain analysis and planning.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 550.

Typically Offered
Fall

CE 760 - Environmental Engineering Seminar

Credits: 0

Discussion of current advances in research and practice of environmental engineering.

Note:
One hour of seminar biweekly.

Typically Offered
Fall, Spring

Crosslisted:
BAE 760

CE 762 - Water Treatment Processes

Credits: 3

Physical and chemical process principles and their application to water treatment plant design.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 565.

Typically Offered
Spring

CE 766 - Wastewater Engineering: Biological Processes

Credits: 3

Biological process principles and their application to the design of wastewater treatment plants.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 565.

Typically Offered
Fall

CE 768 - Geoenvironmental Engineering Design

Credits: 3

A team design project in geoenvironmental engineering focused on resolving interdisciplinary issues related to containment of pollutants and remediation of soil and groundwater.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: one of the following: AGRON 605, AGRON 746, BAE 690, CE 625, CE 654, CHE 531 or GEOL 611.

Typically Offered
Spring

Crosslisted:
BAE 768, CHE 768

CE 771 - Travel Demand Modeling

Credits: 3

Historical development and current status of techniques used in urban transportation planning and travel demand forecasting; trip generation, trip distribution, mode choice, and traffic assignment.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: CE 572 or consent of instructor.

Typically Offered
Spring

CE 774 - Pavement Design

Credits: 3

Methods of evaluating the load-carrying capacity of soil subgrade, subbase, and base courses; critical analysis of the methods of design for flexible and rigid pavements; methods of increasing the load-carrying capacity of highway and airport pavements.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: "C" or better in CE 522.

Typically Offered
Fall

CE 775 - Traffic Engineering

Credits: 3

Traffic operations of roads, streets, and highways; traffic engineering studies; use of signs, signals, and pavement markings as traffic control devices; highway and intersection capacity, design and operations of traffic signals; current microcomputer models and applications.

Requisites:
Prerequisite: "C" or better in CE 572.

Typically Offered
Spring

CE 777 - Portland Cement Concrete Pavements

Credits: 3

Portland cement concrete mix design and production. Paving operations. Saw and seal operations. Subgrade preparation. Base selection. Drainage selection, design and construction. Bonded and unbonded concrete overlays. Whitetopping and Ultra-Thin Whitetopping. Concrete pavement restoration; Quality Assurance and Quality Control in Concrete Pavement Construction.

Note:
Three hous recitation a week.

Requisites:
Prerequisite: CE 641.

Typically Offered
Spring

CE 786 - Land Development for Civil Engineers and Planners

Credits: 3

Engineering problems involved in site planning and design. The comprehensive planning process, zoning and subdivision regulations; design and location of streets and highways, water supply and sanitary facilities, drainage and public utilities.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: CE 572 or consent of instructor.

Typically Offered
Fall

CE 790 - Problems in Civil Engineering

Credits: 1-18

Requisites:
Prerequisite: Approval of instructor.

Typically Offered
Fall, Spring, Summer

CE 791 - Research in Civil Engineering

Credits: 1-18

Original investigation or advanced study in some field related to the practice of civil engineering.

Requisites:
Prerequisite: Approval of department head.

Typically Offered
Fall, Spring, Summer

CE 802 - Advanced Mechanics of Materials and Applied Elasticity

Credits: 3

Two- and three-dimensional deformation analysis , equilibrium, and elastic constitutive laws. Stress-strain transformations between coordinate systems. Advanced topics in bending, shearing, torsion and combined loads, with applications to engineering problems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 533.

Typically Offered
Fall-Odd Years

Crosslisted:
ME 802

CE 803 - Numerical and Analytic Techniques for Engineers

Credits: 3

Theory and application of linear algebra, differentiation, integration, optimization and complex variables to a broad range of engineering problems; introduction to solving partial differential equations using finite difference, finite element and boundary element methods.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: MATH 240.

Typically Offered
Fall

CE 807 - Applied Geostatistics

Credits: 2

Analysis of spatially-correlated data. Univariate, bivariate, and spatial description; global and point estimation; random function models; stationarity; intrinsic hypothesis; semivariogram; correlogram; ordinary and block kriging; cross validation; cross correlation and cokriging; experimental design.

Note:
One hour lecture and one hour computer lab a day.

Requisites:
Prerequisite: STAT 510 or STAT 703.

Typically Offered
Intersession

Crosslisted:
AGRON 807

CE 816 - Selected Topics in Civil Engineering / Adv. Finite Element Modeling of Structures

Credits: 1-18

Study of intermediate level topics of interest in civil engineering. Topics announced when offered.

Requisites:
Prerequisite: Graduate standing and approval of instructor.

Typically Offered
Fall, Spring, Summer

CE 822 - Shear Strength and Slope Stability of Soils

Credits: 3

Advanced theories of soil strength and failure; soil improvement; theories of lateral earth pressure with applications; stability analysis by both classical and numerical methods. Selected soil mechanics laboratory project.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 728.

Typically Offered
Other

CE 823 - Engineering Properties of Cohesive Soils

Credits: 3

Mineralogy and structures of clay minerals; fabric and bonding of the clay particles; compressibility and strength characteristics of clays; moisture effects, retention, and movement through clay.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 522 and CE 725.

Typically Offered
Fall

CE 824 - Strength and Deformation of Geo-materials

Credits: 3

Mathematical and physical modeling in geotechnical engineering. Advanced laboratory testing of soils. Plasticity, dilatancy, failure and critical state. Finite element applications: Laboratory strength tests and/or simple field problems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 522 or equivalent.

Typically Offered
Other

CE 825 - Environmental Geotechnology

Credits: 3

Soil/environment and soil/ pollutant interactions; pollutant effect on soil strength and behavior; design and performance of waste containment structures; clay liners, surface seals, and slurry walls; slope stability problems for landfills.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 725.

Typically Offered
Other

CE 827 - Computational Applications in Geo-Systems

Credits: 3

The application of finite element method to multi-physics and pressure dependent materials such as soils, rock, concrete and asphalt. Course covers the formulation of 1D

element, overview of elasticity (isotropic and anisotropic), theory of plasticity (modified Cam Clay and Drucker-Prager models), which is followed by applications such as stresses in the soil, shear strength, consolidation, shallow and deep foundations, retaining walls, mechanically stabilized earth and groundwater seepage.

Requisites:
Prerequisite: CE 522

Typically Offered
Spring

CE 828 - Advanced Seepage and Settlement Analysis in Soils

Credits: 3

Permeability and seepage analysis involving dams and sheet piles; stress distribution in earth masses, one- and three-dimensional consolidation theories; advanced study of compressibility of soil, numerical method applications in consolidation and seepage; analysis of settlement. Selected soil mechanics laboratory project.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 522 and CE 802.

Typically Offered
Other

CE 833 - Advanced Structural Analysis II

Credits: 3

Nonlinear structural analysis using classical solutions; nonlinear geometry analysis by matrix methods for trusses and frames; nonlinear material analysis by matrix methods for trusses and frames; solution of nonlinear equilibrium equations; modeling structural problems by commercial software to predict ultimate capacity and nonlinear response.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 732 or equivalent.

Typically Offered
Spring

CE 834 - Strengthening Design of Reinforced Concrete with Fiber Reinforced Polymers

Credits: 3

The course introduces advanced aspects of the analysis and design of reinforced concrete beams and columns (3 weeks), it then covers the mechanical properties of FRP composites used in CE applications (2 weeks), it then covers the flexural strengthening analysis and design of reinforced concrete beams with FRP including the formulation for various failure modes (5 weeks), it them addresses the shear strengthening analysis and design of reinforced concrete beams with FRP (2 weeks), it then covers the strengthening and FRP wrapping of reinforced concrete columns with FRP (3 weeks) and finally it describes the practical methods of the proper installation and inspection of FRP (1 week).

Requisites:
Prerequisite: CE 544

Typically Offered
Spring

CE 836 - Energy Methods and Applied Variational Principles

Credits: 3

Theory and applications of virtual work, minimum potential, and variational principles using generalized coordinates, displacements, and forces to derive and solve advanced problems in structural, soil and hydrodynamic problems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 801.

Typically Offered
Other

CE 837 - Structural Stability

Credits: 3

Analysis of flexible members. Linear and nonlinear buckling of beams, frames, plates and complicated structural systems; post buckling behavior of steel structures.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 802.

Typically Offered
Spring

CE 844 - Prestressed Concrete Design

Credits: 3

Study of prestressing methods including strength and load-balancing approaches and their application to the analysis and design of beams, slabs, and axially loaded members. Flexural, shear, torsion, and anchorage-zone analysis. Study of deflection and time-dependent losses.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 544.

Typically Offered
Fall

CE 854 - Analysis of Groundwater Flow

Credits: 3

Principles of flow through porous media; applications of flow theory to well analysis and design; groundwater resource evaluation and regional groundwater systems analysis.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 552.

Typically Offered
Spring

CE 857 - Advanced Civil Engineering Design Using GIS

Credits: 3

Investigating the usage of Geographic Information Systems (GIS) technology to better solve engineering problems. Teams of students will use GIS to design solutions to various civil engineering related situations.

Requisites:
Prerequisite: Graduate standing and approval of instructor.

Typically Offered
Spring

CE 861 - Environmental Engineering Chemistry

Credits: 3

Chemical kinetics and equilibria, acid-base chemistry, complex formation, precipitation and dissolution processes, and applications to the analysis of environmental engineering problems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 565, CE 762.

Typically Offered
Fall

CE 863 - Water Supply and Wastewater Collection Systems

Credits: 3

Analysis and design of water distribution networks, pump stations and storage reservoirs; wastewater collection and pump station system design; computer applications and systems optimization.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 565, CE 801.

Typically Offered
Other

CE 864 - Unit Operations and Processes in Environmental Engineering

Credits: 3

A laboratory study of physical, chemical and biological phenomena operative in engineered environmental systems.

Note:
One hour recitation and six hours lab a week.

Requisites:
Prerequisite or concurrent enrollment: CE 762 and CE 766.

Typically Offered
Other

CE 866 - Advanced Wastewater Treatment

Credits: 3

Recent advances in municipal and industrial wastewater treatment. Wastewater microbiology, wastewater biochemistry, applications of biotechnology in wastewater engineering, recent advances in nutrient removal processes, wastewater treatment technologies, and water reclamation.

Note:
Three hours recitation.

Requisites:
Prerequisite: CE 766.

Typically Offered
Spring

CE 872 - Transportation Safety

Credits: 3

Importance of transportation safety, crash data collection, common crash databases, traffic safety studies, accident data analysis, identification of high crash locations, traffic control devices as related to safety, special population group safety, traffic conflict studies, accident reconstruction, statistical methods in crash data analysis and traffic calming.

Note:
Three hours recitation per week.

Requisites:
Prerequisite: CE 572 or consent from the instructor.

Typically Offered
Other

CE 873 - Airport Design

Credits: 3

Planning and design of a regional airport, including site selection in conformance with state and federal regulations; layout and design of runway system; size and layout of terminal buildings, landside facilities, parking lots, and circulation system.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: CE 572.

Typically Offered
Spring

CE 874 - Sustainable Transportation Asset Management

Credits: 3

Recent advances in transportation asset management system. Inventory and condition data collection, life cycle analysis, prioritization, optimization, and implementation.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 774 or equivalent.

Typically Offered
Other

CE 875 - Traffic Flow Theory

Credits: 3

Theory of traffic flow, traffic stream characteristics, car following models, shock wave analysis, queuing analysis, application of statistical methods to traffic engineering problems, traffic simulation.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: CE 775. Prerequisite or concurrent enrollment: STAT 510.

Typically Offered
Spring

CE 890 - Graduate Seminar in Civil Engineering

Credits: 0

Discussion of current advances and research in civil engineering.

Note:
One hour seminar biweekly.

Typically Offered
Fall, Spring

CE 898 - Master's Report

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

CE 899 - Master's Thesis

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

CE 916 - Advanced Topics in Civil Engineering

Credits: 1-18

A course reserved for study of current topics in civil engineering.

Requisites:
Prerequisite: Eighteen hours graduate credit in areas approved by instructor.

Typically Offered
Fall, Spring, Summer

CE 930 - Advanced Topics in Geotechnical Engineering

Credits: 1-18

Advanced study of selected topics in geotechnical engineering.

Requisites:
Prerequisite: Eighteen hours graduate credit in areas approved by instructor.

Typically Offered
Fall, Spring

CE 935 - Structural Dynamics II

Credits: 3

Analysis of structures subject to dynamic loadings. Optimization of structural systems to minimize earthquake hazards.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 802.

Typically Offered
Other

CE 938 - Theory of Plates and Shells

Credits: 3

Equations and solutions of bending of thin plates of various edge conditions and shapes. Membrane and bending theory of shells of revolution. Nonlinear theory of plates and shells.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 802.

Typically Offered
Other

CE 950 - Advanced Topics in Structural Engineering

Credits: 1-18

Advanced study of selected topics in structural engineering.

Requisites:
Prerequisite: Eighteen hours graduate credit in areas approved by the instructor.

Typically Offered
Fall, Spring

CE 967 - Physicochemical Processes

Credits: 3

Advanced study of physical and chemical processes in the movement and removal of particulates and organics in natural and engineered systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 861.

Typically Offered
Other

CE 970 - Advanced Topics in Environmental and Water Resources Engineering

Credits: 1-18

Advanced study of selected topics in environmental and water resources engineering.

Requisites:
Prerequisite: Eighteen hours graduate credit in areas approved by the instructor.

Typically Offered
Fall, Spring

CE 980 - Advanced Topics in Transportation and Materials Engineering

Credits: 0-18

Advanced study of selected topics in transportation engineering and civil engineering materials.

Requisites:
Prerequisite: Eighteen hours graduate credit in areas approved by the instructor.

Typically Offered
Fall, Spring

CE 999 - Dissertation Research

Credits: 1-18

Topics selected with approval of major professor and department head. Doctor of veterinary medicine degree only.

Typically Offered
Fall, Spring, Summer

CFT 824 - Parent-Child Interaction: Theory and Research

Credits: 3

Developmental theories and empirical research concerning the reciprocal interactions between parents and their children focusing on the socialization of the child within the family.

Requisites:
Prerequisite: LSHD 810.

Typically Offered
Summer

CFT 853 - Family Systems in Cultural Context

Credits: 3

Helps students integrate an understanding of individuals, couples, and families within the context of culture. Helps participants to listen and respond in a thoughtful and sensitive manner to the individuals and families they serve professionally, especially those from diverse cultural backgrounds. Students will become more aware of their own cultural memberships, and develop a framework for appreciating the cultural context of the profession of family therapy.

Requisites:
Prerequisite: Admission to the CFT program and/or instructor's consent.

Typically Offered
Spring

CFT 864 - Clinical Theory and Practice A

Credits: 3

Introduction to the foundation of family therapy. A survey of the first half of major schools of family therapy.

Requisites:
Pre-requisite: Admission to the CFT program and/or instructor's consent.

Typically Offered
Fall

CFT 866 - Sex Therapy

Credits: 3

A focus on the framework and skills for delivering therapy to individuals and couples experiencing difficulties with their own sexuality or with sexual functioning in their relationships.

Typically Offered
Fall

CFT 867 - Pre-Practicum in Couple and Family Therapy

Credits: 3

Introduction to master's program in couple and family therapy, including clinic policies and clinical observations. Restricted to students admitted to the couple and family therapy program.

Requisites:
Prerequisite: Admission to the CFT program and/or instructor's consent.

Typically Offered
Fall

CFT 868 - Pre-Practicum in Couple and Family Therapy II

Credits: 1

Preparation for screening into the clinical practicum in couple and family therapy and participation in clinic research program.

Requisites:
Prerequisite: CFT 867 and concurrent enrollment in CFT 870.

Typically Offered
Spring

CFT 869 - Systematic Treatment of Trauma Violence and Substance Abuse

Credits: 3

Framework and skills for helping individuals and families experiencing domestic violence and/or substance abuse with emphasis on assessment and treatment.

Requisites:
Prerequisite: Admission to the CFT program and/or instructor consent.

Typically Offered
Fall

CFT 870 - Couples and Sex Therapy

Credits: 3

Examination of couple processes and clinical approaches to couple intervention and treatment, including evidence based approaches. The course will include a specific focus on contextual and systemic dynamics affecting couple relationships as well as the treatment of couples experiencing difficulties with their own sexuality or with sexual functioning in their relationships.

Requisites:
Pre-requisite: Admission to the CFT program or instructor approval.

Typically Offered
Spring

CFT 872 - Family Therapy

Credits: 3

Discussion of the primary theories of Couple and Family Therapy which are used in the treatment of whole families who present themselves for therapy.

Requisites:
Pre-requisite: Admission to the CFT program or instructor approval

Typically Offered
Spring

CFT 877 - Individual and Family Assessment

Credits: 2

Assessment of individual and family functioning within multiple contexts; including an emphasis on client focused progress monitoring.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval

Typically Offered
Fall

CFT 878 - Professional Studies in Family Therapy

Credits: 3

Analysis of professional issues, techniques, and responsibilities associated with working effectively with families in a family therapy setting.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval.

Typically Offered
Spring

CFT 879 - Systemic Assessment and Treatment of Psychopathology

Credits: 3

Examination of the Diagnostic and Statistical Manual of Mental Disorders. Exploration of relational diagnoses and the interaction of individual disorders and relational functioning. Review of empirically supported treatments for individual and relational disorders.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval.

Typically Offered
Spring

CFT 885 - Practicum in Couple and Family Therapy

Credits: 1-3

Supervised experience in couple and family therapy. Designed for master's level students.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval

Typically Offered
Fall, Spring, Summer

CFT 886 - Clinical Intervention with Parents and Children

Credits: 3

The course will examine the history of play therapy including the theories from which play therapy evolved, attachment theory, the fundamentals of play therapy, use of assessment with children and adolescents, sand tray play therapy, use of play therapy in the family context and special topics.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval.

Typically Offered
Fall

CFT 889 - Clinical Project

Credits: 1-3

Integration of clinical work and course work resulting in a final clinical project.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

CFT 894 - Readings in Couple and Family Therapy

Credits: 1-6

Implications of research findings in preparation for professional work in counseling, teaching, and research in couple and family therapy.

Repeat for Credit
Repeatable for a maximum of 9 hours.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Fall, Spring, Summer

CFT 896 - Clinical Theory and Practice B

Credits: 3

A survey of the second half of major schools of family therapy.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval.

Typically Offered
Fall

CFT 899 - MS Research in Couple and Family Therapy

Credits: 1-6

Individual research problems in couple and family therapy which may form the basis for the master's thesis or report.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

CFT 910 - Topics in Couple and Family Therapy

Credits: 1-3

Examination of recent research, theory, and clinical practice related to couple and family therapy.

Repeat for Credit
May be taken for a maximum of nine hours.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval

Typically Offered
Fall, Spring

CFT 970 - Specialization and Leadership

Credits: 3

Seminar focusing on the development of specialization in research, teaching, and applied work.

Typically Offered
Fall-Even Years

CFT 982 - Practicum in CFT Research

Credits: 1-3

Student will work with a faculty member to complete a research project and submit it to a journal.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval.

Typically Offered
Fall, Spring, Summer

CFT 983 - Advanced Family Research Methods

Credits: 3

Analysis of a variety of family research methods.

Typically Offered
Other

CFT 984 - Supervision of Couple and Family Therapy

Credits: 3

Preparation of experienced couple and family therapists for

supervision roles within educational, medical and agency settings.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval.
Corequisite: CFT 986

Typically Offered
Other

CFT 985 - PhD Practicum in Couple and Family Therapy

Credits: 1-3

Supervised experience in family therapy.

Note:
Consent of instructor is required.

Repeat for Credit
May be taken for a maximum of nine hours.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval

Typically Offered
Fall, Spring, Summer

CFT 986 - Practicum in Supervision in Couple and Family Therapy

Credits: 1-3

Supervised experience in supervision of couple and family therapy.

Repeat for Credit
May be taken for a maximum of nine hours.

Requisites:
Prerequisite: Admission to the CFT program or instructor approval.

Typically Offered
Fall, Spring, Summer

CFT 987 - Advanced Clinical Theory

Credits: 3

Exploration of couple and family therapy clinical theories and the process of integrating these theories into a personalized model for utilization in both therapy and supervision.

Requisites:
Prerequisite: CFT 870 and CFT 896.

Typically Offered
Other

CFT 988 - Conjoint and Group Techniques in Family Counseling

Credits: 3

Advanced theory in couple and family counseling with emphasis on group techniques.

Requisites:
Prerequisite: CFT 885 and consent of instructor.

Typically Offered
Spring, Summer

CFT 990 - Dissertation Proposal Seminar

Credits: 1

Presentation and discussion of proposals for dissertation research in human development and family science.

Requisites:
Prerequisite: Six hours of statistics, 3 hours of research design or methods, and consent of major professor.

Typically Offered
Fall, Spring, Summer

CFT 999 - Doctoral Research in Couple and Family Therapy

Credits: 1-18

Repeat for Credit
Repeatable

CHE 520 - Chemical Engineering Thermodynamics I

Credits: 2

A study of the first and second laws of thermodynamics, real gases, heat of solution and reaction.

Note:
Two hours recitation a week.

Requisites:
Prerequisite: A grade of C or better in CHE 320.
Prerequisite or concurrent enrollment: MATH 340.

Typically Offered
Fall

CHE 521 - Chemical Engineering Thermodynamics II

Credits: 3

A continuation of the study of the second law, thermodynamic analysis of processes, phase equilibrium, chemical reaction equilibrium.

Note:
Three hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: CHE 416.
Prerequisite: CHE 520.

Typically Offered
Spring

CHE 522 - Chemical Engineering Laboratory I

Credits: 2

Laboratory experiments on momentum and heat transfer.

Note:
Five hours lab a week.

Requisites:
Prerequisite: CHE 520 and CHE 530.

Typically Offered
Spring

CHE 530 - Transport Phenomena I

Credits: 3

A unified treatment of the basic principles of momentum, energy, and mass transport.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: A grade of C or better in CHE 320 and MATH 340.

Typically Offered
Fall

CHE 531 - Transport Phenomena II

Credits: 3

Continuation of Transport Phenomena I with special emphasis on mass transfer.

Note:
Three hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: CHE 416.
Prerequisite: CHE 530.

Typically Offered
Spring

CHE 542 - Unit Operations Laboratory

Credits: 3

Laboratory experiments on classical unit operations, e. g., distillation, absorption, extraction, and on chemical kinetics and process dynamics.

Note:
Eight hours lab a week.

Requisites:
Prerequisite: CHE 535, CHE 550 and CHE 560.
Prerequisite or concurrent enrollment: CHE 561.

Typically Offered
Spring

CHE 550 - Chemical Reaction Engineering

Credits: 3

Applied chemical kinetics and catalysis including the

analysis and design of tubular, packed bed, stirred tank, and fluidized bed chemical reactors.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 521 and CHE 531.

Typically Offered
Fall

CHE 560 - Separational Process Design

Credits: 3

Development of the basic theory and design of separational processes such as distillation, gas absorption, liquid extraction, adsorption, and ion exchange.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 521 and CHE 531.

Typically Offered
Fall

CHE 561 - Chemical Process Dynamics and Control

Credits: 3

A study of the unsteady state behavior and control of chemical processes.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 550.

Typically Offered
Spring

CHE 565 - Health and Safety in Chemical Engineering

Credits: 3

Fundamentals of chemical process safety, particularly as they apply to process design. Topics will include toxicology and industrial hygiene, fires and explosions, runaway reactions, relief systems, process hazards identification, risk assessment, and inherently safer design.

Requisites:
Corequisite or Prerequisite: CHE 570.

Typically Offered
Fall

CHE 570 - Chemical Engineering Systems Design I

Credits: 3

Basic concepts of process economics and process optimization with application to the synthesis and design of chemical processing systems.

Requisites:
Prerequisite or concurrent enrollment: CHE 550 and CHE 560.

Typically Offered
Fall

CHE 571 - Chemical Engineering Systems Design II

Credits: 3

The solution of comprehensive systems design problems.

Requisites:
Prerequisite: CHE 550, CHE 560, and CHE 570.
Prerequisite or concurrent enrollment: CHE 561.

Typically Offered
Spring

CHE 580 - Problems in Chemical Engineering or Materials Science

Credits: 1-18

An introduction to chemical engineering research.

Note:
Undergraduate and graduate credit.

Requisites:
Prerequisite: Approval of department head.

Typically Offered
Fall, Spring, Summer

CHE 626 - Bioseparations

Credits: 3

Study of separations important in food and biochemical engineering such as leaching, extraction, expression, absorption, ion exchange, filtration, centrifugation, membrane separation, and chromatographic separations.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 531 or BAE 545.

Typically Offered
Spring-Even Years

CHE 642 - Fundamentals of Conversion of Biorenewable Resources

Credits: 3

An introduction to the conversion of biorenewable resources into biobased products and biofuels.

Note:
Three hours of recitation per week.

Requisites:
Recommended Prerequisite: Graduate standing or consent of instructor.

Typically Offered
On sufficient demand

Crosslisted:
BAE 642

CHE 643 - Life Cycle Assessment

Credits: 3

Examination of the process and methodologies associated with life cycle analysis. Application of the methods developed in the course to a project to gain experience in defining and quantifying uncertainty associated with human perturbation, management and utilization of biofuels and other complex processes.

Note:
Three hours recitation per week.

Requisites:
Recommended Prerequisite: Graduate standing or consent of instructor.

Typically Offered
On sufficient demand

Crosslisted:
BAE 643

CHE 650 - Hazardous Waste Engineering Seminar

Credits: 1

Topics in hazardous materials management and control, waste reduction and minimization, hazardous substance tracking, and hazardous waste engineering.

Note:
One hour recitation a week.

Requisites:
Prerequisite: CHM 230.

Typically Offered
Fall, Spring, Summer

CHE 656 - Polymer Science and Engineering

Credits: 3

An introduction to polymeric materials, including chemistry, structure and formation; physical states and transitions; and, basic physical and mechanical properties.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHM 531.

Typically Offered
Fall-Even Years

CHE 661 - Processing of Materials for Solid State Devices

Credits: 3

Structure, properties and processing of materials for solid state devices. Crystal growth, epitaxy, oxidation, diffusion, lithography, and etching as applied to device fabrication.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 350 or CHE 352.

Typically Offered
Fall, Spring

CHE 663 - Environmental and Ecological Risk Assessment

Credits: 3

Examination of processes and methodologies associated with human environmental and ecological risk assessments. Application of the methods learned to a project to gain experience in defining and quantifying uncertainty associated with human perturbation, management and restoration of environmental and ecological processes.

Note:
Three hours recitation per week.

Requisites:
Recommended Prerequisite: Graduate standing or consent of instructor.

Typically Offered
On sufficient demand

Crosslisted:
BAE 663

CHE 670 - Sustainability Seminar

Credits: 1

Topics in environmental sustainability, green engineering, life cycle analysis, sustainable development, and sustainability science.

Requisites:
Prerequisite: CHM 230.

Typically Offered
Fall, Spring, Summer

CHE 681 - Engineering Materials II

Credits: 3

The structure and bonding in crystalline and amorphous materials; crystallography; thermodynamic stability in materials; equilibrium diagrams and the phase rule; rate theory and kinetics of solid-state transformations; mechanical behavior of engineering materials; dislocations; failure mechanisms.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CHE 350 or CHE 352.

Typically Offered
Fall, Spring, Summer

CHE 682 - Surface Phenomena

Credits: 3

Principles and applications of interfacial phenomena, including capillarity, colloids, porosity, adsorption, and catalysis.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 520, CHM 585, ME 513, or PHYS 664.

Typically Offered
Fall-Odd Years

CHE 715 - Biochemical Engineering

Credits: 3

The analysis and design of biochemical processing systems with emphasis on fermentation kinetics, continuous fermentations, aeration, agitation, scale up, sterilization, and control.

Note:
Three hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: CHE 550.

Typically Offered
Fall

CHE 725 - Biotransport Phenomena

Credits: 3

Principles of transport phenomena applied to biological and physiological processes. Membrane transport processes, circulatory system transport phenomena, transport and distribution of drugs.

Requisites:
Prerequisite: CHE 530.

Typically Offered
Fall, Spring

CHE 735 - Chemical Engineering Analysis I

Credits: 3

The mathematical formulation of problems in chemical engineering using partial differential equations, vector and tensor notation. Solution of these problems by analytical and numerical.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 530.

Typically Offered
Fall, Spring, Summer

CHE 750 - Air Quality Seminar

Credits: 1

Topics in air quality including health effects, toxicology, measurement, characterization, modeling, management, and control.

Note:
One hour recitation a week.

Requisites:
Prerequisite: CHM 230.

Typically Offered
Fall

CHE 802 - Selected Topics in Materials Science

Credits: 1-18

Areas of current interest in materials including solidification, transformations, solutions, dislocations, creep, fracture, failure analysis, and failure prevention.

Requisites:
Prerequisite: CHE 681.

Typically Offered
Fall, Spring, Summer

CHE 805 - Selected Topics in Biochemical Engineering

Credits: 3

Subjects of current interest in the broadest sense of biochemical engineering. These involve not only chemical engineering problems which contain biochemical biological, or medical elements but also applications of chemical engineering principles and methodologies to biochemical, biological, medical, and ecological problems.

Requisites:
Prerequisite: CHE 715.

Typically Offered
Spring, Summer

CHE 810 - Research in Chemical Engineering

Credits: 1-18

Original investigations in transport phenomena, unit operations, thermodynamics, process dynamics, applied chemical kinetics and process development. The results of these investigations may be used for the master's thesis or the doctoral dissertation.

Typically Offered
Fall, Spring, Summer

CHE 815 - Advanced Chemical Engineering Thermodynamics

Credits: 3

Advanced topics in thermodynamics, with emphasis on a

chemical and physical equilibria and the estimation of thermodynamic properties.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: Graduate standing in chemical engineering.

Typically Offered
Fall, Spring, Summer

CHE 822 - Advanced Chemical Reaction Engineering

Credits: 3

Theory of kinetics and catalysis in homogeneous and heterogeneous systems, with applications in chemical reactor design and process development.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 550.

Typically Offered
Fall, Spring, Summer

CHE 826 - Advanced Unit Operations I

Credits: 3

Advanced study of mass transfer operations.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 560.

Typically Offered
Fall, Spring, Summer

CHE 842 - Advanced Biomass Thermochemical Conversion

Credits: 3

Thermochemical methods to convert biomass to fuels and chemicals: liquefaction, pyrolysis, gasification, and heterogeneous catalysis. Analysis of the reaction kinetics and mass, heat, and momentum transfer in chemical reactors associated with these methods.

Note:
Three hours of recitation a week.

Requisites:
Recommended Prerequisite: CHE 520 or ME 513 and CHE 550 or BAE 545.

Typically Offered
Fall-Odd Years

Crosslisted:
BAE 842

CHE 862 - Advanced Transport Phenomena I

Credits: 3

Advanced treatment of momentum, energy, and mass transport, with emphasis on momentum transport in chemical engineering applications.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 735.

Typically Offered
Fall, Spring, Summer

CHE 867 - Advanced Transport Phenomena II

Credits: 3

Advanced treatment of momentum, energy, and mass transport, with emphasis on energy and mass transport in chemical engineering applications.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 862.

Typically Offered
Fall, Spring, Summer

CHE 875 - Graduate Seminar in Chemical Engineering

Credits: 1

Discussion of current advances and research in chemical engineering and related fields.

Typically Offered
Fall, Spring

CHE 898 - Master's Report

Credits: 1-18

Topics selected with approval of department head and major professor.

Typically Offered
Fall, Spring, Summer

CHE 899 - Master's Thesis

Credits: 1-18

Topics selected with approval of department head and major professor.

Typically Offered
Fall, Spring, Summer

CHE 901 - Selected Topics in Reaction Engineering

Credits: 3

Advanced study in this field of such topics as complex reactions, catalysis, dispersion effects, fast reactions, reactions in fluidized beds.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 822 and one course in chemical engineering numbered 851 or higher.

Typically Offered
Fall, Spring, Summer

CHE 910 - Selected Topics in Transport Phenomena

Credits: 3

Subjects of current interest such as surface phenomena, turbulent transport, droplet mechanics, multicomponent systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 867.

Typically Offered
Fall, Spring, Summer

CHE 930 - Selected Topics in Thermodynamics

Credits: 3

Advanced study in this field of such topics as irreversible thermodynamics, solution theory, and surface phenomena.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 815 and one course in chemical engineering numbered 851 or higher.

Typically Offered
Fall, Spring, Summer

CHE 999 - Dissertation Research

Credits: 1-18

Topics selected with approval of department head and major professor.

Typically Offered
Fall, Spring, Summer

CHINE 501 - Chinese V

Credits: 4

Development of communication skills through application activities. Enhancement of vocabulary and intensive practice in grammatical structures and their usage.

Requisites:
Prerequisite: CHINE 202 or equivalent.

CHINE 502 - Chinese VI

Credits: 4

Continuation of Chinese V. Development of functional skills for general situations. Further enhancement of vocabulary and intensive practice in grammatical structures and their usage.

Requisites:
Prerequisite: CHINE 501 or equivalent.

CHINE 599 - Special Studies in Chinese

Credits: 0-18

Requisites:
Prerequisite: Consent of department head and instructor.

CHM 500 - General Physical Chemistry

Credits: 3

Elementary principles of physical chemistry.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CHM 230 or CHM 250 and MATH 210 or MATH 220, and PHYS 114 or PHYS 213.

Typically Offered
Spring

CHM 531 - Organic Chemistry I

Credits: 3

Topics to be covered include fundamental concepts in organic chemistry such as hybridization, molecular orbitals, structure and bonding, acids and bases, kinetics and thermodynmaics, stereochemistry and chirality, and conformational analysis. The basic knowledge will be used to study the syntheses, reactions, and mechanisms of functional groups such as alkanes, haloalkanes, and alkenes. Structural determination using infrared spectroscopy and nuclear magnetic resonance will also be included.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CHM 230 or CHM 250.

Typically Offered
Fall, Spring

CHM 532 - Organic Chemistry Laboratory

Credits: 2

A laboratory exploring the synthesis and characterization of organic compounds.

Note:
It is recommended students complete CHM 531 prior to taking this course.

Requisites:
Prerequisite: Previous or concurrent enrollment in CHM 531

Typically Offered
Fall, Spring

CHM 545 - Chemical Separations

Credits: 2

Principles of modern separation techniques.

Note:
One hour. lecture and three hours lab a week.

Requisites:
Prerequisite: CHM 250 or CHM 371, CHM 532 and CHM 550.

Typically Offered
Spring

CHM 550 - Organic Chemistry II

Credits: 3

A continuation of Organic Chmistry I (CHM 531). CHM 550 represents the second semester of a two-semester survey of organic chemistry. Topics to be discussed include syntheses, reactions, and mechanisms of alkynes, aldehydes and ketones, carboxylic acids and thier derivatives, amines, benzene and its derivates, organometallic chemistry, conjugated unsaturated systems and pericyclic reactions, polymers, carbohydrates, lipids, amino acids, proteins, and

nucleic acids. Structural identification will be studied using various spectroscopic methods.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CHM 531.

Typically Offered
Fall, Spring

CHM 551 - Advanced Organic Laboratory

Credits: 2

Note:
One five-hour lab and one hour of lecture a week.

Requisites:
Prerequisite: CHM 550 and CHM 532.

Typically Offered
Fall, Spring

CHM 566 - Instrumental Methods of Analysis

Credits: 3

Introduction to theory and practice of electrochemical methods, molecular and atomic spectroscopy, surface science, mass spectrometry, separation methods, and electronics in analytical chemistry.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CHM 250 or CHM 371; CHM 531; and CHM 500 or CHM 585.

Typically Offered
Fall

CHM 585 - Physical Chemistry I

Credits: 3

Elementary chemical thermodynamics and kinetic theory of gases.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CHM 350 or CHM 531, MATH 222, and PHYS 214.

Typically Offered
Fall

CHM 595 - Physical Chemistry II

Credits: 3

Elementary quantum chemistry, spectroscopy, statistical thermodynamics, and chemical kinetics.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CHM 350 or CHM 531, MATH 222, and PHYS 214.

Typically Offered
Spring

CHM 596 - Physical Methods Laboratory

Credits: 1-2

Experiments that relate to physical and instrumental methods.

Note:
Three to six hours lab a week.

Requisites:
Prerequisite: CHM 566 and MATH 221 and PHYS 114 or PHYS 214.

Typically Offered
Spring

CHM 599 - Senior Thesis Research

Credits: 1-3

A final written report and oral presentation are required.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

CHM 600 - Scientific Glassblowing

Credits: 1

The basic techniques of bending, sealing, and blowing glass used to fabricate scientific glassware.

Note:
Three hours of laboratory including one lecture demonstration a week. Unless otherwise stated, all chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 596 Physical Methods Laboratory.

Requisites:
Prerequisite: Senior or graduate standing in physical sciences.

Typically Offered
Spring

CHM 601 - Safe Chemical Laboratory Practices

Credits: 1

A general safety course for persons working or teaching in a chemical laboratory.

Note:
One hour of lecture per week. Unless otherwise stated, all chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 596 Physical Methods Laboratory.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall

CHM 657 - Inorganic Techniques

Credits: 1-2

The preparation, characterization, and study of transition metal, main group, and organometallic compounds using techniques commonly encountered in industrial and academic research.

Note:
One hour lecture and three hours lab a week. Unless otherwise stated, all chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 596 Physical Methods Laboratory.

Requisites:
Prerequisite: CHM 585.

Typically Offered
Fall

CHM 700 - Practicum in Teaching Chemistry

Credits: 1

Principles and methods of instruction in laboratories and recitation classes in chemistry, including one semester of supervised experience as an instructor in a chemical laboratory. This is a required course of all teaching assistants in the Department of Chemistry.

Note:
May be taken only once for credit. Unless otherwise stated, all chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 596 Physical Methods Laboratory.

Requisites:
Prerequisite: Senior standing in chemistry or consent of instructor.

Typically Offered
Fall

CHM 711 - Inorganic Chemistry I

Credits: 3

Atomic and molecular structure, bonding concepts used in the practice of inorganic chemistry. Applications of symmetry and group theory to structure, bonding, and spectra.

Note:
Three hours lecture a week. Unless otherwise stated, all chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550 Organic

Chemistry II; CHM 532 Organic Chemistry Laboratory.

Requisites:
Prerequisite: CHM 550.

Typically Offered
Fall

CHM 712 - Inorganic Chemistry II

Credits: 3

Structure, reactivity, and mechanistic aspects of main group and transition metal complexes. Organometallic reactions, catalysis, and bioinorganic chemistry.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CHM 711.

Typically Offered
Spring

CHM 752 - Advanced Organic Chemistry

Credits: 3

Advanced study of organic compounds and fundamental types of reactions.

Note:
Three hours lecture a week. Unless otherwise stated, all chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 596 Physical Methods Laboratory.

Requisites:
Prerequisite: CHM 532, CHM 550 and CHM 595.

Typically Offered
Fall

CHM 777 - Practical NMR Spectroscopy

Credits: 1

Fundamental aspects of 1D and 2D nuclear magnetic resonance (NMR) spectroscopy, as applied to the Chemistry Department's Varian 200- and 400-MHz spectrometers.

Note:
Unless otherwise stated, all chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 596 Physical Methods Laboratory.

Requisites:
Prerequisite: Senior or graduate standing in the physical sciences, or by consent of the instructor.

Typically Offered
Spring

CHM 799 - Problems in Chemistry

Credits: 1-18

Problems may include classroom or laboratory work. Not for thesis research.

Note:
Unless otherwise stated, all chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 596 Physical Methods Laboratory.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

CHM 800 - Chemistry in Outer Space and in the Laboratory

Credits: 2

The generation of reactive atoms and molecules in outer space and in the laboratory is covered, as well as their chemical reactions and spectroscopy. Extreme conditions of high and low temperatures, synthesis using atoms, nanoscale particles of inorganic materials, and matrix isolation are discussed.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II;

and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: CHM 712.

Typically Offered
Spring-Odd Years

CHM 801 - Chemical Thermodynamics

Credits: 3

The laws, principles, and methods of thermodynamics and their applications to chemical systems. Statistical-molecular approach emphasized.

Note:
Three hours lecture a week. Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Other

CHM 820 - Materials Chemistry

Credits: 3

Concepts of materials chemistry developed from an understanding of the chemical composition and structure of materials, and their relationship to the properties of matter. Students will be introduced to the structures and composition of materials and the diverse range of materials, including metals, metal clusters, semiconductors, nanomaterials, supramolecular materials, sol-gel materials, liquid crystals, glasses, polymers and composites.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Spring

CHM 854 - Theoretical Chemistry I

Credits: 3

Introduction to quantum mechanics and atomic and molecular spectroscopy.

Note:
Three hours lecture a week. Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Fall

CHM 856 - Chemical Kinetics

Credits: 3

Survey of experimental and theoretical aspects of dynamics of chemical reactions.

Note:
Three hours lecture a week. Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: CHM 801 or CHM 854.

Typically Offered
Other

CHM 860 - Synthetic Organic Chemistry

Credits: 4

Conditions, scope, and applications of reactions useful in synthetic organic chemistry.

Note:
Four hours lecture a week. Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Spring

CHM 862 - Organic Spectroscopy

Credits: 3

The principles of IR, UV-VIS, mass, and NMR spectroscopies applied to the problem of structure determination.

Note:
Three hours lecture a week. Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Fall

CHM 899 - Research in Chemistry

Credits: 1-18

Research in analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry for the M.S. Degree.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Fall, Spring, Summer

CHM 901 - Graduate Seminar in Analytical Chemistry

Credits: 0-1

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Fall, Spring, Summer

CHM 902 - Graduate Seminar in Inorganic Chemistry

Credits: 0-1

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Fall, Spring, Summer

CHM 903 - Graduate Seminar in Organic Chemistry

Credits: 0-1

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Fall, Spring, Summer

CHM 904 - Graduate Seminar in Physical Chemistry

Credits: 0-1

Presentation of topics from literature in physical chemistry.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Fall, Spring, Summer

CHM 920 - Analytical Separations

Credits: 3

The theory, instrumentation, and application of classical and modern separation techniques are covered in this lecture course.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: CHM 566 and CHM 595.

Typically Offered
Spring

CHM 929 - Physical Methods in Inorganic Chemistry

Credits: 3

Theory and application of infrared, Raman, visible, ultraviolet, NMR, ESR, NQR, Mossbauer, and mass spectrometry to inorganic chemistry.

Note:
Three hours lecture a week. Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: CHM 711.

Typically Offered
Spring

CHM 930 - Homogeneous Catalysis

Credits: 2

The study of industrially important and synthetically useful catalysis of organic reactions by soluble metal complexes.

Note:
Two hours lecture a week. Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: CHM 712 or consent of instructor.

Typically Offered
Spring-Even Years

CHM 935 - Selected Topics in Inorganic Chemistry

Credits: 1-3

A lecture course in inorganic chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

CHM 937 - Applications of Surface Science to Chemistry

Credits: 3

Chemical bonding in the solid state. Surface science and related techniques as applied to chemical problems. Special topics including data analysis and corrosion studies.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Spring-Even Years

CHM 939 - Topics in Analytical Chemistry

Credits: 1-3

A lecture course in analytical chemistry in areas of specialization of the faculty, with emphasis on current developments.

Repeat for Credit
May be repeat for credit with change in topic.

Requisites:
Prerequisite: CHM 566.

Typically Offered
On sufficient demand

CHM 940 - Chemical Microscopy

Credits: 3

The theory, instrumentation and applications of modern microscopic methods are covered in this lecture course. Emphasis is given to the study of chemically-important phenomena in material systems.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Spring-Even Years

CHM 944 - Electroanalytical Chemistry

Credits: 2-3

Theory and applications of electrochemical methods: chronoamperometry, chronopotentiometry, cyclic voltammetry, coulometry, polarography, potentiometry, and instrumentation.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Spring-Odd Years

CHM 947 - Applied Molecular Spectroscopy

Credits: 3

Experimental, and theoretical methods associated with ultraviolet and visible absorption, fluorescence, Raman scattering, and nonlinear optical spectroscopies.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: CHM 854.

Typically Offered
Spring-Odd Years

CHM 950 - Chemical Statistical Mechanics

Credits: 3

Application of classical and quantum statistical mechanics to chemical phenomena.

Note:
Three hours lecture a week. Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: CHM 801, CHM 854.

Typically Offered
Other

CHM 954 - Theoretical Chemistry II

Credits: 3

Quantum theory of atomic and molecular structure.

Note:
Three hours lecture a week. Unless otherwise stated, all

chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: CHM 854.

Typically Offered
Spring

CHM 955 - Selected Topics in Physical Chemistry

Credits: 1-3

A lecture course in physical chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Requisites:
Prerequisite: CHM 854.

Typically Offered
On sufficient demand

CHM 965 - Physical Organic Chemistry

Credits: 3

Principles of orbital symmetry, thermochemistry, kinetics, and other topics applied to the understanding of reaction mechanisms.

Note:
Three hours lecture a week. Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Spring

CHM 970 - Selected Topics in Organic Chemistry

Credits: 1-3

A lecture course in organic chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
On sufficient demand

CHM 999 - Research in Chemistry

Credits: 1-18

Research in analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry for the Ph.D. Degree.

Note:
Unless otherwise stated, all chemistry courses numbers 600 or above require the following as minimum prerequisites: CHM 550 Organic Chemistry II; CHM 532 Organic Chemistry Laboratory; CHM 595 Physical Chemistry II; and CHM 598 Physical Chemistry II Laboratory.

Typically Offered
Fall, Spring, Summer

CIS 501 - Software Architecture and Design

Credits: 3

Principles and patterns for design and structure of software, development of object-oriented models, examples of software architecture.

Requisites:
Prerequisite: CIS 400. Students may enroll in CIS courses only if they have earned a grade of C or better for each

prerequisite to those courses.

Typically Offered
Fall, Spring

CIS 505 - Introduction to Programming Languages

Credits: 3

History, programming language concepts including type, scope and extent, abstraction mechanisms and control; programming paradigms, including one or more of logic, functional, and object-oriented programming, and programming languages supporting the selected paradigms; interpreters, compilers and virtual machines for the selected languages; storage management and garbage collection; type checking and type inference.

Note:
Not available for credit to students with credit in CIS 705.

Requisites:
Prerequisite: CIS 301, CIS 400. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall, Spring

CIS 520 - Operating Systems I

Credits: 3

Operating systems concepts, services, and implementation: interrupt processing, processes, concurrency, deadlocks, resource scheduling and system structure; resource management: real and virtual storage, input/output systems, disk scheduling and file systems; design and construction of concurrent programs.

Requisites:
Prerequisite: CIS 450 or ECE 431; CIS 308, and CIS 400 or CIS 501. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 521 - Real-Time Programming Laboratory

Credits: 3

Project-oriented introduction to asynchronous processes and related systems software: device drivers, event-driven operations, hierarchical and time-sliced process scheduling, spooling operations, interjob and intermachine communications. Projects will be built on a single-use environment.

Requisites:
Prerequisite: ECE 241 and CIS 350, concurrent enrollment CIS 520. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 522 - Introduction to Data Structures

Credits: 1

Introduction to basic data structures such as stacks, queues, lists, and priority queues, and algorithmic techniques for sorting, searching and hashing. Emphasis on modularity and reuse. Introduction to the concept of object-oriented design and interface specifications.

Note:
Three hours recitation a week. Course meets in one contiguous block of five weeks.

Requisites:
Prerequisite: C, or C++ programming.

Typically Offered
Spring

CIS 523 - Introduction to Concurrent Programming

Credits: 1

Introduction to concurrent programming techniques based on message passing primitives (send/receive) and shared memory (semaphore based P/V operations and Monitor based wait/signal operations).

Note:
Three hours recitation a week. Course meets in one contiguous block of five weeks.

Requisites:

Prerequisite: C, or C++ programming and CIS 300 or CIS 522. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 525 - Introduction to Network Programming

Credits: 3

Basic inter-process communication and network programming concepts including client-server and peer-to-peer, communication protocol use and specification, reliable and secure communication, and network applications including web technologies, electronic mail, and file transfer with a focus on application and implementation.

Requisites:
Prerequisite: CIS 300 and either CIS 209 or CIS 308. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 526 - Web Application Development

Credits: 3

Fundamental principles and best practices of web development, user interface design, web API design, advanced web interfaces, web development frameworks, single-page web applications, web standards, and accessibility issues.

Note:
Not available for credit to students with credit in CC 515.

Requisites:
Prerequisite: CIS 501 and either CMST 135 or equivalent experience in HTML, CSS, and JavaScript. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Prerequisite or concurrent: CIS 560

Typically Offered
Spring

CIS 527 - Enterprise Systems Administration

Credits: 3

Administration of the Linux operating system, including installation, configuration, distributed file systems, firewalls and security, shell scripting, and user account management.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CIS 300. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 530 - Introduction to Artificial Intelligence

Credits: 3

Fundamental background in intelligent systems for undergraduate students. Intelligent agents, problem-solving, uninformed and informed (heuristic) search, game tree search, foundations of knowledge representation and reasoning using logic and probability, and a first introduction to planning and machine learning. AI topics include the problem areas of natural language processing (NLP) and perception and methodologies such as artificial neural networks and genetic and evolutionary computation. Applications to practical design and development of intelligent systems will be emphasized, leading to individual projects on current topics and applications in AI.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CIS 300, CIS 301 and MATH 312 or MATH 510. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 531 - Introduction to Programming Techniques for Data Science and Analytics

Credits: 3

Introduction to programming techniques for working with big data. Survey of programming concepts that underlie the MapReduce architecture, their implementation, and specific tools for data integration and data transformation. Basic databases and query processing in the context of real-world problems.

Requisites:
Prerequisite: Either CIS 200, CIS 209, or CC 210; and either STAT 325 or STAT 510. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
fall

CIS 533 - Introduction to Data Science Foundations

Credits: 3

Introduction to the foundations of data science and data analytics. Computer science concepts used for making discoveries in data. Data wrangling, feature engineering, classification, regression, clustering, outlier detection, societal aspects of data science, and more. Analysis of real-word data.

Requisites:
Prerequisite: CIS 300 or CC 310

Typically Offered
Fall

CIS 536 - Introduction to Computer Graphics

Credits: 3

Introduction to computer graphics for undergraduate students. Mathematical foundations (e.g., linear, affine, and projective transformations) and fundamental topics in realistic rendering: view normalization, clipping and culling, scan conversion of lines and polygons, shading and illumination, texture mapping, user interfaces, picking, and collision handling. Intermediate topics include shaders, procedural textures, particle systems, basics of animation, fractals, color theory, and ray tracing.

Note:
Not available for credit to students with credit in CIS 636. Three hours lecture a week.

Requisites:
Prerequisite: CIS 308 and either MATH 205 or MATH 220. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 544 - Advanced Software Design and Development

Credits: 3

Advanced concepts and practicum in object-oriented analysis, modeling, design, implementation, testing, and use of CASE tools; relationships among structural, static, and dynamic models; relationship among conceptual, system, and implementation models.

Note:
Not available for credit to students with credit in CIS 744.

Requisites:
Prerequisite: CIS 501. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring, Summer

CIS 551 - Fundamentals of Computer and Information Security

Credits: 3

An introduction to computer and information security, including common attack techniques, application of cryptography in security, authentication and authorization, network security, enterprise network defense, web security, and analysis of design flaws that render a system vulnerable. Course projects provide hands-on experience on both the defense and offense aspects in cyberspace.

Note:
Three hours recitation a week. Not available for credit to students with credit in CIS 751.

Requisites:
Prerequisite: CIS 450 or CIS 520. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 553 - Fundamentals of Cryptography

Credits: 3

Introduction to the fundamentals of cryptography, including mathematical background, classical ciphers, public key encryption, block and stream ciphers, cryptographic hash functions, digital signatures, common attacks, and basic security protocols.

Note:
Three hours recitation a week. Not available for credit to students with credit in CIS 753.

Requisites:
Prerequisite: CIS 300 and MATH 510. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 560 - Database System Concepts

Credits: 3

Concepts, approaches, and techniques in database management. Representation of information as data, data storage techniques, foundations of logical data models, data retrieval, database design, transaction management, integrity and security.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CIS 300 and CIS 301. Prerequisite or concurrent: MATH 312 or MATH 510. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall, Spring

CIS 570 - Introduction to Formal Language Theory

Credits: 3

Formal languages, automata, regular expressions, grammars, introduction to computability theory. Reading and writing informal mathematical proofs pertaining to these topics.

Note:
Not available for credit to students with credit in CIS 770.

Requisites:
Prerequisite: MATH 510. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 575 - Introduction to Algorithm Analysis

Credits: 3

An introduction to mathematical analysis of time- and space-complexity of algorithms, including worst-case, average-case, and amortized complexity. An examination of various algorithmic designs, such as greedy algorithms, divide-andconquer algorithms, and dynamic programming algorithms. Techniques for proving correctness of algorithms.

Requisites:
Prerequisite: CIS 300, CIS 301, and MATH 510.

Typically Offered
Spring

CIS 580 - Fundamentals of Game Programming

Credits: 3

Fundamental principles of programming games. Foundational game algorithms and data structures. Two-dimensional graphics and game world simulation. Development for multiple platforms. Utilization of game programming libraries. Design of multiple games incorporating topics covered.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CIS 501 and MATH 221

Typically Offered
Spring

CIS 585 - Game Engine Design

Credits: 3

Current practices of game engine development. The game engine as a soft real-time multi-agent simulation. Three-dimensional graphics and animation techniques, scene management, physics simulation, event systems, resource management, and network game architectures. Design and prototyping of a general-use game engine.

Requisites:
Prerequisite: CIS 580 and MATH 551.

Typically Offered
Spring

CIS 590 - Special Topics in Computer Science

Credits: 1-4

Selected topics in Computer Science.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Permission of instructor.

Typically Offered
On sufficient demand

CIS 596 - Entrepreneurial Computer Science Project

Credits: 3

Directed studies: selection, investigation, and report on some topic not covered in prior courses; may include an implementation and/or experimentation component; may be done in collaboration with other students. Completion of a final report with a literature review and project evaluation.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: CIS 560, ENTRP 340 and senior standing in computer science. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 598 - Computer Science Project

Credits: 3

Directed studies: selection, investigation and report on some topic not covered in prior courses; may include an implementation and/or experimentation component; may be done in collaboration with other students. Completion of a plan, two reviews, and a final report with literature review and project evaluation.

Requisites:
Prerequisite: CIS 560 and senior standing in Computer Science. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall, Spring

CIS 599 - Cybersecurity Project

Credits: 3

Directed studies: selection, investigation, and report on some topic not covered in prior security courses; may include an implementation and/or experimentation component; may be done in collaboration with other students. Completion of a final report with literature review and project evaluation.

Requisites:
Prerequisite: CIS 551 and senior standing in computer science. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall, Spring

CIS 604 - Set Theory and Logic for CS

Credits: 3

Informal and axiomatic set theory, propositional and predicate logic, proof techniques.

Requisites:
Prerequisite: Graduate standing.

CIS 621 - Real-Time Programming Fundamentals

Credits: 1

Relationship between C/C++ constructs and corresponding assembly code generated by compilers. Introduction to special techniques used to implement microcontrollers, such as initialization of programmable CPU modules/peripheral devices, techniques to link assembly and C/C++ codes, producing ROM-able code, and EPROM burning/Flash programming.

Note:
Three hours recitation a week. Course meets in one contiguous block of five weeks.

Requisites:
Prerequisite: C or C ++ programming, and CIS 523 and either CIS 300 or CIS 522. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 622 - Real-Time Operating Systems

Credits: 1

Basic real-time operating systems concepts and services; interrupt processing; process and thread models; real-time software architectures and development environments. Detailed study of design and implementation of real-time applications using real-time operating systems.

Note:
Three hours recitation a week. Course meets in one contiguous block of five weeks.

Requisites:
Prerequisite: CIS 621. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 625 - Concurrent Software Systems

Credits: 3

Architecture, design, modeling, implementation, and verification of concurrent, parallel, and distributed software; aspects such as real-time programming, parallel simulation; fault-tolerant programming; grid computing, embedded systems control.

Requisites:
Prerequisite: Either CIS 450 or ECE 431; and either CIS 400 or CIS 501. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 635 - Introduction to Computer-Based Knowledge Systems

Credits: 3

Introduction to the applications of artificial intelligence concepts to solving knowledge-dependent tasks. Review of knowledge-representation ideas. Survey of expert system design. Introduction to existing knowledge-based tools available on personal computers. Development of an intelligent system.

Requisites:
Prerequisite: CIS 300. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 636 - Introduction to Computer Graphics

Credits: 3

Devices and software for graphics display and user interaction, development of software for direct graphic manipulation applications.

Requisites:
Prerequisite: CIS 300. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall, Spring

CIS 638 - Multimedia Systems

Credits: 3

Introduction to computer graphics devices, user interaction; history and scope; multimedia structure, encoding methods and standards, mark-up and scripting languages, software tools, and applications; readings in current literature; class presentation; multimedia project.

Requisites:
Prerequisite: CIS 300, senior standing. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 640 - Software Testing Techniques

Credits: 3

Survey of software testing methodologies; evaluation of software testing strategies; experience in a variety of software testing practices.

Requisites:
Prerequisite: CIS 301 and CIS 501. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 641 - Software Engineering Design Project

Credits: 3

Current practices of software development, requirements, design, prototyping, measures and evaluations. Specification, design, and prototpying of a software system.

Note:
Not available for credit to students with credit in CIS 642.

Requisites:
Prerequisite: CIS 308 and 501. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 642 - Software Engineering Project I

Credits: 3

The first semester of a two-semester capstone course. Current practices of software development, requirements, design, prototyping, measures and evaluation. Specification, design, and prototyping of a software system.

Note:
Not available for credit to students with credit in CIS 641.

Requisites:
Prerequisite: CIS 308 and 501. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 643 - Software Engineering Project II

Credits: 3

Continuation of CIS 642. Final implementation, integration, and testing of a software system. Introduction to configuration management, project management, and software maintenance.

Requisites:
Prerequisite: CIS 642 (which must be taken in the preceding semester). Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 645 - Software Development Environments

Credits: 3

Survey of current development environments and/or an in-depth study of one development environment.

Requisites:
Prerequisite: CIS 501. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
On sufficient demand

CIS 655 - Security and Reliability of Computing Systems

Credits: 3

Fundamentals of security and reliability of computing systems from both hardware and software perspectives. Topics include symmetric and asymmetric cryptography, artificial intelligence (AI) safety and security, selected topics from hardware-based security, introduction to reliability and fault tolerance, hardware fault tolerance, and software fault tolerance.

Requisites:
Prerequisites: CIS 450 (Computer Architecture and Operations) OR ECE 441 (Design of Digital Systems); recommended MATH 221 (Analytic Geometry and Calculus II); recommended prior or concurrent CIS 553/CIS 753 (Introduction to Cryptography). Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 690 - Implementation Project

Credits: 3

The department will suggest various design or implementation projects for individuals or groups in areas such as translators, interpreters, microprogramming, minicomputer operating systems, graphics, numerical software, etc.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

CIS 697 - Seminar in Computer Science

Credits: 1-3

Requisites:
Prerequisite: Junior standing.

CIS 705 - Programming Languages

Credits: 3

Programming language concepts, including typing, scoping, abstraction and exceptions; programming paradigms, including one or more of logic, functional, object-oriented and concurrent programming, and programming languages supporting the selected paradigms; introduction to programming language semantics; programming language design; development environments.

Note:
Not available for credit to students with credit in CIS 505.

Requisites:
Prerequisite: CIS 301 and CIS 400. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 706 - Translator Design I

Credits: 3

Compilers and interpreters, including description of languages, finite state scanners. LL(1) parsing, symbol tables, syntax-directed semantics, simple code generation. Constructing a simple compiler.

Requisites:
Prerequisite: CIS 501, and CIS 505. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 710 - Computer Simulation Experiments

Credits: 3

Principles of digital computer simulation; discrete simulation method, statistics of simulations; implementations.

Requisites:
Prerequisite: CIS 300. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
On sufficient demand

CIS 720 - Advanced Operating Systems

Credits: 3

Process synchronization and communication, distributed programming primitives, transactions and concurrency control, distributed scheduling, distributed storage, deadlock, security.

Requisites:
Prerequisite: CIS 520. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

CIS 721 - Real-Time Systems

Credits: 3

The design of hard real-time embedded systems, including language and operating system support, scheduling, schedulability analysis, fault tolerance, and design tools.

Requisites:
Prerequisite: CIS 520 or both CIS 622 and ECE 633. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

CIS 722 - Operating System Practices

Credits: 3

Structure and functions of modern operating systems. Emphasis on reading and modifying the source code of a working operating system. This includes memory management, input/output, process management, file systems, and network interconnection software construction.

Requisites:
Prerequisite: CIS 520. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 725 - Advanced Computer Networks

Credits: 3

Network algorithms: routing and congestion control; protocol engineering: protocol decomposition, specification and verification, synthesis; protocols for high speed networks, parallel implementations, light-weight protocols.

Requisites:
Prerequisite: CIS 520, and CIS 525. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

CIS 726 - Advanced World Wide Web Technologies

Credits: 3

An advanced course on the technologies that make up the World Wide Web. WWW site designs and analysis, WWW software architecture, server-side technologies, dynamic executable scheduling, digital libraries, WWW security.

Requisites:
Prerequisite: CIS 520, CIS 525. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 730 - Principles of Artificial Intelligence

Credits: 3

Introduction to the fundamental concepts and techniques of AI: problem solving, search and planning, knowledge representation and qualitative reasoning, expert systems, natural language processing and cognitive modeling, computer vision, and machine learning.

Requisites:
Prerequisite: CIS 501. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 731 - Programming Techniques for Data Science and Analytics

Credits: 3

Intermediate programming techniques for data science. Survey of programming concepts that underlie MapReduce, Apache Hadoop, and Spark, along with related tools. NoSQL, search tools, graph databases, and visualization presented in the context of real-world problems involving data integration and transformation.

Requisites:
Either CIS 200 or CIS 209, and either STAT 325 or STAT 510.

Typically Offered
Fall

CIS 732 - Machine Learning and Pattern Recognition

Credits: 3

Theory and methodology of inductive learning, including decision trees, artificial neural networks, probabilistic and instance-based learning, and inductive logic programming; unsupervised and reinforcement learning, bagging and boosting; genetic algorithms and genetic programming; and applications to data mining.

Requisites:
Prerequisite: CIS 501 or CIS 575.

Typically Offered
Fall

CIS 733 - Data Science Foundations

Credits: 3

Methods used for making discoveries in complex data and turning data into knowledge. Handling big data and "small data," feature engineering, convolutions, classification, regression, using clustering for discovery, novelty detection, statistical inference, research design, prescriptive analytics, and more. Using standard software packages and libraries for preparing and analyzing data, implementing supervised machine learning, and visualization.

Requisites:
Prerequisite: CIS 300 or CC 310.
Prerequisite or concurrent: STAT 325, STAT 340, STAT 350, STAT 510, or STAT 703.

Typically Offered
Fall

CIS 734 - Introduction to Genomics and Bioinformatics

Credits: 4

A problem solving approach to understanding genomics and bioinformatics. Practical use of databases and web-based tools used to study biological problems. Introduction to the algorithms behind these tools.

Note:
Three hours lecture and one-and-a-half hours lab a week.

Requisites:
Prerequisite: Either BIOL 450 or CIS 300, and instructor permission. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring-Even Years

Crosslisted:
BIOL 734

CIS 736 - Computer Graphics

Credits: 3

Topics in computer representation and display of images and graphic interaction.

Requisites:
Prerequisite: CIS 308. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

CIS 740 - Software Engineering

Credits: 3

Software life cycle, equirements, specifications, design, validation, measures, and maintenance.

Requisites:
Prerequisite: CIS 641 or CIS 642. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

CIS 744 - Advanced Software Analysis and Design

Credits: 3

Advanced concepts and practicum in object-oriented analysis, modeling, design, implementation, testing, and use of CASE tools; relationships among structural, static, and dynamic models; relationship among conceptual,

system, and implementation models.

Note:
Not available for credit to students with credit in CIS 544.

Requisites:
Prerequisite: CIS 641 or CIS 642. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring, Summer

CIS 746 - Software Measurement

Credits: 3

Measurement theory; development, validation and use of software measures; software measures in the lifecycle, including cost estimation, design measures, software complexity and software reliability.

Requisites:
Prerequisite: CIS 641 or CIS 642. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

CIS 748 - Advanced Software Management

Credits: 3

Topics related to the management of software, including organization, project planning, process models, life cycle models, TQM, software quality assurance, cost estimation, configuration management.

Requisites:
Prerequisite: CIS 740 or CIS 744. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring, Summer

CIS 750 - Advanced Computer Architecture

Credits: 3

Fundamentals of quantitative design of computer architectures, memory hierarchy design, instruction-level parallelism, data-level parallelism, thread-level parallelism, parallel programming, parallel performance analysis, and warehouse-scale computers.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: CIS 450. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
On sufficient demand

CIS 751 - Computer and Information Security

Credits: 3

A comprehensive coverage of computer and information security. Basic cryptography, access control, authentication, authorization, network security, software security, and social aspects of security. The lectures discuss when and where things can go wrong and how design flaws in a system can be exploited to compromise security. Common attack techniques are introduced, and students have the opportunity to work on course projects that cover both the defense and offense aspects in cyber space.

Note:
Not available for credit to students with credit in CIS 551.

Requisites:
Prerequisite: CIS 450 or CIS 520. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 753 - Applied Cryptography

Credits: 3

Fundamentals of cryptography, including mathematical background, classical ciphers, public key encryption, block and stream ciphers, cryptographic hash functions, digital signatures, common attacks, and basic network security.

Note:
Not available for credit to students with credit in CIS 553. Three hours recitation a week.

Requisites:
Prerequisite: CIS 300, MATH 510, or equivalent. Students may enroll in CIS courses only if they have earned a grade

of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 755 - Systems Security

Credits: 3

In-depth coverage of advanced theoretical and practical security techniques with emphasis on construction of new systems and auditing and repair of existing security-critical systems using rigorous design, risk analysis, and engineering methods and application of state-of-the-art theoretical tools.

Requisites:
Prerequisite: CIS 551 or CIS 751. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 761 - Data Base Management Systems

Credits: 3

Data models and languages, hierarchical, network, relational systems; implementational and operational requirements; programming projects using data base management systems.

Requisites:
Prerequisite: CIS 560, CIS 604. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

CIS 762 - Office Automation

Credits: 3

Characteristics of information work; modeling systems for characterizing aspects of office environment; form-based systems; office automation and description languages, ergonomics, local area networks and tools used in the automation of offices.

Requisites:
Prerequisite: CIS 525, CIS 560. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

CIS 764 - Database Design

Credits: 3

Conceptual, logical, physical, and user interface design for database management systems.

Requisites:
Prerequisite: CIS 501. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
On sufficient demand

CIS 770 - Formal Language Theory

Credits: 3

Regular languages, finite automata, context-free languages, pushdown automata, context-sensitive languages, linear bounded automata, recursively enumerable languages, Turing machines.

Note:
Not available for credit to students with credit in CIS 570.

Requisites:
Prerequisite: MATH 510. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Spring

CIS 771 - Software Specification

Credits: 3

Formal logic or specification of software components; algebraic vs. model-based specifications; common abstract types; verification of properties of specifications; introduction to specification of concurrent systems.

Requisites:
Prerequisite: CIS 301. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

CIS 775 - Analysis of Algorithms

Credits: 3

Study and application of techniques and procedures used in the analysis of algorithms including the worst and average cases of both time and space. Study of the P and NP classes.

Requisites:
Prerequisite: CIS 575. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Typically Offered
Fall

CIS 798 - Topics in Computer Science

Credits: 1-18

Requisites:
Prerequisite: Prerequisite varies with the announced topic.

CIS 801 - Translator Design II

Credits: 3

LR parsing, storage allocation, code generation, data flow optimization, compiler generators.

Requisites:
Prerequisite: CIS 706.

Typically Offered
On sufficient demand

CIS 806 - Semantics of Programming Languages

Credits: 3

Introduction of formal semantics description methods for programming languages; comparison of operational, denotational, algebraic, and axiomatic methods; analysis of relationship of formal semantics definitions to computer implementation.

Requisites:
Prerequisite: CIS 771.

CIS 810 - Logic Programming

Credits: 3

Selected topics; constraint logic programming, deductive databases, concurrent logic programming, object-oriented logic programming, mathematical theory of logic programming specification and transformation of logic programs.

Requisites:
Prerequisite: Knowledge of Prolog.

CIS 820 - Topics in Theory of Asynchronous Systems

Credits: 3

Safety and liveness properties, synchronous and asynchronous message passing systems, virtual circuit and datagram communication, process failure, concepts of composition and superimposition, temporal logic, reachability analysis, theory of concurrency control, atomic commitment, replica control.

Requisites:
Prerequisite: CIS 720.

CIS 825 - Topics in Distributed Systems

Credits: 3

Models of distributed computation, events and global states, failure semantics, communication abstractions, synchronization in distributed programs; distributed algorithms: election, termination and deadlock detection, broadcast programming and algorithms.

Requisites:
Prerequisite: CIS 720; or CIS 725 and permission of the instructor.

CIS 826 - Protocol Engineering

Credits: 3

Basic concepts of protocol design, specification languages and formal description techniques, safety and liveness properties, protocol validation, protocol synthesis, protocol translation and conformance testing.

Requisites:
Prerequisite: CIS 725.

CIS 830 - Current Topics in Artificial Intelligence

Credits: 3

Advanced techniques and new ideas in artificial intelligence. Includes applications and case studies of artificial intelligence in action.

Requisites:
Prerequisite: CIS 730.

CIS 832 - Knowledge Representation for the Semantic Web

Credits: 3

Knowledge representation languages for data sharing and integration, in particular the W3C Semantic Web standards RDF, OWL and SPARQL; state of the art knowledge graph and knowledge graph schema modeling process; ontology design patterns; modular ontology engineering.

Requisites:
Prerequisite: CIS 300

Typically Offered
Fall or Spring

CIS 833 - Information Retrieval and Text Mining

Credits: 3

Theory and practice of search engines for retrieving textual information; basic and advanced topics, with emphasis on newer technologies that go beyond simple keyword search; the use of MapReduce framework to process large collections of documents.

Requisites:
Prerequisite: CIS 732 and instructor permission.

Typically Offered
Fall

CIS 834 - Machine Learning for Bioinformatics

Credits: 3

The course will cover some of the most important machine learning algorithms (including semi-supervised and transfer learning algorithms) and their applications to bioinformatics.

Requisites:
Prerequisite: Either CIS 732 or CIS 734, and instructor permission.

Typically Offered
Spring-Odd Years

CIS 841 - Verification and Validation

Credits: 3

Practical techniques for verifying and validating software including formal verification, software testing, reliability measurement and modeling.

Requisites:
Prerequisite: CIS 771 and either or CIS 740 or CIS 744.

CIS 842 - Specification and Verification of Reactive Systems

Credits: 3

Review of formal specification languages; architecture of concurrent and reactive systems; specification methods including: Z, Petri nets, temporal logic, state transition models; development and evaluation of system specifications; verification structures including layered systems, serialization, and predicate automata.

Requisites:
Prerequisite: CIS 771.

CIS 844 - Agent-Oriented Software Engineering

Credits: 3

Analysis, design, and implementation of large, complex, distributed, and adaptive software systems using agent-oriented paradigm. Will survey various modeling languages and agent-oriented methodologies.

Requisites:
Prerequisite: CIS 730, CIS 740.

Typically Offered
Spring

CIS 855 - High Assurance Systems

Credits: 3

Techniques for developing high assurance (safety critical, security critical, or mission-critical in nature) systems. Topics include writing requirements for safety-critical systems, formal architecture definition, risk management techniques including various forms of hazard analysis, safety systems, and verification and validation.

Requisites:
Prerequisites: (CIS 771) Software Specification AND Java programming skills.

Typically Offered
Spring

CIS 860 - Advanced Database Systems

Credits: 3

Advanced topics in database and intelligent information systems. Possible topics include active, temporal, object-oriented, and multimedia databases, warehousing and data mining.

Requisites:
Prerequisite: CIS 761 or CIS 764.

CIS 864 - Data Engineering

Credits: 3

Advanced topics in database design and maintenance including performance monitoring, query optimization and tuning in centralized and distributed data systems.

Requisites:
Prerequisite: CIS 761 or CIS 764.

CIS 870 - Theory of Computability

Credits: 3

Formal models for computability; universal programs; Church's thesis; unsolvable problems and reducibilities; partial recursive functions; recursive and recursively enumerable sets; s-m-n theorem and the recursion theorem.

Requisites:
Prerequisite: CIS 770.

CIS 890 - Special Topics in Computer Science

Credits: 2-4

Topics of the current state-of-the-art of computer science.

Requisites:
Prerequisite: Prerequisite varies with the announced topic.

CIS 895 - MSE Project

Credits: 0-6

This course takes the student through the process of developing a project. This process typically takes more than one semester to complete. Includes reviews and walkthroughs of the requirements, design, and implementation.

Requisites:
Prerequisite: CIS 740 or CIS 744, CIS 748, CIS 771, and three additional credits toward the MSE degree.

CIS 897 - Seminar in Computer Science

Credits: 1

Introduction to computing as a discipline; the relationship of computing to other disciplines; the interaction of computing and ethics; the development of a written and oral research proposal.

Requisites:
Prerequisite: full graduate standing in CIS (CR/NCR only).

Typically Offered
Fall, Spring, Summer

CIS 898 - Master's Report in CIS

Credits: 1-3

Typically Offered
Fall, Spring, Summer

CIS 899 - Research in Computer Science

Credits: 1-6

Requisites:
Prerequisite: CIS 897.

CIS 901 - Topics in Translator Design

Credits: 3

Topics involving incremental, extensible, conversational compilers; program development systems, portability and validation of compilers; compiler generators.

Requisites:
Prerequisite: CIS 801.

CIS 905 - Theory of Programming Languages

Credits: 3

Formal definition languages; operational and formal semantic models; equivalence of semantic models; formal properties of programming languages.

Requisites:
Prerequisite: CIS 806.

CIS 920 - Research Topics in Distributed Systems

Credits: 3

Topics on current state-of-the-art research in distributed systems.

Requisites:
Prerequisite: Permission of the instructor.

CIS 926 - Computation Structures

Credits: 3

Petri nets, flowgraph schemata, dataflow models, relationships between abstract computational models and hardware models and programming languages.

Requisites:
Prerequisite: CIS 771.

CIS 930 - Expert Systems

Credits: 3

Advanced theory and techniques in the development of expert systems. Focuses on knowledge acquisition and knowledge organization used in expert systems. Includes design, implementation, and evaluation of an expert system.

Requisites:
Prerequisite: CIS 830.

CIS 940 - Research Topics in Software Engineering

Credits: 3

Research on one of the topics in CIS 840.

Repeat for Credit
Repeatable. May be repeated for credit.

Requisites:
Prerequisite: CIS 840.

CIS 960 - Theory of Data Base Systems

Credits: 3

Advanced topics in data base systems including distributed data bases, integrity, security, normalization, data base machines, performance models, query languages.

Requisites:
Prerequisite: CIS 840.

CIS 990 - Research Topics

Credits: 2-3

Study of current topics in computer science.

Requisites:
Prerequisite: Permission of the instructor.

CIS 999 - Research in Computer Science

Credits: 1-18

CLSCS 501 - Topics in Classical Literature in Translation

Credits: 3

A detailed survey of Greek and/or Roman literature in translation.

Typically Offered
Fall, Spring, Summer

CLSCS 502 - Topics in Classical Studies

Credits: 3

Focuses on different aspects of ancient Greek and Roman culture. Greek society and culture, Roman society and culture, Greco-Roman religion, and ancient ethnography are among the potential topics of this course.

Note:
Lecture and discussions. All readings will be in English.

Typically Offered
Fall or Spring

CLSCS 549 - Special Studies in Classics

Credits: 1-5

Independent study in Classics, Latin, or Greek.

Repeat for Credit
Repeatable

CNRES 500 - Topics in Conflict Resolution and Trauma Studies

Credits: 1-3

Independent study on topics in conflict resolution and trauma studies.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

CNRES 529 - Trauma and Traumatic Stress

Credits: 3

This course will introduce and review the theoretical and historical beginnings of the concept of trauma, which includes the inclusion of posttraumatic stress disorder (PTSD) as a diagnosis in the DSM III. It will highlight the other forms of recognized traumatic events and stressors that have more recently been brought to light. It will discuss various trauma reactions, effects of stressful events, as well as the treatment of trauma. Resilience and transcendence of trauma will be outlined, with an emphasis on the importance of self-care for clinicians and helping professionals working in this area.

Typically Offered
Fall

CNRES 530 - Coping with Life Crises

Credits: 3

The purpose of this course is to provide students with resources related to managing stress and coping with crises across the lifespan that can be utilized in both their own lives and in the lives of those families they serve. Students will be introduced to the biopsychosocial nature of stress; methods of coping with stress, anxiety, and conflict; models of effective family functioning in the presence of stress and crises and the current literature on how families cope with a variety of life transitions and crises.

Typically Offered
Summer

CNRES 531 - Core Conflict Resolution

Credits: 3

This course focuses on a set of core skills and strategies for managing and resolving disputes. It is designed to (1) help individuals deal with differences and address conflict on a personal level, and (2) provide detailed knowledge of a structured approach for third party conflict resolvers.

Typically Offered
Fall, Spring

CNRES 532 - Conflict Resolution across Cultures & Contexts

Credits: 3

The course explores the cultural components of conflict by examining the dynamics of interpersonal beliefs and socialization, cross cultural conflict theory, and issues related to application in a variety of settings. This course is designed to be an exercise in critical thinking, cultural exploration, and self-reflection.

Requisites:
Prerequisite: CCONRS or RCATS or instructor permission.
Corequisite: CNRES 531.

Typically Offered
Fall

CNRES 533 - Prevention & Intervention of Violence

Credits: 3

This course includes an introduction to a range of violence intervention and prevention approaches developed for use as the interpersonal, intergroup, and societal level. Various theories of human aggression and violence and their underlying assumptions about human nature and the causes of violence will be examined.

Typically Offered
On sufficient demand

CNRES 534 - Conflict in Organizations

Credits: 3

This course focuses on the causes and sources of conflict within organizations and groups, dispute systems assessment and design, and how conflict resolution professionals work as interveners and agents of change. Students will also explore and identify their own professional consultation strengths and interests.

Typically Offered
Fall

CNRES 535 - Divorce & Child Custody Mediation

Credits: 3

This course focuses on mediation as an approach for couples wishing to create divorce settlements through a cooperative, confidential, and private process. Divorce and child-custody is considered as a family problem and not a legal problem. It addresses the psychological, financial, and legal dimensions of divorce in conflict resolution settings.

Requisites:
Prerequisite: CNRES 531

Typically Offered
On sufficient demand

CNRES 536 - Conflict and Trauma in International Settings

Credits: 3

This course study will examine the historical, political, and religious roots of conflict in an international setting. The focus of study will also include an analysis of the area's cultural traditions and exploration into the ways in which divided societies cope with attendant political, economic, and social problems. Prospects for continued and sustainable peace in the region, as well as how progress is being made, will also be examined.

Typically Offered
Spring

CNRES 537 - Elder and Family Decision Making

Credits: 3

This course focuses on the specialized skills and techniques for successfully facilitating adult family conversations around issues such as living arrangements, caregiving, driving, medical decisions, family communication, financial planning, inheritance/personal property distribution, trusts and estates.

Typically Offered
Intersession

CNRES 538 - Advanced Trauma and Traumatic Stress

Credits: 3

This course will examine a broad range of traumatic experiences and their associated biopsychosocial outcomes. A variety of topics including military trauma, childhood abuse, sexual assault, intimate partner violence, human trafficking, natural disasters, and terrorism, among others, will be addressed. We will also discuss various mental, emotional, and interpersonal reactions to traumatic life events, as well as traditional and alternative treatment approaches for trauma-related diagnoses. Factors that contribute to posttraumatic growth will be highlighted, with an emphasis on examining effective community-based resources for the successful treatment of traumatic stress.

Requisites:
Recommended prerequisite: CNRES 539

Typically Offered
Intersession

CNRES 539 - Grief and Loss Across the Lifespan

Credits: 3

This course offers an introduction to theories of grief and loss as well as an overview of how loss affects individuals and families according to their developmental stages. Theoretical bases of study would include both individual and family-based models. Another component covers coping and treatment approaches, with a special emphasis on working with families coping with grief in the professional sphere.

Typically Offered
Intersession

CNRES 599 - Conflict Resolution Practicum

Credits: 3

Co-mediation training with Kansas state-approved mediators. Training consists of supervised mentoring and practice in conflict resolution.

Note:
Typically includes 1-5 client direct contact hours per month, in addition to group and individual supervision (actual or role-play), reporting, and record keeping. Individual supervision will consist of faculty supervision and continued live observation of cases. Successful completion of this course will allow the student to become eligible to apply for Kansas state-approved mediator status.

Repeat for Credit
Repeatable. No more than 6 credits may be applied to the degree.

Requisites:
Prerequisites: CNRES 531 and CNRES 535.

Typically Offered
Fall, Spring, Summer

CNRES 700 - Topics in Conflict Resolution and Trauma Studies

Credits: 0-3

Independent study on topics in conflict resolution and trauma studies.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: CNRES 751

Typically Offered
Fall, Spring, Summer

CNRES 750 - Crises Across the Lifespan

Credits: 3

The purpose of this course is to provide students with resources related to managing stress and coping with crises across the lifespan that can be utilized in both their own lives and the lives of those families they serve. Students will be introduced to the biopsychosocial nature of stress; methods of coping with stress, anxiety, and conflict; models of effective family functioning in the presence of stress and crises; and the current literature on how families cope with a variety of life transitions and crises.

Typically Offered
Summer

CNRES 751 - Conflict Resolution: Core Skills and Strategies

Credits: 3

This course presents communication theories and interpersonal skills relevant to conflict resolution, including the understanding of, analysis of, and management of conflict. Completion of the course meets the Kansas Office of Dispute Resolution's training requirements for state approval in core mediation [K.S.A. 5-501 and Rule 902(e)].

Typically Offered
Fall, Spring, Summer

CNRES 752 - Culture and Conflict

Credits: 3

This course is an exercise in critical thinking, cultural exploration, and self-reflection. It explores the cultural dimensions of conflict, including the role of culture in defining conflict for individuals and groups. The dynamics of interpersonal beliefs and socialization, cross cultural conflict theory, and issues related to application are also examined.

Typically Offered
Fall

CNRES 753 - Violence Prevention and Intervention

Credits: 3

This course examines various theories of human aggression and violence, exploring their underlying assumptions about human nature, and the causes of violence. Included is an introduction to a range of violence intervention and prevention approaches developed for use at the interpersonal, intergroup, and societal level.

Typically Offered
Spring

CNRES 754 - Organizational Conflict

Credits: 3

This course provides an overview of the theories, methods, and practice issues involved in identifying and assessing sources of conflict. Students will learn about organizations, organizational development, causes and sources of conflict within organizations, dispute systems design, and how conflict resolution professionals work as interveners and agents of change.

Typically Offered
Spring

CNRES 755 - Family Mediation

Credits: 3

This course addresses the multidimensional aspects of divorce, including the legal divorce, the psychological divorce, and children of divorce. The second half of the semester focuses on how mediation can empower families - teens and parents - resolve their interpersonal conflicts using a neutral third party.

Requisites:
Prerequisite: CNRES 751

Typically Offered
Spring

CNRES 757 - Elder and Family Decision Making

Credits: 3

This course focuses on the specialized skills and techniques for successfully facilitating adult family conversations around issues such as living arrangements, caregiving, driving, medical decisions, family communication, financial planning, inheritance/personal property distribution, trusts and estates.

Typically Offered
Intersession

CNRES 759 - Foundations of Trauma and Traumatic Stress

Credits: 3

This course will introduce and review the theoretical and historical beginnings of the concept of trauma, which includes the inclusion of posttraumatic stress disorder (PTSD) as a diagnosis in the DSM III. It will highlight the other forms of recognized traumatic events and stressors that have more recently been brought to light. It will discuss various trauma reactions, effects of stressful events, as well as the treatment of trauma. Resilience and transcendence of trauma will be outlined, with an emphasis on the importance of self-care for clinicians and helping professionals working in this area.

Typically Offered
Fall

CNRES 761 - International Conflict & Trauma

Credits: 3

This course study will examine the historical, political, and religious roots of conflict in an international setting. The focus of study will also include an analysis of the area's cultural traditions and exploration into the ways in which divided societies cope with the attendant political, economic and social problems. Prospects for continued and sustainable peace in the region, as well as how progress is being made will also be examined.

Typically Offered
Spring

CNRES 799 - Practicum in Conflict Resolution

Credits: 3

Co-mediation training with Kansas state-approved

mediators. Training consists of supervised mentoring and practice in conflict resolution.

Note:
Typically includes 1-5 client direct contact hours per month, in addition to group and individual supervision (actual or role-play), reporting, and record keeping. Individual supervision will consist of faculty supervision and continued live observation of cases. Successful completion of this course will allow the student to become eligible to apply for Kansas state-approved mediator status.

Repeat for Credit
Repeatable. A maximum of 6 credits.

Requisites:
Prerequisites: CNRES 751 and CNRES 755.

Typically Offered
Fall, Spring, Summer

CNS 510 - Technology for Management of the Construction Process

Credits: 2

Fundamentals and application of computer aided technology in the management of the construction process.

Note:
One hour recitation and one hour lab per week.

Requisites:
Prerequisite: ARE 312, CNS 641, and CNS 645.

Typically Offered
Fall, Spring

CNS 524 - Steel and Timber Construction

Credits: 3

Principles of design, fabrication, and erection of structural steel and timber structures in conformance with codes.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 331.

Typically Offered
Fall, Spring

CNS 528 - Concrete and Masonry Construction

Credits: 3

Principles of design, fabrication, and erection of concrete and masonry structures.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 331.

Typically Offered
Fall, Spring

CNS 534 - Heating and Air Conditioning

Credits: 3

Principles of designing, applying, and installing heating and air conditioning systems for buildings.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CNS 321.

Typically Offered
Fall, Spring

CNS 535 - Electrical and Lighting

Credits: 3

Basic design and construction of building electrical, lighting, and distribution systems with emphasis on the National Electrical Code and installation.

Note:
Three hours recitation a week.

Requisites:
Prerequisites: CNS 321 and PHYS 114

Typically Offered
Fall, Spring

CNS 536 - Water Supply and Plumbing

Credits: 3

Principles and practices of the design and layout of plumbing and fire protection, and individual waste treatment systems for buildings including code requirements and estimating.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CNS 321.

Typically Offered
Fall, Spring

CNS 540 - Construction Methods and Equipment

Credits: 3

Operations, costs, productivity of construction equipment. Investments/life cycle costing of the equipment. Equipment selection criteria and analysis. Construction methods.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CNS 321, CNS 330, and CNS 522.

Typically Offered
Fall, Spring

CNS 542 - Ethics and Professional Standards

Credits: 1

An application of the concepts of ethics as applied to the professional standards of the design and construction industry.

Note:
Two hours recitation a week.

Requisites:
Prerequisite or Concurrent: CNS 440.

Typically Offered
Fall, Spring

CNS 544 - Problems in Construction Science

Credits: 1-18

A study of specific design problems under the direct supervision of a member of the construction science faculty.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

CNS 545 - Heavy Construction Methods

Credits: 3

Principles of asphalt, asphalt and concrete paving operations, concrete batch plant operations, heavy construction equipment and applications.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CNS 325, CNS 440

Typically Offered
Fall

CNS 550 - Construction Safety

Credits: 2

Introduction to safety and safety programs, workers' compensation, OSHA organization and structure, safety policies and record keeping, safety standards. Emphasis will be on communication and job-site safety management. On-site safety inspections will be required within class presentation and written reports to be submitted.

Note:
Two hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: CNS 535 and CNS 440.

Typically Offered
Fall, Spring

CNS 610 - Pre-Engineered Metal Buildings

Credits: 2

Pre-engineered metal building systems: history, components, erection procedures and sequencing, delivery considerations, quality control, safety, and quantity surveying and plan reading.

Note:
Two hours recitation a week.

Requisites:
Prerequisite: Professional Program standing in Construction Science and Management or Graduate student in Architectural Engineering

Typically Offered
On sufficient demand

CNS 629 - Tilt-up Concrete Structures in Construction Management

Credits: 2

Basics of concrete, principles of tilt-up concrete, construction operations of tilt-up projects, planning procedures for job site erection, and safety procedures.

Note:
Two hours recitation a week

Requisites:
Prerequisite: CNS 220.

Typically Offered
On sufficient demand

CNS 634 - Building Systems Commissioning

Credits: 2

Principles and methods of proper procedures for installing, commissioning and maintaining efficient performance of building envelope and support systems including mechanical and electrical systems.

Note:
Two hours recitation a week.

Requisites:
Prerequisite: Either CNS 534, CNS 535, and CNS 536 OR ARE 561 and ARE 562.

Typically Offered
On Sufficient Demand

CNS 641 - Construction Estimating

Credits: 3

Understanding estimating procedures, quantity surveying, specification reviews, pricing of an estimate, market analysis, subcontractor and supplier solicitation, and risk management, following the CSI format.

Note:
Nine hours lab a week.

Requisites:
Prerequisite: CNS 325 and 440. Concurrent enrollment: CNS 645.
Prerequisite or concurrent enrollment: CNS 642.

Typically Offered
Fall, Spring

CNS 642 - Construction Management

Credits: 3

An introduction to the business of construction; study of legal considerations, contract documents, bonds and insurance. Evaluation of the characteristics of the construction firm, organization structure, and financial performance.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CNS 540 and CNS 542 or concurrent enrollment.

Typically Offered
Fall, Spring

CNS 643 - Preconstruction Services/Design Build

Credits: 3

Application of Value Engineering to the construction process, Conceptual Estimating, Onscreen take-off quantity surveying, Design-Build. Other project delivery types and their impact on the preconstruction efforts including general contractor pricing, fees, contingencies, risk, and

schedule impacts.

Note:
Three hours recitation per week.

Requisites:
Prerequisite: CNS 641, CNS 642 and CNS 645.

Typically Offered
Fall, Spring

CNS 644 - Topics in Construction Management

Credits: 1-18

Topical material of importance in the management of construction such as marketing, ethics, personnel management, etc.

Repeat for Credit
Repeatable

Requisites:
Prerequisite or concurrent enrollment: CNS 642.

Typically Offered
Fall, Spring

CNS 645 - Construction Scheduling and Cost Control

Credits: 3

Construction cost reporting and control. Construction planning, both long-term and short-interval, construction scheduling, monitoring, and controlling. Computer application.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CNS 440 and concurrent enrollment in CNS 641.

Typically Offered
Fall, Spring

CNS 646 - Construction Financial Management

Credits: 2

Principles and applications of financial Management for the construction professional. Includes financial statements, cost control, cash flow, and risk management.

Note:
Two hours recitation per week.

Requisites:
Prerequisite: CNS 641, CNS 642, and CNS 645

Typically Offered
Fall, Spring

CNS 655 - Current Trends in Construction

Credits: 2

Broad overview of relevant topics in the construction industry in the areas of project management, field supervision, estimating, contracting, and various other special topics, taught by industry professionals who specialize in their area of expertise.

Requisites:
Prerequisite: CNS 641, Prerequisite or concurrent CNS 550.

Typically Offered
Fall, Spring

CNS 660 - Construction Operations

Credits: 3

Shop drawing and submittal processes, field and office practices, change orders, construction safety standards and practice, pre-construction planning, expediting, short-interval planning.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CNS 542, CNS 641, CNS 642, and CNS 645. Prerequisite or concurrent enrollment: CNS, 510, CNS 550.

Typically Offered
Fall, Spring

CNS 738 - Mechanical and Electrical Estimating

Credits: 2

Principles and practices of mechanical and electrical building systems estimating. Procedure for evaluating relative costs of different plumbing, HVAC, and electrical/lighting systems.

Note:
Six hours labs per week.

Requisites:
Prerequisite: CNS 534 or ARE 562, CNS 536 or ARE 561, and prerequisite or concurrent enrollment: CNS 535.

Typically Offered
Fall, Spring

COMM 525 - Argumentation Theory

Credits: 3

An advanced study of prominent argumentation theorists, with an in-depth examination of special topics concerning the philosophy, theory, and practice of argumentation.

Typically Offered
Fall, Spring

COMM 526 - Persuasion

Credits: 3

The study of communication as persuasion; examination of contemporary approaches to persuasion.

Requisites:
Prerequisite: COMM 105 or COMM 106.

Typically Offered
Spring

COMM 535 - Communication and Leadership

Credits: 3

A study of the ways leadership in differing contexts is designed and exercised through communication. Constructs examined may include credibility, charisma, vision, power, myth, and public memory.

Typically Offered
Spring

COMM 537 - Negotiation and Communication

Credits: 3

Develops conceptual knowledge and skill in negotiation in multiple contexts and examines the constitutive nature of communication in the negotiation process.

Typically Offered
Spring

COMM 542 - Relational Communication

Credits: 3

A survey of theories and research on the role of communication in social and personal relationships. Emphasis is on observing and evaluating communication behaviors using real-life media examples.

Requisites:
Prerequisite: COMM 311, COMM 320, COMM 322, COMM 323, COMM 326, COMM 328, or COMM 480.

Typically Offered
Fall

COMM 545 - Communication and Democracy

Credits: 3

A study of the ways in which democratic citizenship and participation in the public sphere are defined and enacted through communication.

Typically Offered
Spring

COMM 550 - Senior Colloquium

Credits: 3

A demonstration of the mastery of vocabulary, theory, and the ability to make practical applications of the study of rhetoric and communication will be required of all senior communication studies majors. Mastery will be demonstrated by writing a senior capstone project and presenting the results of that project to the assembled communication studies faculty and majors in a required

colloquium.

Requisites:
Prerequisite: senior standing.

Typically Offered
Spring

COMM 551 - Senior Honors Thesis

Credits: 3

Honors Thesis Colloquium. Open only to seniors in arts and sciences Honors program.

Typically Offered
Fall, Spring

COMM 575 - Internship in Communication Studies

Credits: 3

Students will work for/within an organization during the course of a semester. Interns must complete a minimum of 100 work hours to earn course credit. The internship work experience is intended to help apply formal classroom education to "real World" work experience. Ideally internships are pre-professional and project based experiences allowing students the opportunity to make meaningful contributions to the organization. Each intern will complete a series of deliverables to the internship director as well as work under a site supervisor at the host organization. Prior to registration, the internship director must approve all internships.

Crosslisted:
Fall, Spring, Summer

COMM 630 - Special Topics in Rhetoric and Communication

Credits: 3

Intensive study of selected topics in communication and rhetoric.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Fall, Spring

COMM 710 - Introduction to Communication Research Methods

Credits: 3

Introduction to descriptive and experimental methodologies in communication, including conceptualization and operationalization of communication concepts, strategies of research design, and logic of inquiry.

Typically Offered
Fall

COMM 720 - Perspectives on Communication

Credits: 3

Analysis of current perspectives on the communication process. Materials cover assumptions, principles, implications and selected research within each perspective.

Requisites:
Prerequisite: COMM 320 or graduate standing.

Typically Offered
Fall-Even Years

COMM 726 - Seminar in Persuasion

Credits: 3

Survey and analysis of advanced theory and experimental studies in persuasion.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Spring-Odd Years

COMM 730 - Classical Rhetorical Theory

Credits: 3

Study of rhetorical theory and criticism from early Greek to Roman times.

Typically Offered
Fall

COMM 732 - Contemporary Rhetorical Theory

Credits: 3

Study of major European and American contributors to rhetorical theory in the twentieth century.

Requisites:
Prerequisite: COMM 730.

Typically Offered
Spring

COMM 733 - Rhetorical Criticism

Credits: 3

Study of traditional and contemporary approaches to the analysis of public discourse.

Typically Offered
Spring

COMM 790 - Deliberation & Dialogue Theory

Credits: 3

Explores the conceptual and theoretical underpinnings of the Dialogue, Deliberation, and Public Engagement field, including group theory, civic space, and deliberative democracy.

Typically Offered
Fall

COMM 799 - Problems in Communication Studies

Credits: 1-18

Open to students in any communication studies area.

Requisites:
Prerequisite: Junior standing and consent of instructor.

Typically Offered
Fall, Spring

COMM 800 - Teaching Public Speaking

Credits: 1

Seminar for graduate teaching assistants in strategies, techniques, and materials for the introductory public speaking course. Includes current practices and research in communication education. Enrollment limited to graduate teaching assistants in the Department of Communication Studies.

Typically Offered
Fall, Spring

COMM 801 - Instructional Communication

Credits: 3

Study of theory and practice of communication in the classroom including both teacher and student communication. Topics include: integration of modes of communication, language choices, power, humor, communication strategies for instruction, and impact of communication on learning.

Typically Offered
Spring

COMM 810 - Research Writing in Communication Studies

Credits: 1

A study of the problems of writing and rewriting the results of scholarly investigations in communication studies.

Typically Offered
Fall, Spring, Summer

COMM 814 - Graduate Studies in Leadership Communication

Credits: 3

This course examines the intersections of community-engaged scholarship and leadership through practices of relationship, story, strategy, and action. Students are introduced to resources and opportunities for pursuing public engagement, community-engaged scholarship, and successful program completion.

Typically Offered
Fall, Spring

Crosslisted:
LEAD 814, AGCOM 814

COMM 815 - Seminar in Leadership Communication

Credits: 1

This seminar provides doctoral students opportunities for collaboration and mentorship with peers, faculty, and visiting scholars, and exploration of career pathways in public engagement.

Repeat for Credit
Repeatable

Crosslisted:
LEAD 815, AGCOM 815

COMM 816 - Small Group Communication

Credits: 3

Review literature and develop research projects pertaining to the communication processes in small task groups. Topics include group communication processes, barriers to group communication, and style-specific theories of effective group communication.

Requisites:
Prerequisite: COMM 326 or senior standing.

Typically Offered
Other

COMM 817 - Relational Communication

Credits: 3

A survey of theories and research on the role of communication in social and personal relationships. Emphasis is on observing and evaluating communication behaviors using real-life media examples.

Requisites:
Prerequisite: COMM 311, COMM 320, COMM 322, COMM 323, COMM 326, COMM 328, or COMM 480.

Typically Offered
Fall

COMM 820 - Seminar in Communication Studies

Credits: 3

Selected topics in communication studies.

Repeat for Credit
Repeatable. May be repeated for credit with change in topic.

Typically Offered
Fall, Spring, Summer

COMM 821 - Experimental Research in Communication Studies

Credits: 3

Descriptive and experimental methodologies pertinent to investigation in communication studies. Topics will include such techniques as content analysis, attitude scaling, and stylistic analysis.

Requisites:
Prerequisite: COMM 520 or equivalent.

Typically Offered
Fall

COMM 822 - Field Research in Communication Studies

Credits: 3

Critical and interpretive methodologies pertinent to investigations in communication studies. Topics will include participant observation, unstructured interviewing, ethnography, and discourse analysis.

Typically Offered
Spring

COMM 823 - Competitive Forensic Theory

Credits: 3

Theory and study of current research in competitive debate and individual events.

Requisites:
Prerequisite: COMM 125 and COMM 426.

Typically Offered
Fall, Spring, Summer

COMM 824 - Language and Social Interaction

Credits: 3

Study of the epistemological, social, and behavioral functions of language in communication. Examination of the processes by which language functions to construct one's worldview and guide individual action.

Requisites:
Prerequisite: COMM 320 or LING 280 or ANTH 220; junior standing.

Typically Offered
Spring

COMM 825 - History of American Public Address

Credits: 3

Study of American speakers, from the time of Jonathan Edwards to the present, including their education, major speeches, and contributions to the rhetorical history of the United States.

Requisites:
Prerequisite: Junior standing and consent of the instructor.

Typically Offered
On sufficient demand

COMM 827 - Political & Corporate Speechwriting

Credits: 3

A study of the principles and practice of professional speechwriting with a special emphasis on the role of speechwriting in a democratic society.

Typically Offered
Fall, Spring, Summer

COMM 831 - Deliberation & Dialogue Process Models

Credits: 3

Survey of and introduction to the variety of process models for Dialogue, Deliberation, and Public Engagement, including the following: National Issues Forums, World Cafe, Sustained Dialogue, Appreciative Inquiry, 21st Century Town Hall.

Requisites:
Prerequisite: COMM 790.

Typically Offered
Fall

COMM 832 - Dialogue, Deliberation, and Public Engagement: Core Skills and Strategies

Credits: 3

Instruction in the assessment of situations and application of theoretical and conceptual frameworks for DDPE to real-world contexts and scenarios.

Requisites:
Prerequisite: COMM 790 and COMM 791.

Typically Offered
Spring

COMM 833 - Dialogue, Deliberation, and Public Engagement: Capstone Experience

Credits: 3

Focuses on the individualized goals, objectives, and interests of the student, designed to integrate insights from the courses on theoretical foundations, process models, and conceptual frameworks for evaluation and design. Students will meet face-to-face with national leaders to present their research.

Requisites:
Prerequisite: COMM 790, COMM 791, and COMM 792.

Typically Offered
Intersession

COMM 834 - The Rhetoric of Social Movements

Credits: 3

Study of the theory and criticism of social movement rhetoric. Topics may include the development of movement studies as a distinct genre of scholarship within the field of communication studies, questions and controversies in the

rhetorical study of movements, and the rationale for protest tactics, from nonviolence to terrorism.

Requisites:
Prerequisite: COMM 330, COMM 331, or graduate standing.

Typically Offered
Fall-Even Years

COMM 835 - Leadership Communication

Credits: 3

A study of the role that public discourse plays in attaining, enacting, and constraining leadership in a democratic society.

Typically Offered
Spring

COMM 837 - Practicum in Communication and Conflict

Credits: 3-6

Supervised opportunity to apply theoretical information into a self-selected conflict situation in culturally diverse settings

Requisites:
Prerequisite: COMM 120 and any other required course at or above 300 level.

Typically Offered
Spring, Summer

COMM 840 - Intercultural Communication

Credits: 3

A study of the relationship between language and culture and its impact on human communication. Examines how language and culture differ among people and how differences are handled through the process of communication.

Requisites:
Prerequisite: COMM 105 or COMM 106.

Typically Offered
Fall, Spring

COMM 845 - Approaches to Public/Community Engagement

Credits: 3

An advanced survey of key concepts and theoretical frameworks associated with deliberative democracy and public engagement. Focus on theoretical and practical community-engaged scholarship.

Typically Offered
Fall, Spring

Crosslisted:
LEAD 845, AGCOM 845

COMM 850 - Political Communication

Credits: 3

Overview of theory and research in the field of political communication. Introduces students to key concepts, research questions, and approaches in the field. Explores how political elites construct their messages and how citizens come to understand their roles in discourse. Topics covered: presidential communication, election campaign discourse, civic discourse and deliberation, and new media and civic/political engagement.

Typically Offered
Fall

COMM 899 - Masters Research in Communication

Credits: 1-6

A study of the relationship between language and culture and its impact on human communication.

Requisites:
Prerequisite: Sufficient training to carry on the line of research.

Typically Offered
Fall, Spring, Summer

COMM 916 - Communication Theories and Engagement

Credits: 3

Focus on the intersections of communication theory and engagement. Evolution of communication theories. Philosophy and theory pertaining to community-engaged research.

Typically Offered
Fall, Spring

Crosslisted:
AGCOM 916

COMM 945 - Social Science Research for Public Problem Solving

Credits: 3

The study of how social science research and social sector evaluation can be applied to address public problems, including the identification of public problems and the critique of current evaluation methods, and applying concepts by developing an evaluation including quantitative and qualitative analysis in partnership with social sector partners.

Typically Offered
Fall, Spring

Crosslisted:
AGCOM 945, LEAD 945

COMM 999 - Research in Leadership Communication

Credits: 1-15

Doctoral research demonstrates the candidate's ability to conduct significant original research related to leadership and communication, to analyze the information obtained from the research, and to present the results in a dissertation format appropriate to the field.

Typically Offered
Fall, Spring, Summer

Crosslisted:
AGCOM 999, LEAD 999

COT 632 - Radio Frequency Technology for Unmanned Systems

Credits: 3

An introduction to the theory and design of electronic circuits for communications emphasizing the implementation and analysis of common radio-frequency (RF) building blocks. Topics include s-parameters, the Smith chart, component behavior, RF test equipment, computer simulation, filter design, impedance matching, amplifiers, oscillators, mixers, and demodulators. A report will be required of all graduate students.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Spring

COT 650 - Analytical and Computational Tools for Unmanned Systems

Credits: 3

Ordinary differential equations, vector algebra, vector calculus, partial differential equations and the separation of variables technique for solving wave equations. Students also perform simulation and analysis using software tools including MATLAB and MATHCAD applied to Unmanned Systems.

Requisites:
Prerequisite: One previous calculus course and consent of the instructor.

Typically Offered
Fall

COT 660 - Airport Law

Credits: 3

A detailed study of how the U.S. regulatory and legal systems work in relation to airport management. This course emphasizes contract law related to the Federal Aviation Administration Airport covenants and restrictions, Federal Aviation Regulation compliance, and airport operator liability.

Typically Offered
Spring

COT 661 - Airport Planning and Management

Credits: 3

An overview of the Federal Aviation Regulation Part 139

airport design standard and airport master planning process. Includes a study of the role of the airport in community development. Advanced course project required.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall

COT 662 - Aviation Management

Credits: 3

Provides the Professional Master of Technology student with the opportunity to gain a thorough understanding of basic aviation industry management practices in use today combined with historical perspectives. Includes case study analysis.

Typically Offered
Fall

COT 663 - UAS Flight Operations Management

Credits: 3

Best practices for managing complex operations of Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS) including topics on: personnel and training, regulatory/policy considerations, airspace access, operating procedures, mission planning, system acquisitions, safety, customer relations, application-specific considerations, and data handling. Emphasis on the handling of unexpected delays and challenges to normal operations.

Typically Offered
Fall

COT 664 - UAS Program Management

Credits: 3

Best practices for top-level management of an Unmanned Aircraft Systems (UAS) program, including topics on: strategic planning, business model development, proposals, marketing, customer and government relations, personnel management, data handling and security, export control, regulatory environment, and operating procedures.

Typically Offered
Spring

COT 674 - Processing Techniques for Low-Altitude Remotely Sensed Data

Credits: 3

Students learn techniques for exploring remotely sensed data using geographic information systems and image processing software. Topics include manipulation of vector and raster data, management of spatial databases, image stitching, georeferencing, orthorectification, and techniques in the use and interpretation of metadata and development of spatial analysis models useful in remote sensing applications.

Requisites:
Prerequisite: AVT 460 or AVT 463 or consent of instructor

Typically Offered
Fall

COT 675 - Acquisition and Advanced Processing of LARS Data

Credits: 3

Topics begun in COT 674 are further developed. Advanced topics include: multi-spectral data acquisition and processing, exploitation of full-motion video, interpretation of geospatial and remotely sensed data, geostatistical methods of data analysis, photogrammetric measurements, and an introduction to big data concepts.

Requisites:
Prerequisite: COT 674.

Typically Offered
Spring

COT 676 - Low-Altitude Remote-Sensing Product/Project Development

Credits: 3

Building on the skills acquired in COT 674 and 675, students fly a low-altitude remote-sensing mission to obtain geospatial data to process, manipulate, and analyze as the means of developing a finished product in areas of interest to the student. Potential areas of investigation include:

precision agriculture, environmental remediation, fire management, wildlife studies, or stewardship of managed ecosystems.

Requisites:
Prerequisite: COT 675.

Typically Offered
Fall

COT 680 - Unmanned Aircraft Systems and Risk Analysis

Credits: 3

An introductory course in Unmanned Aircraft Systems (UAS) history, elements, US Aviation regulations, operations, use of geospatial data; automation, safety issues; detect and avoid systems; sensors and payloads, human factors, and future. Special attention to UAS Cyber Security Risks, Threats, Impact, Vulnerabilities, and Countermeasures will be identified. The Ryan-Nichols Risk Assessment equations will be used for qualitative risk analysis of Threats so identified.

Typically Offered
Fall

COT 682 - Open Source Cyber Surveillance

Credits: 3

One of the key public concerns for safe integration of Unmanned Aircraft Systems (UAS) into the National Air Space (NAS) is *privacy.* This course questions the technical gaps, Intelligence Community (IC) assumptions, and important legal issues related to open source cyber surveillance with emphasis on UAS activities/deployment. Topics addressed include the responsible, legal, and ethical use of data and information gathered from the use of unmanned, semiautonomous systems, web data mining, social networks, and other modern technological systems.

Typically Offered
Fall

COT 684 - Advanced Topics in Cyber Data Fusion

Credits: 3

This course is scenario-based applying cyber surveillance techniques and analysis of collected data, to realistic, terrain-oriented problems. Topics
include the digital soldier and sailor, 360-degree battlefield awareness and the use of unmanned, semiautonomous technologies. Risk Assessment and Cyber Security countermeasures are the "glue" to successful implementation of data fusion techniques. The Ryan-Nichols Risk Assessment equations and other methods will be used for qualitative risk analysis of identified Cyber Threats.

Typically Offered
Spring

COT 686 - Risk Management for Unmanned Aircraft Systems Operators, Pilots, and Ground Personnel.

Credits: 3

Unmanned Aircraft Systems (UAS) Operators, Pilots, and Ground Personnel must be committed to safety if the goal of UAS integration into National Air Space (NAS) is to be accomplished. The best tool for assessment and determination of safest possible flight is Risk Management. This course introduces three risk assessment tools for UAS Operators, Pilots, and Ground Personnel to manage the workloads associated with each phase of flight.

Typically Offered
Spring

COT 688 - Sense and Avoid Technologies in Unmanned Aircraft Systems

Credits: 3

An advanced course in Sense and Avoid (SAA) technologies for Unmanned Aircraft Systems (UAS). SAA is an extremely important concept and is the main obstacle for wider application of UAS in non-segregated airspace related to traffic safety in civilian and military/ defense domains. This course presents the state-of-the-art research results from British, American, Australian and European universities, as well as corporate organizations such as Boeing and MITRE.

Typically Offered
Fall

COT 689 - Conduct and Ethics for Cyber-Security and UAS Professionals

Credits: 3

Explores the constitutional, legal, personal and public policy fundamentals associated with the field of cyber data collection, fusion, integration, and UAV surveillance.

Typically Offered
Fall, Spring, Summer

COT 701 - Advanced Technical Communication

Credits: 3

Intensive writing practice, applying rhetorical principles to a number of genres common to non-academic professions and workplaces, including oral presentations. Introduction to allied topics such as document design and editing, and crafting technical presentations. Application of global information literacy and research methods will culminate in the preparation of a master's project proposal.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Fall

COT 702 - Applied Research Skills and Methods

Credits: 3

Survey of qualitative and quantitative research methods; use of a range of tools to develop applied research skills focusing on literature reviews. Examines applied research concepts, methods, and skills to foster enlightened decision making in professional practice.

Note:
Three hours lecture a week.

Typically Offered
Spring

COT 703 - Project Management for Professionals

Credits: 3

This course focuses on applied project management methodology, tools, and techniques. Topics include career aspects of project management; business factors affecting the project; project organization, planning, execution, and communications; the project life cycle; risk analysis; and best practices in project management.

Typically Offered
Fall

COT 704 - Managerial Finances, Metrics, and Analytics

Credits: 3

Provides an overview of an organization's financial statements, with an emphasis on the interaction between people in management positions and those statements, as well as an examination of the business investment decision-making process. Explores the use of metrics and analytics to measure and improve managerial performance.

Typically Offered
Spring

COT 705 - Transformational Leadership for Technology

Credits: 3

Study and application of leadership styles and common leader traits, skills and behaviors needed in technology industries and dynamic environments where innovation is a key success factor. Includes application in virtual team environments, and introduces concepts of transformational leadership. This course enables students to build group vision, values, and commitment and to make connections between diverse organizational cultures, leadership styles, and business strategies that enable success in a rapidly changing technology world. Students develop lifelong learning networks and information sources that enable them to continue to grow as leaders.

Typically Offered
Fall

COT 706 - Informatics and Technology Management

Credits: 3

Provides theoretical and practical experience in using information technology to support organizational decision-

making processes. Provides tools in areas such as statistics, research methods, data mining, and information technology to develop solutions tailored to business problems.

Typically Offered
Spring

COT 713 - Advanced Aviation Safety Management

Credits: 3

An examination of the development of safety and how safety management has become an important part of any company. Discusses Safety Management Systems and how this blueprint is becoming an integral part of most organizations, emphasizing specific governmental and corporate programs. Topics include management tools and techniques to aid in systematically controlling risk and developing a safety culture mind-set.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Spring

COT 720 - Application of Lean Six Sigma Methods

Credits: 3

Six sigma and lean tools within an enterprise to improve product and process development, production operations, and service activities.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Spring

COT 721 - Reliability Centered Maintenance of Plant Equipment

Credits: 3

Reliability modeling and assessment, reliability-centered maintenance, condition monitoring technologies, and computer tools.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring

COT 731 - Electromagnetics for Unmanned Systems

Credits: 3

Fundamentals of electromagnetic wave phenomena primarily using transmission line theory to study practical applications such as antennas, cables, and waveguides. Includes a treatment of EMI and related issues.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Spring

COT 741 - Aerospace Manufacturing and Materials

Credits: 3

An introduction to aerospace manufacturing and materials processes that focus on understanding manufacturing applied to the production of aerospace vehicles and associated materials.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Fall, Spring

COT 750 - Professional Master of Technology International Experience

Credits: 0-6

Seminar and travel course including faculty-led international field experience focused on Professional Master of Technology students' area of interest, with travel followed by a final project. The course is designed to enhance students' global and cultural awareness while adding knowledge and skill in topical issues. In addition, students will be introduced to and immersed in historical components, both disciplinary and cultural.

Repeat for Credit

Repeatable

Requisites:
Instructor Consent

Typically Offered
Fall, Spring

COT 770 - Material Properties of Bulk Solids

Credits: 3

Covers material properties related to bulk solids handling such as particle density, bulk density, particle hardness, surface area, particle size and shape and its distribution, porosity and permeability. Additional material property topics include moisture content, temperatures, RH, explosiveness, cohesion and adhesion, angle of internal friction, wall friction, angle of repose, time consolidation, unconfined yield strength, shear strength and more. Sampling and measurement techniques of materials are also included.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Fall

COT 771 - Storage and Flow of Bulk Solids

Credits: 3

Covers topics related to storage and flow of bulk solids which include design of hopper , bin, chute, and feeders. A study of solid flow problems such as cohesive arching, ratholing, bridging, and shear tester operational principles is included.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Fall

COT 772 - Pneumatic Conveying of Bulk Solids

Credits: 3

Covers topics such as types and components of pneumatic conveying systems and its design principles. Trouble shooting, pipe wear and attrition, dust control are included.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Fall

COT 773 - Instrumentation and Safety of Bulk Solids Handling

Credits: 3

Examines various instrumentation used in bulk solids handling operation such as measurement of airflow, pressure, temperature, level and measuring techniques. Different type valves, PLC control and safety are included.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Spring

COT 774 - Mechanical Conveying of Bulk Solids

Credits: 3

Covers topics such as types and components of bucket elevator, screw conveyor, drag and belt conveying systems and their design principles. Different aspects of designing each component of these systems with examples and troubleshooting will be discussed.

Requisites:
Prerequisite: Industry experience or consent of instructor.

Typically Offered
Summer

COT 780 - UAS and High Altitude Platforms(HAPS) for Wireless Communications

Credits: 3

An introductory course to HAPS technology applied in the civilian UAS sector. Covers technologies, communications, and protection of those computer communications from hostile intent. HAPS technology provides wireless narrowband and broadband telecommunications and

broadcasting services to users using either aircraft (unmanned (UAS/UAV) or manned) or lighter-than-airships (LTA). Research indicates UAS to be the best alternative. These platforms are reusable and positioned at stratospheric altitudes, from approximately 12.4 miles to 31 miles (20 to 50 km).

Requisites:
Prerequisite: Graduate Status.

Typically Offered
Spring

COT 781 - Capstone Experience for Professional Master of Technology Degree

Credits: 1-6

Students formulate research and execute a project for industry partners to gain hands-on experience under expert guidance while integrating knowledge to solve complex problems. Students write a convincing proposal for a capstone experience, gather and analyze data, draw conclusions and present results. Teams of first and second-year students may form to work on real-world projects.

Repeat for Credit
May be repeated up to a total of six credit hours.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

COT 792 - Problems in Professional Master of Technology

Credits: 0-3

Opportunity for advanced independent study of a specific topic in one of the following areas: Aviation safety, engineering technology, or technology management. Topics selected jointly by student and the instructor.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

COT 799 - Special Topics in Professional Master of Technology

Credits: 0-6

Offered on sufficient demand. Advanced topics in Professional Master of Technology.

Requisites:
Prerequisite: Varies with announced topic.

Typically Offered
Fall, Spring, Summer

CS 720 - Supplemental Equine Theriogenolgy

Credits: 1

An in-depth exposure to methods of maximizing reproductive efficiency in the mare and the stallion. Advanced equine reproductive physiology, diagnostics, and therapeutics are emphasized.

Requisites:
Prerequisite: Fourth year standing in the College of Veterinary Medicine.

Typically Offered
Fall

CS 732 - Diagnostic Techniques in Equine Medicine

Credits: 1

This elective course emphasizes the techniques needed for internal medicine. Lectures and labs covering endoscopy, bronchoalveolar lavage, transtracheal wash, ultrasound, spinal tap, dentistry and epidural will emphasize skills, indications, and complications.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Spring

CS 736 - Pleasure Horse Medicine

Credits: 1

This course is intended to present topics of interest to equine interested veterinary students. The objectives of the course will focus on diagnosis and clinical management as will be performed in practice. The primary goal of the

course is to supplement the equine interested veterinary student with topics that are not offered in the core curriculum, yet will be encountered in an equine or mixed practice setting. The format will use a case and problem-based discussion to present and apply clinically relevant information.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Summer

CS 757 - Equine Lameness I

Credits: 1

Lectures will cover common causes of lameness emphasizing specific portions of the lameness exam providing the foundation for diagnosis and treatment of specific equine musculoskeletal diseases. Students will perform lameness exams including diagnostic imaging to correctly diagnose the "unknown lameness" and prescribe appropriate therapeutic options.

Note:
12 lectures, 3 labs.

Requisites:
Prerequisite: Satisfactory completion of all required second year veterinary courses.

Typically Offered
Spring

CS 758 - Equine Lameness II

Credits: 1

A continuation of Equine Lameness I. This course will complete the review of the most common lameness problems in horses.

Note:
12 lectures, 3 labs.

Requisites:
Prerequisite: CS 757.

Typically Offered
Spring

CS 764 - Beef Cattle Breeding Evaluation

Credits: 1

Female breeding soundness and pregnancy detection in beef cattle through rectal palpation with and without ultrasound technology. Some discussions of infectious diseases that impair reproduction.

Note:
Three hour lab each week.

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring

CS 765 - Advanced Food Animal Practice

Credits: 3

Advanced food animal medicine, surgery, reproduction, and herd health in an integrated format. Students are placed into a practice setting where individual food animal practice is placed in context with production medicine / herd health activities. Field trips and problem-solving exercises applying concepts of production analysis, disease prevention and feedlot management.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall

CS 768 - Pre-Clinical Non-Traditional Practice Mentorship

Credits: 1

Structured one week (45 contact hours) mentorship in a nontraditional veterinary setting designed to promote skills training and awareness of nontraditional or exclusive practice experiences in a private or public practice setting with veterinarians who have expressed an interest in training and mentoring veterinary students.

Requisites:
Prerequisite: First, second, third year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

CS 776 - Advanced Urinary

Credits: 1

This elective builds on the case-based urinary section of CS 711. Focus of the class will be on the disease pathophysiology and treatment.

Requisites:
Prerequisite: Third year standing in the College of Veterinary Medicine.

Typically Offered
Spring

CS 785 - Veterinary Care and Management of South American Camelids

Credits: 3

This course will provide detailed information regarding nutrition, herd health, breeding management, medicine, neonatal care, and surgical problems of llamas and alpacas. Lab required.

Requisites:
Prerequisite: 1st, 2nd or 3rd-year standing in the College of Veterinary Medicine at Kansas State University.

Typically Offered
Fall

CS 812 - Production Medicine of Small Ruminants

Credits: 1

Lectures and other exercises emphasizing production medicine of small ruminants.

Requisites:
Prerequisite: Third or Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Spring

CS 814 - Veterinary Diagnostic Imaging II

Credits: 3

Students will receive advance training in radiologic interpretation and alternate imaging procedures. Emphasis will be on didactic and hands-on training in ultrasound imaging.

Requisites:
Prerequisite: CS 724.

Typically Offered
Fall, Spring, Summer

CS 820 - Topics in Global Veterinary Medicine

Credits: 1

An overview of the role of veterinarians around the world. Topics include international uses and attitudes about animals, problems the world faces pertaining to livestock production, and social tensions. One hour lecture each week.

Note:
One hour lecture each week.

Requisites:
Prerequisite: 1st or 2nd year standing in the College of Veterinary Medicine, or enrolled as a graduate student with instructor permission.

Typically Offered
Spring

CS 821 - International Vet Study Tours

Credits: 1-4

Faculty-led trip for students to explore veterinary medicine in a foreign country. Prior to travel, students will learn about the country through lectures, research, presentations. During the trip they will interact with nationals in the veterinary profession and experience the culture.

Requisites:
Prerequisite: Enrolled as a 1st-3rd year or grad student in the College of Vet Med. Additional students admitted with discretion of faculty leading the tour.

Typically Offered
Fall, Spring, Summer

CS 822 - Introduction to Sustainable Beef Systems

Credits: 1

This course provides the fundamentals of assessing sustainability in beef production systems through evaluation of aspects of sustainability pillars, people, planet and profit, in each sector of the beef value chain. The course focuses on principles of sustainable food systems, beef cattle production practices, systems thinking, and impacts of food choices.

Requisites:
Prerequisite: Graduate School standing.

Typically Offered
Fall

Crosslisted:
VCS 822

CS 823 - Advanced Diagnostic Imaging - Small Animal

Credits: 1

Case presentation/discussion of diagnostic imaging techniques used in small animal veterinary practice, including radiography, ultrasonography, nuclear imaging, magnetic resonance imaging, and computer tomography. Clinical cases will demonstrate imaging methods and technology used in the various body systems, with an emphasis on interpretation and clinical diagnosis. Students may re-enroll for a maximum of three credits.

Requisites:
Prerequisite: DVM degree.

Typically Offered
Fall

CS 824 - Topics in Small Animal Internal Medicine I

Credits: 1

Various topics in small animal internal medicine will be presented. In-depth discussion of pathophysiology and recent advances in diagnostics and therapeutics. Different topis will be covered in various years at instructor's discretion.

Note:
Course may be repeated with approval of instructor.

Requisites:
Prerequisite: DVM degree.

Typically Offered
Fall

CS 825 - Topics in Small Animal Internal Medicine II

Credits: 1

Various topics in small animal internal medicine will be presented. One topic will be covered in a one-hour conference weekly. In-depth discussion of pathophysiology and recent advances in diagnostics and therapeutics.

Note:
Course may be repeated with approval of instructor.

Requisites:
Prerequisite: DVM degree.

Typically Offered
Spring

CS 826 - Small Animal Endoscopy

Credits: 1

Introduction to the fundamentals of small animal (canine and feline) endoscopy, including respiratory and gastrointestinal endoscopy, laparoscopy and anthroscopy. Thirteen lectures with 2 laboratories will be offered.

Requisites:
Prerequisite: DVM degree and approval from course coordinator.

Typically Offered
Fall

CS 827 - Advanced Topics in Small Animal Surgery

Credits: 0-18

Current and foundational information on techniques, theory, and management in small animal surgery.

Requisites:
Prerequisite: DVM degree or approval on instructor.

Typically Offered
Fall, Spring

CS 828 - Wound Healing

Credits: 2

Didactic lectures on the science of wound healing physiology and on the clinical application of wound healing principles. Laboratory sessions will be incorporated to cover the principles of reconstructive surgery.

Requisites:
Prerequisite: DVM degree

Typically Offered
Fall

CS 829 - Applied Production Medicine

Credits: 1

Advanced training in agricultural production medicine. Emphasis on answering production medicine problems through the appropriate design and interpretation of research models. Course is discussion-based and facilitated by a team of faculty members. Students will be expected to participate in weekly topic discussions.

Requisites:
Prerequisite: Graduate student.

Typically Offered
Fall, Spring

CS 830 - Design and Interpretation of Clinical Trials

Credits: 3

Designing appropriate experimental studies to answer research questions that can be addressed in clinical and field settings, and analyzing, interpreting and communicating the results in a suitable manner.

Typically Offered
Spring

CS 831 - Veterinary Ophthalmic Surgery Techniques

Credits: 3

Lectures will cover ophthalmic instruments and proper surgical techniques for commonly performed ophthalmic surgeries. Cadavers will be available to practice adnexal and corneal ophthalmic surgeries.

Requisites:
Prerequisite: Ophthalmology resident at Kansas State University Veterinary Health Center.

Typically Offered
Spring

CS 833 - Nephrology/Urology

Credits: 1

Advanced studies about small animal nephrology/urology (various topics: Pathophysiology, clinical signs, differential diagnoses, diagnostic approach, and treatment consideration).

Requisites:
Prerequisite: DVM Degree and Graduate Student.

Typically Offered
Spring

CS 834 - Surgical Pathophysiology I – Hematology, Anesthesia and Infection

Credits: 1

Designed to expose small animal surgery residents to a standard curriculum set out by the American College of Veterinary Surgeons in preparation for the Phase I Surgery Qualification examination. Assigned textbook reading covers various topics: Hematology, Anesthesia and Infection. Meet for one hour weekly with faculty to guide the resident's self-study, answer questions, and correct deficiencies.

Requisites:
Prerequisite: Small animal surgery resident at Kansas State University Veterinary Health Center and Graduate Student.

Typically Offered
Fall, Spring, Summer

CS 835 - Surgical Pathophysiology II – Analgesia and Wound Management

Credits: 1

Designed to expose small animal surgery residents to a standard curriculum set out by the American College of Veterinary Surgeons in preparation for the Phase I Surgery Qualification examination. Assigned textbook reading covers various topics: Analgesia and Wound Management. Meet for one hour weekly, with faculty to guide the resident's self-study, answer questions, and correct deficiencies.

Requisites:
Prerequisite: Small animal surgery resident at Kansas State University Veterinary Health Center and Graduate Student.

Typically Offered
Fall, Spring, Summer

CS 836 - Surgical Pathophysiology III – Soft Tissue Surgery

Credits: 1

Designed to expose small animal surgery residents to a standard curriculum set out by the American College of Veterinary Surgeons in preparation for the Phase I Surgery Qualification examination. Assigned textbook reading covers Soft Tissue Surgery topics. Meet for one hour weekly, with faculty to guide the resident's self-study, answer questions, and correct deficiencies.

Requisites:
Prerequisite: Small animal surgery resident at Kansas State University Veterinary Health Center and Graduate Student.

Typically Offered
Fall, Spring, Summer

CS 837 - Surgical Pathophysiology IV – Orthopedic and Neurosurgery

Credits: 1

Designed to expose small animal surgery residents to a standard curriculum set out by the American College of Veterinary Surgeons in preparation for the Phase I Surgery Qualification examination. Assigned textbook reading covers various topics: Orthopedic and Neurosurgery. Meet for one hour weekly, with faculty to guide the resident's self-study, answer questions, and correct deficiencies.

Requisites:
Prerequisite: Small animal surgery resident at Kansas State University Veterinary Health Center and Graduate Student.

Typically Offered
Fall, Spring, Summer

CS 838 - Advanced Small Animal Endocrinology

Credits: 2

Advanced topics in small animal endocrinology. Emphasis on comparative aspects of endocrine gland disease and its clinical manifestations in dogs and cats. Primary literature, review articles, and advanced texts will be the principle sources of information.

Requisites:
Prerequisite: DVM degree.

Typically Offered
Spring

CS 840 - Communication with the Agricultural Worker

Credits: 2

An elective course focused on improving communications between veterinarians and animal caretakers in production agriculture and equine industries. The course will use face to face discussions and online seminars in KSOL to teach communications skills with a focus on common terminology and vocabulary necessary for effective communication. Audio-visual teaching utilizing immersion philosophy is utilized to provide the material course work.

Requisites:
Prerequisite: 2nd or 3rd year standing in the College of Veterinary Medicine or enrolled as a graduate student.

Typically Offered
Fall, Spring

CS 841 - Advanced Clinical Gastroenterology

Credits: 1

Advanced study of gastrointestinal structure and function with discussions of material presented applicable to the

general ACVIM board examinations. Assigned journal articles will cover literature references from sources on the ACVIM reading list, as well as general physiology taken from human literature.

Requisites:
Prerequisite: DVM degree and Kansas State University Graduate Student Standing.

Typically Offered
Fall, Spring

CS 842 - Advanced Clinical Hepatology

Credits: 1

Advanced study of hepatology with discussions of material presented applicable to the general ACVIM board examinations Assigned journal articles will cover literature references from sources on the ACVIM reading list, as well as general physiology taken from human literature.

Requisites:
Prerequisite: DVM degree and Kansas State University Graduate Student Standing

Typically Offered
Fall, Spring

CS 850 - Research in Medicine

Credits: 1-6

An attempted solution of some of the medical and parasitological problems confronting the practitioner of veterinary medicine.

Requisites:
Prerequisite: Consent of staff.

Typically Offered
Fall, Spring, Summer

CS 851 - Breeding Diseases

Credits: 1-5

Advanced studies of the breeding diseases of domestic animals.

Requisites:
Prerequisite: D.V.M. degree or consent of staff.

Typically Offered
Fall, Spring, Summer

CS 852 - Interpretation of Radiology Studies of Body Systems

Credits: 3

Advanced discussions of radiologic interpretation, indications and interpretation of alternate imaging procedures (MRI, CT, nuclear medicine, ultrasound).

Requisites:
Prerequisite: DVM degree or consent of department head prior to registration.

Typically Offered
Fall-Odd Years

CS 854 - Systemic Medicine I

Credits: 1-3

Study of the medical aspects of diseases of the urinary, nervous, and integumentary systems and special senses.

Requisites:
Prerequisite: DVM degree or consent of department head.

Typically Offered
Fall, Spring, Summer

CS 855 - Systemic Medicine II

Credits: 1-3

Study of the medical aspects of diseases of the cardiovascular, respiratory, musculoskeletal and endocrine systems.

Requisites:
Prerequisite: DVM degree or consent of department head.

Typically Offered
Fall

CS 857 - Clinical Interpretation of Equine Diagnostic Images

Credits: 1

Graduate veterinary students will meet one hour weekly to

review clinical equine images and review pertinent literature.

Requisites:
Prerequisite: Graduate student in the College of Veterinary Medicine.

Typically Offered
Fall, Spring

CS 858 - Orthopedic Surgery

Credits: 4

Fundamentals, theory, and practice concerning genetic, metabolic, infectious, neoplastic, and traumatic diseases of bones and joints.

Requisites:
Prerequisite: DVM degree or consent of department head.

Typically Offered
Spring-Even Years

CS 859 - Clinical Sciences Seminar

Credits: 1

A seminar for all house officers and all Clinical Sciences graduate students.

Note:
One hour seminar presentation each week. May re-enroll for total maximum of two credits.

Typically Offered
Fall, Spring

CS 862 - Theriogenology

Credits: 3

Consideration of prevention, diagnosis, and treatment of disease, and maintenance of health and productivity of the genital tract of domestic animals. Three hours of lecture a week.

Requisites:
Prerequisite: Third-year standing in College of Veterinary Medicine or graduate student.

Typically Offered
Fall

CS 870 - Diagnostic Methods in Feedlot Management

Credits: 3

Practical experience in feedlot operation and bovine necropsy diagnosis consisting of 40 hours in bovine necropsy and 320 hours of an on-location practicum in a cattle feedlot.

Requisites:
Prerequisite: Successful completion of the first-year professional curriculum in the College of Veterinary Medicine with a cumulative GPA of 3.0 or better and no grade below a C.

Typically Offered
Summer

CS 877 - Clinical Nutrition

Credits: 2

A focus on practical aspects of nutrition as it relates to performance, health and animal well-being of food-producing animals and, programs designed for health and well-being of small animals including exotic animals. Nutritional aspects of the mechanisms of health and disease are taught primarily at the individual and population level with some molecular and cellular aspects included. Designed for all students to be able to properly nourish animals in their care during their career.

Requisites:
Prerequisite: Graduate student.

Typically Offered
Spring

Crosslisted:
ASI 886 and AP 886

CS 890 - Clinical Science Problems

Credits: 1-3

Advanced instruction in research topics and technologies, emphasizing various clinical disciplines.

Requisites:
Prerequisite: D.V.M. Degree. or dual degree students in the College of Veterinary Medicine

Typically Offered
Fall, Spring, Summer

CS 895 - Research Methods

Credits: 1

Discussion of research design, grantsmanship, practical statistics, manuscript preparation, and ethics.

Requisites:
Prerequisite: DVM degree or consent of department head.

Typically Offered
Spring-Even Years

CS 896 - Advanced Topics in Clinical Ophthalmology I

Credits: 2

Designed to expose comparative ophthalmology residents to the source material associated with the ABVO certifying examination. Assigned textbook reading covers various topics from the major required textbook reading list. Meet with faculty to guide the resident's self-study, answer questions, and correct deficiencies.

Repeat for Credit
Repeatable

Requisites:
Prerequisite : Comparative Ophthalmology Resident at Kansas State University Veterinary Health Center and Graduate Student

Typically Offered
Fall, Spring, Summer

CS 897 - Advanced Topics in Clinical Ophthalmology II

Credits: 2

Designed to familiarize comparative ophthalmology residents with the basic format of the ABVO certifying examination. The course will include written and image recognition examinations that collectively assess the students' comprehensive knowledge of clinical ophthalmology, including medical and surgical case management. Basic vision science concepts associated with embryology, anatomy, physiology, and optics will also be reviewed. Meet to deliver mock examinations, including time to review the content, answer questions, and correct deficiencies.

Repeat for Credit
Repeatable

Requisites:
Prerequisite : Comparative Ophthalmology Resident at Kansas State University Veterinary Health Center and Graduate Student

Typically Offered
Fall, Spring, Summer

CS 898 - MS Report in Clinical Sciences

Credits: 1-2

A written report of either laboratory-based research, field-based research, or a review paper on a topic in the major field.

Requisites:
Prerequisite: Consent of the major professor

Typically Offered
Fall, Spring, Summer

CS 899 - Research in Clinical Sciences

Credits: 1-6

Individual research in any of the fields of Clinical Sciences.

Note:
This work may form the basis for either the M.S. Thesis or the M.S. Report.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring, Summer

CSD 515 - Laboratory in Acoustic Phonetics

Credits: 1

The study of speech perception and production through acoustic analysis. Laboratory experience in the use of computer-based speech analysis systems.

Requisites:
Prerequisite: CSD 347 and senior standing.

Typically Offered
Fall

CSD 549 - Clinical Procedures in Communication Disorders

Credits: 3

Orientation to clinical practicum. Opportunities for clinical observation of speech, language, and hearing evaluation and treatment. Study of diagnostic tools, treatment materials, equipment, and clincial procedures.

Requisites:
Prerequisite: CSD major; CSD 443 and CSD 446 and senior standing.

Typically Offered
Fall

CSD 560 - Clinical Research in Communication Sciences and Disorders

Credits: 3

Logic and methods of clinical research with emphasis on those most frequently used in speech-language pathology and audiology. Experience reading, planning, and evaluating research.

Requisites:
Prerequisite: STAT 325 or equivalent, CSD 443 and CSD 446 or instructor permission.

Typically Offered
Fall

CSD 567 - Basic Audiology

Credits: 3

An introduction to audiology concepts and basic audiology testing procedures. Areas covered include disorders of the auditory system, testing procedures, and audiometric interpretation.

Requisites:
Prerequisite: CSD 361, CSD major, completion of 57 credit hours and 3.0 GPA, including both K-State and transfer course work.

Corequsite: CSD 443, CSD 446.

Typically Offered
Spring

CSD 580 - Neurological Basis of Communication and Swallowing Disorders

Credits: 3

Introduction to basic neuroanatomy and physiology as it relates to processes of human communication and swallowing. Learn about the nervous system and how health conditions that affect neurological function contribute to activity limitations and participation restrictions. Provides foundational knowledge for students in communication sciences and disorders and health majors about individuals who have neurologically-based communication and swallowing disorders.

Repeat for Credit
No

Requisites:
Prerequisite: CSD 360 or instructor permission for a non-CSD major to substitute a comparable anatomy course.

Typically Offered
Spring

CSD 591 - Undergraduate Topics in Communication Sciences and Disorders

Credits: 0-3

Review of current topics in speech-language pathology and/or audiology.

Repeat for Credit
Repeatable. May be repeated for a maximum of 6 hours with a change in topic.

Requisites:
Prerequisite: Consent of instructor.

CSD 701 - Research Experience in Communication Sciences and Disorders

Credits: 1

The course furthers understanding and application of research principles in communication sciences and disorders. Students participate in scholarly activities that apply to clinical populations in speech-language pathology.

Repeat for Credit
No

Requisites:
Prerequisite: CSD 560 or equivalent.

Typically Offered
Fall, Spring

CSD 705 - Practicum in Speech-Language Pathology

Credits: 1-3

Supervised practice in the use of the methods and materials of speech-language pathology.

Requisites:
Prerequisite: CSD 549.

Typically Offered
Fall, Spring, Summer

CSD 706 - Practicum in Audiology

Credits: 1-3

Supervised practice in the use of equipment, materials, and methods of audiology.

Requisites:
Prerequisite: CSD 567.

Typically Offered
Fall, Spring, Summer

CSD 725 - Augmentative and Alternative Communication

Credits: 2

This course examines the area of augmentative and alternative communication (AAC) for people across the lifespan. The etiologies and communicative needs of current and prospective users of AAC, as well as procedures for evaluation are addressed. The course includes strategies and procedures for implementing AAC systems for people who are permanently or temporarily severely communicatively impaired.

Requisites:
Prerequisite: CSD 360 and CSD 549

Typically Offered
Summer

CSD 741 - Fluency Disorders

Credits: 3

Research and theory concerning etiology, characteristics, assessment, and treatment of individuals with disfluency problems.

Requisites:
Prerequisite: CSD 560.

Typically Offered
Fall

CSD 742 - Language Assessment and Intervention II

Credits: 3

Theory and research concerning language disorders in school-aged children are presented. Specific language assessment and intervention methodologies for this population are reviewed. Dialectal and bilingual considerations for assessment and intervention are addressed.

Requisites:
Prerequisite: CSD 443.

Typically Offered
Spring

CSD 743 - Communication Impairments in Autism Spectrum Disorders

Credits: 2

This course provides an overview of Autism Spectrum Disorders (ASD), including characteristics, diagnosis, and etiologies. Interventions used by speech-language pathologists for enhancing the communication of individuals with ASD across the lifespan will be presented, with a focus on using evidence-based practice guidelines to

determine programs of treatment. Current developments and research findings related to assessment and intervention will be discussed.

Requisites:
Prerequisite: CSD 443

Typically Offered
Summer

CSD 744 - Aural Rehabilitation

Credits: 2

The study of habilitation and rehabilitation techniques for individuals diagnosed with a hearing disorder. Specific areas of interest include hearing evaluation techniques, speech and language development for the hearing impaired, hearing aid amplification, cochlear implants, and central auditory processing.

Requisites:
Prerequisite: CSD 567.

Typically Offered
Summer

CSD 745 - Neuromotor Speech Disorders

Credits: 3

An introduction to motor speech disorders including an overview of the neurological system. Research and practical knowledge concerning etiologies, evaluation, and principles of treatment are addressed.

Requisites:
Prerequisite: CSD 360 and CSD 446.

Typically Offered
Fall

CSD 748 - Cleft Palate

Credits: 1

An overview of communicative disorders related to cleft palate and other structurally-based conditions affecting velopharyngeal function. Research and practical knowledge related to the characteristics, assessment, and treatment of these communicative problems are addressed.

Requisites:
Prerequisite: CSD 360 and CSD 446.

Typically Offered
Spring

CSD 750 - Voice Disorders

Credits: 3

The etiologies and characteristics of voice disorders, as well as general principles of assessment, prevention, and treatment of these disorders, are presented. The role of the speech-language pathologist in rehabilitation planning following treatment for laryngeal cancer is also addressed.

Requisites:
Prerequisite: CSD 360.

Typically Offered
Fall

CSD 780 - Instrumental Measurement for Clinical Application

Credits: 2

This course addresses instrumentation and measurement procedures for clinical purposes. Particular emphasis is placed on measurement of physiological aspects of speech breathing and acoustic and physiological aspects of phonation and resonance.

Requisites:
Prerequisite: CSD 360, CSD 748, CSD 750

Typically Offered
Spring

CSD 841 - Acquired Language and Cognitive Disorders

Credits: 4

Study of acquired language and cognitive-communicative disorders in adults. Content addresses research and applied knowledge concerning etiologies, evaluation, and treatment of aphasia and communication deficits that result from right hemisphere damage, dementia, and traumatic brain injury.

Requisites:
Prerequisite: CSD 745.

Typically Offered
Spring

CSD 844 - Dysphagia

Credits: 3

Study of normal and abnormal swallowing in children and adults. Procedures for assessment, diagnosis, and intervention are explored.

Requisites:
Prerequisite: CSD 745 or concurrent enrollment.

Typically Offered
Fall

CSD 847 - Externship in Speech-Language Pathology

Credits: 3-12

Clinical practicum in off-campus sites, including supervised experience in evaluation and treatment of children and adults with communication disorders.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: CSD 705 and consent of the instructor.

Typically Offered
Fall, Spring, Summer

CSD 849 - Graduate Topics in Communication Sciences and Disorders

Credits: 1-3

Critical review of recent research related to measurement and modification of speech, hearing, or language deficits.

Repeat for Credit
Repeatable. May be repeated for a maximum of 9 hours with change in topic.

Requisites:
Prerequisite: CSD 560, graduate standing, and consent of the instructor.

CSD 851 - Professional Issues in Speech-Language Pathology

Credits: 2

An overview of current professional issues in speech-language pathology. Primary topics include professional and ethical practices, scope of practice and service delivery, preparation for employment, and credentialing. Because this is a capstone course, the student must be within three semesters/terms of the graduate degree.

Requisites:
Prerequisite: CSD 705 and consent of instructor.

Typically Offered
Spring

CSD 897 - Graduate Seminar in Communication Sciences and Disorders

Credits: 1-3

Advanced course providing critical analysis of recent theory and research in a designated topic area.

Repeat for Credit
May be repeated with a change in subject matter.

Requisites:
Prerequisite: CSD 560 and consent of the instructor.

Typically Offered
Summer

CSD 899 - MS Research in Communication Sciences and Disorders

Credits: 1-8

Individual research problems in communication sciences and disorders which may form the basis for the master's thesis or report.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

DANCE 502 - Performance Production

Credits: 0-1

Studies in the techniques of dance production and performance. Emphasis is on practical application.

Repeat for Credit
Repeatable. May be repeated four times.

Requisites:
Prerequisite: Junior standing or consent of instructor.

Typically Offered
Fall, Spring

DANCE 503 - K-State Tap Dance Ensemble

Credits: 0-1

A performing ensemble that dances for the K-State and Manhattan communities.

Requisites:
Prerequisite: Audition required in April.

Typically Offered
Fall, Spring

DANCE 505 - Methods and Materials of Teaching Dance

Credits: 2

An in-depth survey of the development of dance education and a practical examination of dance for its educative, artistic, disciplinary, and therapeutic values. Emphasis on role of dance education, pedagogy, and advocacy.

Requisites:
Prerequisite: DANCE 205, DANCE 405, and DANCE 504 or consent of instructor.

Typically Offered
On sufficient demand

DANCE 506 - Dance Education Fieldwork

Credits: 1

A semester of supervised fieldwork incorporating dance as an educative tool in the classroom, in a therapeutic setting, or in an advocacy position. Application of dance education theory under faculty supervision and conference.

Requisites:
Prerequisite: DANCE 505.

Typically Offered
On sufficient demand

DANCE 507 - K-State African Dance and Music Ensemble

Credits: 0-1

A performing group that is open to all students and does not require an audition.

Typically Offered
Fall, Spring

DANCE 510 - Senior Project

Credits: 1

Student creates and presents major performance, choreographic or written project demonstrating advanced level of achievement.

Requisites:
Prerequisite: Senior standing and consent of instructor.

DANCE 599 - Independent Studies in Dance

Credits: 1-3

Selected topics in dance.

Note:
Maximum of 3 hours applicable toward degree.

Repeat for Credit
Repeatable for a maximum of 3 hours toward degree.

Requisites:
Prerequisite: Consent of department head.

DAS 507 - Senior Research in Latin American Studies

Credits: 3

Independent research project under supervision by director

of Latin American Studies.

Typically Offered
Fall, Spring, Summer

DAS 525 - Senior Research in International Studies

Credits: 3

A research paper or project on an international topic.

Typically Offered
Fall, Spring, Summer

DAS 550 - Advanced Topics in the Humanities (Study Abroad)

Credits: 0-18

This is an umbrella course for numerous individual courses offered to students in the Humanities in Italy program and other study abroad experiences.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Permission of the director of the individual study abroad experience.

Typically Offered
Spring

DAS 555 - Themes in Nonviolence Studies

Credits: 3

Explores nonviolence from a national and global perspective, with particular emphasis on emergent techniques and themes in nonviolence studies with particular emphasis on conflict resolution, peacekeeping and peacebuilding, and intersections of gender, race, class, ethnicity, and religion.

Requisites:
Recommended prerequisite: DAS 355.

Typically Offered
Fall, Spring, Summer

DAS 575 - Peacebuilding

Credits: 3

Explores how social problems, violence and war are generated and how people are working to build conditions that produce peace. Students will analyze peacebuilding efforts at home, in communities, in countries, in regions, and in the global social system.

Typically Offered
Fall, Spring, Summer

DED 895 - Preparing for the Professoriate in Education

Credits: 1

This course targets graduate students who plan to enter the professoriate in education. Examines topics such as the job search, integration into the professoriate, expectations for promotion and tenure, and achievement in academia.

Repeat for Credit
Repeatable

Typically Offered
Spring

DMP 610 - Feedlot Health Systems

Credits: 2

Health of cattle in a commercial feedyard. Includes health risk assessment, cattle handling, processing, vaccination protocols, identification/treatment of sick cattle, necropsy techniques, using computer data to make management decisions for feeder cattle, other management issues. Discussion of disease syndromes and foreign diseases.

Typically Offered
Fall

DMP 611 - Cow-Calf Health Systems

Credits: 2

Management of animal well-being and efficient production in a cow-calf system. Includes the areas of health, growth, nutrition,
pharmaceutical management, and reproduction.

Typically Offered
Spring

DMP 650 - Fundamentals of Public Health and Food Safety

Credits: 3

Organization and function of food inspection services; principles of disease transmission; diseases transmitted to humans through the food chain.

Note:
Jointly with HRIMD 650.

Requisites:
Prerequisite: BIOL 198.

Typically Offered
Fall

DMP 680 - Problems in Pathobiology

Credits: 1-5

Enrollment is by consent of the instructor. The format and credit hrs for the course are determined by the instructor.

Typically Offered
Fall, Spring, Summer

DMP 690 - Essential Practices for BSL-3 Research Settings

Credits: 1

This hands-on laboratory centered course will offer students functional skills training and an in-depth understanding of standard microbiological practices, principles and techniques necessary to safely and successfully conduct research in a Biosafety Level-3 setting.

Typically Offered
Summer

DMP 691 - Introduction to High Containment Laboratory Topics and Techniques

Credits: 3

This course examines the rationale behind the skills and techniques taught in DMP 690 Essential Practices for High Containment Research Settings. Students will gain familiarity with the regulatory and operational requirements of high containment facilities and discuss best practices in the laboratory. Students review and discuss scientific readings, case studies, topics, and laboratory techniques appropriate for laboratory work conducted in BSL-3, Animal BSL-3 (ABSL-3), and Large Animal BSL-3 (BSL-3Ag) facilities. This course is designed to complement DMP 690 Essential Practices for High Containment Research Settings.

Requisites:
Corequisite: DMP 690.

Typically Offered
Summer

DMP 710 - Introduction to One Health

Credits: 2

One Health encompasses the complex interrelationships among humans, animals, and the environment. This online course provides a broad introduction to One Health, incorporating original videos of leading experts, case studies, and scientific readings. It addresses zoonotic diseases and environmental issues that impact human, animal, and ecosystem health.

Requisites:
Prerequisite: Two courses in biology

Typically Offered
Fall

DMP 725 - GIS (Geographic Information System) Applications in Animal and Public Health

Credits: 2

Explores the relevance/benefits of applying GIS (Geographic Information System) and the concept of spatial thinking in animal/public health research and practice. Health relevant GIS concepts and terminologies, nature and sources of geospatial data, their manipulation methods in a GIS environment, and spatial analysis techniques will be presented.

Requisites:
Recommended prerequisite: GEOG 508, GEOG 605

Typically Offered
Fall, Spring

DMP 726 - GIS (Geographic Information System) Applications in Animal and Public Health Lab

Credits: 1

Through hands-on laboratory exercises, different technical methods of applying GIS for health data analysis, spatial analytical methods, model building, cartographic principles and geographic visualization are explored.

Requisites:
Prerequisite: DMP 725.

Typically Offered
Fall, Spring

DMP 754 - Introduction to Epidemiology

Credits: 3

The purpose of this course is to introduce students to the basic principles and methods of epidemiology in order to recognize and understand how disease affects populations (and the associated implications for individuals). This course will prepare students to use epidemiologic methods to solve current and future challenges to diagnose, treat, prevent, and control disease during their professional training and throughout their career.

Typically Offered
Fall

Crosslisted:
MPH 754

DMP 770 - Emerging Diseases

Credits: 3

An investigation into recently identified emerging diseases, the conditions that enable their emergence, and the human health implications of each disease.

Note:
This class is open to all students with some biology background, as well as veterinary students.

Requisites:
Prerequisite: 3 hours of Biology above a 700 level.

Typically Offered
Summer

DMP 802 - Environmental Health

Credits: 3

This is a three-credit graduate-level course consisting of a 3-hour meeting per week. Students will be exposed to professional practice of environmental sciences, epidemiology, toxicology, occupational health and industrial hygiene, and consumer health and safety. Topics include the methods for defining environmental contamination; identifying contaminants, pathogens and toxins; assessing risks and causality; determining health impact; ameliorating hazards; and protecting the population through waste management, regulatory programs, environmental inspections, food and product safety, and environmental policy. Includes interaction with professionals in public health practice. There will be 3 one hour lectures each week. Participation is required.

Typically Offered
Spring, Summer

DMP 806 - Environmental Toxicology

Credits: 2

An advanced toxicology course concerned with the occurrence, biological effect, detection, and control of foreign chemicals in the environment.

Requisites:
Prerequisite: Consent of staff.

Typically Offered
Spring

Crosslisted:
MPH 806

DMP 810 - Cancer Pathogenesis

Credits: 2

This lecture will meet once a week for 2 hours per period. The first hour of each meeting will consist of brief student presentations of research papers illustrating key concepts presented in the previous lecture. The second hour of each meeting will consist of a lecture on the indicated topic.

Typically Offered
Fall-Even Years

DMP 813 - Select Agent Studies

Credits: 3

This course provides an in-depth study of select agent regulations and guidance. Specific topics include a historical overview of select agent regulations, program rationales, tier one regulations, personnel suitability assessments, inventory systems and oversight. Additional content will look outside the select agent program and address other regulations and guidelines which impact high-containment research such as Dual-Use regulations and the NIH Guidelines for Recombinant DNA. The course will also introduce students to specific agents covered under the select agent program, and review characteristics and research considerations when working with these agents.

Typically Offered
Summer

DMP 814 - Veterinary Bacteriology & Mycology Lecture

Credits: 3

Veterinary Bacteriology and Mycology, is designed to provide graduate students in pathobiology or related field with basic knowledge of bacteria, fungi and the diseases that they cause primarily in animals. The course is also designed to provide latest information of the pathogenic mechanisms, virulence factors, antigenic nature, zoonosis and disease transmission, treatment and prevention.

Requisites:
Prerequisite: BIOL 455.

Typically Offered
Fall

DMP 815 - Multidisciplinary Thought and Presentation

Credits: 3

Training in critical thinking, writing, and speaking for the food, veterinary, plant, health, and related sciences. With emphasis on writing, students prepare technical reports, news releases, abstracts, and commentaries. Students prepare meeting agendas and present seminars. Committed students will emerge with enhanced critical-thinking and written-presentation skills.

Typically Offered
Fall, Spring

DMP 816 - Trade and Agricultural Health

Credits: 2

This course considers the multilateral trading system as it relates to food safety, food security, animal health, plant health, and international cooperation. The course content will be of value to students interested in food safety and security, epidemiology, public health, agriculture, food science, security studies, political science, agricultural economics, veterinary medicine, and international relations.

Typically Offered
Spring

DMP 817 - Principles of Veterinary Immunology

Credits: 3

Innate and adaptive defense mechanisms in domestic animals. Topics include vaccinology, immunopathology, autoimmunity, immunodeficiency, and immunomodulation.

Requisites:
Prerequisite: BIOCH 521 and BIOL 455.

Typically Offered
Spring

DMP 818 - Veterinary Epidemiology

Credits: 2

Introduction to the principles and methods of veterinary epidemiology: emphasizing how diseases affect populations (and associated implications for individuals), and application to disease diagnosis, treatment, prevention, and control.

Typically Offered
Spring

Crosslisted:
MPH 708

DMP 820 - Rumen Metabolism

Credits: 3

Metabolism, absorption, digestion, and passage of nutrients in the rumen; factors affecting the environment of the

rumen; certain aspects of rumen function and dysfunction; techniques used in rumen research.

Note:
Three one-hour lectures a week.

Requisites:
Prerequisite: ASI 318 and BIOCH 521 or BIOCH 755.

Typically Offered
Spring-Even Years

DMP 821 - Advanced Clinical Pathology Laboratory

Credits: 1

Practical training in advanced techniques of clinical chemistry and hematology used in a large clinical pathology laboratory.

Note:
Three hours lab per week.

Typically Offered
Fall, Spring, Summer

DMP 830 - Quantitative Analysis in Veterinary Medicine

Credits: 3

Practical experience managing, describing, and interpreting data from animal health and management systems so that the data can be informative for decision-makers evaluating and implementing health programs, diagnostic strategies, and animal management processes.

Requisites:
Prerequisite: Successful completion of the first year in the veterinary curriculum.

Typically Offered
Fall

DMP 832 - General Pathology

Credits: 4

Etiology, pathogenesis, lesions, and termination of processes of disease, including inflammation, necrosis, regeneration, oncology, and disturbances of metabolism, circulation, and growth.

Note:
Three hours lecture and four hours lab a week.

Requisites:
Prerequisite: AP 806, AP 816 and AP 810.

Typically Offered
Fall

DMP 834 - Veterinary Parasitology

Credits: 4

Study of the helminth, arthropod, and protozoan parasites of companion and food animals. Emphases are on diagnosis, clinical signs, lesions, treatment, control epidemiology, and public heath aspects of parasitic disease.

Requisites:
Prerequisite: AP 810, AP 804, AP 818 and DMP 817 & DMP 818. Must be 2nd yr student in the Veterinary Curriculum.

Typically Offered
Fall

DMP 840 - Public Health Practice

Credits: 3-6

Supervised field experience in an international, state, local, or district health agency or other appropriate health agency.

Repeat for Credit
Repeatable. Only 6 hours may be applied toward the MPH degree.

Requisites:
Prerequisite: Enrollment in MPH Program.

Typically Offered
Fall, Spring, Summer

Crosslisted:
KIN 840, FDSCI 840, FNDH 840, MPH 840

DMP 844 - Global Health Issues

Credits: 3

A review of global health problems and various strategies

to manage international health concerns. The class is open to graduate students, including veterinary students, with an interest in public health that have at least 12 hours in biology or related courses.

Typically Offered
Fall

DMP 845 - Food Safety Risk Analysis

Credits: 3

Three hours of lectures on interwoven roles of risk assessment, management and communication – defined as risk analysis – will be applied to problems and policy development in food safety. This course will aid students in developing the ability to critically examine food safety risk issues from various stakeholder perspectives, leading to risk management and communication activities to reduce the impact of foodborne disease.

A significant portion of the course will focus on the importance of thorough research and good communication skills, as well as the suitability of communication efforts. The course will be presented through lectures, case study presentations, and Internet-based support material including text, audio and video through the extensive database maintained by Dr. Douglas Powell of Kansas State University and colleagues (foodsafety.ksu.edu; barfblog.com).

Typically Offered
Spring

DMP 846 - Foundations of Biosecurity

Credits: 3

The course examines the biosecurity policies and procedures required in high and maximum-containment research facilities. It provides a historical perspective of biosecurity, establishes definitions and explores concepts related to personnel, governmental and contemporary biosecurity topics. Agro-security topics are highlighted providing a perspective on risk and threat assessment to public health and institutional, local, regional, national and global threats.

Typically Offered
Summer

DMP 850 - Immunology of Domestic Animals

Credits: 3

This course is designed to introduce graduate students to immune responses of domestic animals to pathogens and parasites.

Requisites:
Prerequisite: BIOL 541.

Typically Offered
Fall

DMP 851 - Veterinary Virology

Credits: 3

Morphology, biology, and classification of viruses and their relation to the causes of disease.

Veterinary Virology is a 3 credit lecture course that is designed for veterinary students in the second year of the professional curriculum. The course provides basic and fundamental knowledge on the classification, pathogenesis, and diagnosis of viral pathogens affecting common veterinary species, including ovine, caprine, feline, canine, equine, bovine, avian, and porcine species. In addition, the course is designed to provide adequate knowledge and training for veterinarians in practice on the prevention and management of these viral diseases.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: DMP 817.

Typically Offered
Spring

DMP 852 - Vaccinology

Credits: 3

Multidisciplinary course on vaccine development (including technology) from conceptualization through development, testing, and utilization. Addresses the principles of pathogenesis of infectious diseases, immune protection, and eliciting protective immunity by vaccination; application of traditional and new technologies to vaccine development; principles of preclinical development, manufacturing, and clinical evaluation; importance of the regulatory process; and utilization of epidemiology to measure vaccine need

and effectiveness.

Typically Offered
Spring, Summer

Crosslisted:
AAI 852

DMP 854 - Intermediate Epidemiology

Credits: 3

Epidemiologic principles of disease with a focus on measures of disease occurrence, association and impact, determinants of disease diagnostic test evaluation, study design and critical literature evaluation.

Requisites:
Prerequisite: DMP 708 or DMP 754 or equivalent AND STAT 701 or STAT 703 or DMP 830 or equivalent.

Typically Offered
Spring

Crosslisted:
MPH 854

DMP 855 - Disease Detection, Surveillance and Risk Assessment

Credits: 3

The course is focused on understanding the principles underlying quantitative risk assessments and disease detection/surveillance systems suited to a variety of animal health and food safety applications. These will then be used to advance the practical application of risk assessment and disease detection in the development of valid and useful herd, regional and national disease surveillance programs.

Typically Offered
Fall

DMP 856 - Advanced Veterinary Parasitology

Credits: 3

Structure, life cycle, pathology, immunology, public health significance, diagnosis, and treatment of protozoan and metazoan parasites of veterinary significance.

Note:
One hour lecture, one hour recitation, and four hours lab per week.

Requisites:
Prerequisite: DMP 718

Typically Offered
Spring-Odd Years

DMP 857 - Systemic Pathology

Credits: 5

Pathology of the organ systems of domestic animals including gross and microscopic study of lesions.

Note:
Three hours lecture and six hours lab a week.

Requisites:
Prerequisite: DMP 832.

Typically Offered
Spring

DMP 858 - Introduction to Infectious Disease Modeling for Animal Health

Credits: 3

This is a graduate-level course focused on understanding and implementing infectious disease models using Excel and Monte-Carlo Statistical Methods as well as Spatially Explicit Stochastic models. The course is focused on food animal diseases using a mixture of lecture, scientific literature evaluation, discussion and hands on computer lab exercises.

Typically Offered
Other

DMP 859 - Surgical Pathology

Credits: 1-2

Practical experience in examining and processing surgical biopsy specimens and writing histopathological reports.

Note:
Three or six hours lab per week.

Requisites:
Prerequisite: DMP 852.

Typically Offered
Fall, Spring, Summer

DMP 860 - Bacterial Pathogenesis and Host Response

Credits: 3

Virulence factors of infectious microorganisms and the host response to infection. Topics include pathogenesis of human and animal diseases and mechanisms of immunity.

Requisites:
Prerequisite: DMP 812

Typically Offered
Fall-Even Years

DMP 861 - Advanced Diagnostic Pathology

Credits: 3

Pathologic alterations of disease with emphasis on diagnostic characteristics.

Note:
Nine hours lab per week.

Requisites:
Prerequisite: DMP 852.

Typically Offered
Fall, Summer

DMP 862 - Applied Domestic Animal Immunology

Credits: 2

Real-life immune problems of veterinary and zoonotic relevance and their application to domestic animal immune systems.

Note:
One 1-hour lecture and one 1-hour discussion per week.

Requisites:
Prerequisite: DMP 850, DMP 705 or an immunology course in a veterinary curriculum.

Corequisite: Interested students who might not meet the enrollment prerequisite can contact the course coordinator to request permission to enroll.

Typically Offered
Other

DMP 863 - Advanced Principles of Pathology

Credits: 3

Disease and its effects with emphasis on etiology and pathogenesis; morphologic change will be correlated with changes in chemical composition and function.

Note:
Two hours lecture and three hours lab per week.

Requisites:
Prerequisite: DMP 720.

Typically Offered
Fall

DMP 867 - Advanced Topics in Comparative Pathology

Credits: 1-3

Selected topics to assist pathology majors in their area of specialization.

Requisites:
Prerequisite: DMP 852 and DMP 863.

Typically Offered
Fall, Spring, Summer

DMP 870 - Pathobiology Seminar (MS)

Credits: 1

Oral presentations on topics in epidemiology, food safety, immunology, microbiology, molecular biology, parasitology, pathology, and toxicology. Reports will include critical review of the relevant literature; experimental design and methodology; and presentation and critical evaluation of data. The course is for MS students.

Typically Offered
Fall, Spring, Summer

DMP 871 - Molecular Diagnostics of Infectious Diseases

Credits: 3

This graduate course is aimed at reviewing, and evaluating new and improved molecular diagnostic methods for infectious diseases. Theory, development, and applications of molecular diagnostic tests will be discussed in the context of current literature. This course will provide an opportunity for students to learn and apply recent advances in the development of molecular diagnostic test.

Requisites:
Prerequisite: BIOCH 521
Students without the prerequisites must have the permission of the course coordinator.

Typically Offered
Fall-Odd Years

DMP 875 - Veterinary Public Health

Credits: 2

The linkages between human health and animal health and production. Topics include zoonotic disease, emerging and exotic animal diseases, disaster preparedness, regulatory and community health issues focusing on the role of the veterinarian in all.

Note:
Two hours lecture per week.

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine and DMP 818.

Typically Offered
Spring

DMP 878 - Applications of Flow Cytometry

Credits: 1-3

Theory and practical experience in the use of flow cytometry in diagnosis and research.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring, Summer

DMP 880 - Problems in Pathobiology (MS)

Credits: 1-6

A special problems course for graduate students working toward the MS degree in Pathobiology. The course is generally problems- or techniques-based in any of the disciplines in the Pathobiology program, conducted under the supervision of a graduate faculty in the Pathobiology Graduate Program.

Typically Offered
Fall, Spring, Summer

DMP 888 - Globalization, Cooperation, & the Food Trade

Credits: 1

This course will focus on issues and topics including, but not limited to, disputes in the international agricultural and food trade, new concepts such as Food and Agriculture Security, and the food-related challenges faced by wealthy as well as economically poor societies. The course will also address such important topics as the roles played by innovation and investment in the agricultural and food system, the importance of cross-border cooperation in regulation and trade, and the accomplishments of public health and trade policy thought leaders across history.

Typically Offered
Fall, Spring

DMP 893 - Principles of Biosafety and Biocontainment

Credits: 2

This course will introduce participants to the advanced and administrative principles of biosafety and biocontainment. The course targets future P.I.'s, lab managers, and individuals with previous high-containment research experience. Specific topics include laboratory biosafety levels, special considerations for agriculture and animal labs, facility and building design, regulations, biosafety practices and procedures, and risk assessment processes required in high and maximum containment research facilities.

Requisites:
Prerequisite: DMP 690 and DMP 691 or instructor permission.

Typically Offered
Summer

DMP 895 - Topics in Pathobiology (MS)

Credits: 0-18

A special course for graduate students working toward the MS degree. Lectures, readings, and discussion of topics of current interest in any of the disciplines of Pathobiology.

Typically Offered
Fall, Spring, Summer

DMP 898 - MS Report in Pathobiology

Credits: 2

A written report of either laboratory-based research, field-based research, or a review paper on a topic in the major field.

Requisites:
Prerequisite: Consent of the major professor

Typically Offered
Fall, Spring, Summer

DMP 899 - MS Research in Pathobiology

Credits: 0-18

For graduate students working towards the MS degree. Individual research in the fields of epidemiology, food safety, immunology, microbiology, molecular biology, parasitology, pathology, and toxicology.

Typically Offered
Fall, Spring, Summer

DMP 910 - Pathogenic Mechanisms of Viruses

Credits: 3

The goals of the course are to learn various pathogenic mechanisms (virus-host interactions) of selected virus (RNA and DNA) and Prion diseases. The course will cover the molecular, cellular and immunological bases of pathogenesis both in vitro and in animal models.

Requisites:
Prerequisite: BIOL 730 and BIOL 670.

Typically Offered
Spring-Even Years

DMP 925 - Rumen Microbiology

Credits: 3

Lecture dealing with the microorganisms of the rumen, their habitat, diversity, structure, interactions, and biochemical activities. Techniques for enumeration, isolation and identification of ruminal microorganisms.

Requisites:
Prerequisite: BIOL 455.

Typically Offered
Spring-Odd Years

DMP 954 - Advanced Epidemiology

Credits: 4

Advanced theory and methods for designing, analyzing and interpreting epidemiologic research. Emphasis on observational study design and analysis issues including design identification and optimization, bias recognition and control, and appropriate analytical approaches for epidemiologic data.

Requisites:
Prerequisite: DMP 854 and STAT 717, or equivalent training (recommended).

Typically Offered
Fall

DMP 963 - Advanced Molecular Biology of Foodborne Pathogens

Credits: 2

This lecture will meet once a week for 2 hours per period. The first hour of each meeting will consist of brief student presentations of research papers illustrating key concepts presented in the previous lecture. The second hour of each meeting will consist of a lecture on the indicated topic.

Typically Offered
Fall-Odd Years

DMP 965 - Cellular and Molecular Pathology

Credits: 4

Biochemistry of the injured cell, relationship of intracellular parasitism to cellular metabolism, metabolic and genetic basis of inherited disease.

Requisites:
Prerequisite: BIOCH 755 or BIOL 860.

Typically Offered
Spring

DMP 970 - Pathobiology Seminar (PhD)

Credits: 1

Oral presentations on topics in epidemiology, food safety, immunology, microbiology, molecular biology, parasitology, pathology, and toxicology. Reports will include critical review of the relevant literature; experimental design and methodology; and presentation and critical evaluation of data. The course is for PhD students.

Typically Offered
Fall, Spring, Summer

DMP 971 - Seminal Papers in Molecular Biology

Credits: 1

This discussion course will improve graduate student communication, scientific reasoning, and data analysis skills. Students will gain familiarity with the seminal papers of molecular biology that resolved key issues of the central dogma. Key breakthroughs in molecular evolution, microbial genetics, and biotechnology will be discussed.

Requisites:
Prerequisite: BIO 670, DMP 712, or DMP 860. Should be registered as an M.S. or Ph.D. student in Veterinary Medicine, biochemistry or biology.

Typically Offered
Summer

DMP 980 - Problems in Pathobiology (PhD)

Credits: 1-6

A special problems course for graduate students working toward a PhD degree in Pathobiology. The course is generally problems- or techniques-based in any of the disciplines in the program, conducted under the supervision of a graduate faculty in the Pathobiology Graduate Program.

Typically Offered
Fall, Spring, Summer

DMP 995 - Topics in Pathobiology (PhD)

Credits: 0-18

A special course for graduate students working toward the PhD degree. Lectures, readings, and discussion of topics of current interest in any of the disciplines of Pathobiology

Typically Offered
Fall, Spring, Summer

DMP 999 - PhD Research in Pathobiology

Credits: 1-18

For graduate students working towards the PhD degree in pathobiology. Individual research in the fields of epidemiology, food safety, immunology, microbiology, molecular biology, parasitology, pathology, and toxicology.

Typically Offered
Fall, Spring, Summer

ECE 502 - Electronics Laboratory

Credits: 2

Design, simulation, construction and testing of electronic circuits.

Note:
One hour lecture and three hours lab a week.

Requisites:
Prerequisite: ECE 511 and ECE 526.

Typically Offered
Fall, Spring

ECE 511 - Circuit Theory II

Credits: 3

Time-domain transient response of second-order circuits. Circuit analysis using Laplace transforms. Frequency response, filters, transfer functions, two-port networks, and convolution.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: MATH 340 and ECE 410.

Typically Offered
Fall, Spring

ECE 512 - Linear Systems

Credits: 3

Time- and frequency-domain analysis of signals and systems. Concepts include signal classification, convolution, Fourier series, Fourier transforms, filters, signal sampling, and discrete transforms.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 511 and ECE 540.

Typically Offered
Fall, Spring

ECE 519 - Electric Circuits and Control

Credits: 4

Principles of direct-current circuits and machines, alternating-current circuits and machines, electronics, and application to instrumentation and control.

Note:
Four hours lecture a week. Not open to ECE students.

Requisites:
Prerequisite: PHYS 214.

Typically Offered
Fall, Spring

ECE 525 - Electronics I

Credits: 3

Fundamentals of electronic components (e.g. diodes, MOSFETs, BJTs, op amps) and electronic circuits.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 410 or ECE 519.

Typically Offered
Fall, Spring

ECE 526 - Electronics II

Credits: 3

Continuation of Electronics I, with emphasis on performance measures, including frequency response. Additional topics include Miller's theorem, cascoding, and the application of negative feedback.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 511 and ECE 525.

Typically Offered
Fall, Spring

ECE 530 - Control Systems Design

Credits: 3

Modeling, analysis, and design of control systems. Topics include feedback control; time response and stability of dynamic systems; introduction to root locus and frequency response design.

Note:
Three hours lecture a week.

Requisites:

Prerequisite: MATH 240 and ECE 512.

Typically Offered
Fall, Spring

ECE 540 - Applied Scientific Computing for Engineers

Credits: 3

Mathematical and programming techniques for solving various classes of numerical problems. General topics, such as the precision of floating point numbers are also discussed. Statistics, linear algebra and optimization are the primary classes of numerical problems addressed.

Requisites:
Prerequisite: STAT 510 and CIS 209 or CIS 200.

Typically Offered
Fall, Spring

ECE 542 - Computer Networking

Credits: 3

Introduction to application, transport, network and link layer protocols, with emphasis to Internet TCP/IP protocols.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 241, high-level programming language.

Typically Offered
Fall, Spring

ECE 557 - Electromagnetic Theory I

Credits: 4

Vector analysis, electrostatics, magnetostatics, Faraday's Law, Maxwell's Equations, transmission line analysis, plane waves, Poynting's theorem, and applications.

Note:
Four hours lecture a week.

Requisites:
Prerequisite: PHYS 214, ECE 410 and MATH 222.

Typically Offered
Fall, Spring

ECE 571 - Introduction to Biomedical Engineering

Credits: 3

Overview of engineering applied to clinical medicine and the life sciences. Topics include sensors and instrumentation to acquire physiologic data, imaging techniques, biomechanics, health care information technology, assistive technology, telemedicine, home care, emergency services, battlefield medicine, and biomedical career opportunities.

Note:
Three hour lecture a week.

Requisites:
Prerequisite: MATH 222 and PHYS 214.

Typically Offered
Spring

ECE 581 - Energy Conversion I

Credits: 3

Three-phase systems, magnetic circuits, transformers, and DC and AC machines.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 410 or ECE 519.

Typically Offered
Fall, Spring

ECE 582 - Wind Energy Research

Credits: 1

This course provides an opportunity to pursue one or more longer-term research questions related to wind engineering, including small-wind siting and installation and meteorological-tower installation and data analysis.

Note:

One hour recitation a week.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Spring

ECE 590 - Senior Design Experience I

Credits: 3

Integrates communications, both verbal and written, with ethics and a collaborative design project to emulate a technical professional environment. Introduces desing theory, project management, team dynamics, and socio-economic context to design.

Note:
Three hour recitation a week.

Requisites:
Prerequisite: ECE 511, ECE 525, ECE 540 and ENGL 415.

Typically Offered
Fall, Spring

ECE 591 - Senior Design Experience II

Credits: 2

Second semester of the senior design experience that implements and demonstrates the project design begun in ECE 590. It includes oral presentations for design reviews and technical documentation such as Project Plan, Concept of Operations, Analyses, Architecture and Requirements, Design Descriptions, and User Manual.

Note:
Two hours lecture per week

Requisites:
Prerequisite: ECE 590

Typically Offered
Fall, Spring

ECE 624 - Power Electronics

Credits: 3

Design and analysis of semiconductor-based circuits such as AC-DC converters (rectifiers), DC-DC converters and DC-AC converters (inverters), and their applications in adjustable speed motor-drives, power supplies, and renewable energy conversion systems.

Requisites:
Prerequisite: ECE 511 and ECE 525.

Typically Offered
Fall

ECE 628 - Electronic Instrumentation

Credits: 3

Applications of electronics in the design of analog and digital systems for the measurement of physical variables and in the transduction of these variables into a useful form for both recording and control.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: ECE 502 and ECE 526.

Typically Offered
Fall, Spring

ECE 631 - Microcomputer Systems Design

Credits: 3

Design and engineering application of 32-bit microcomputers to instrumentation and control. Investigate the relationship of the C language and assembly language. Timing and other interfacing problems will be covered.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: CIS 208 or CIS 209 or ME 400; ECE 525 or ECE 519.

Typically Offered
Spring

ECE 633 - Real-Time Embedded Systems

Credits: 1

Interconnection of peripherals, such as CAN networks, DA/AD converters, and Timers. Implementation of device

drivers on top of micro-kernels. Build a simple real time distributed embedded system.

Note:
Two hours lecture, and three hours lab a week. Course meets in one contiguous block of five weeks.

Requisites:
Prerequisite: CIS 621 and CIS 622.

Typically Offered
Fall

ECE 636 - Introduction to Computer Graphics

Credits: 3

An introduction to the software, hardware, and algorithmic aspects of graphics generation. Programming assignments will provide experience in implementing interactive interfaces via application level graphics libraries.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CIS 308 or CIS 209; CIS 300 and MATH 222 or MATH 551.

Typically Offered
Fall, Spring

ECE 641 - Advanced Digital Design using Logic Synthesis

Credits: 3

Applications of hardware description languages (HDLs) for the design of complex digital systems. Topics include designing and simulating using HDLs, logic synthesis into FPGAs and ASICs, optimization techniques, timing issues, hardware verification, and design for testability.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: ECE 441.

Typically Offered
Spring

ECE 643 - Computer Engineering Design Lab

Credits: 3

Design and construction of simple I/O devices and small microcomputer system using simple to complex programmable devices.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: CIS 308 or CIS 209 and ECE 541.
Prerequisite or concurrent enrollment: ECE 649.

Typically Offered
Fall

ECE 645 - Digital Electronics

Credits: 3

Design of high-performance digital electronics and systems. Topics include design metrics, device modeling, transmission-line models for wiring, signaling conventions, transmitter and receiver circuits, noise analysis and management, power distribution, timing and synchronization techniques.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 511, ECE 525, and ECE 441.

Typically Offered
Spring

ECE 647 - Digital Signal Processing

Credits: 3

Difference equation characterization of digital signal processing systems, transient and steady-state analysis of digital filters using the Z-transform, spectral analysis of digital signals, and design and implementation of digital filters.

Note:
Two hours lecture and three hours of lab a week.

Requisites:
Prerequisite: ECE 512.

Typically Offered
Fall

ECE 648 - Multimedia Compression

Credits: 3

Introduction to multimedia creation nad representation. Design of multimedia systems, which incorporate audio, image and video. Topics will include the analysis and design of multimedia compression, streaming, delivery, security and authoring. Emphasis will be placed on current multimedia standards and applications.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 512 or MATH 551 and CIS 308 or CIS 209.

Typically Offered
Spring

ECE 649 - Computer Design I

Credits: 3

Concepts of computer design. Information representation, instruction sets and addressing modes. Arithmetic and logic unit design for fixed and floating point operations. Hardwired and microprogrammed control design. Concepts of pipelining, CICS and RISC architecture. Memory system design including virtual memory, caches and interleaved memories. I/O design methods, interrupt mechanisms, DMA and system integration.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 441.

Typically Offered
Fall, Spring

ECE 660 - Communication Systems I

Credits: 3

Introduction to the analysis and design of analog and digital communication systems. Topics include analog and digital modulation schemes, digital encoding of messages, mathematical modeling of communications systems, noise in communication links and calculation of performance measures for practical links.

Note:
Three hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: ECE 512.

Typically Offered
Spring

ECE 661 - Communication Systems II

Credits: 3

Error-correction code design and analysis with emphasis on block and convolutional coding and decoding; Trellis-coded modulation. Modeling of bandlimited systems and pulse-shape design, optimal receiver design for bandlimited systems, linear and nonlinear equalization. Multiple-access techniques, orthogonal frequency-division multiplexing and receiver design for CDMA schemes. Simulation of practical digital transmission systems.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 660.

Typically Offered
Spring

ECE 662 - Design of Communication Circuits

Credits: 3

The design of communication circuits and systems operating from baseband to UHF frequencies. Topics include tuned-RF amplifiers, oscillators, mixers, LC and ceramic bandpass filters, and demodulators. Projects involve the design and performance testing of a complete radio receiver.

Note:
Two hours lecture and three hours lab a week.

Requisites:

Prerequisite: ECE 502 and ECE 526.

Typically Offered
Spring

ECE 670 - Engineering Applications of Machine Intelligence

Credits: 3

Study of machine intelligence and fuzzy logic concepts and applications in engineering problem domains. As a term project, develop a fuzzy expert system for a specific problem domain that runs on a personal computer and develop the supporting documentation.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CIS 200 or CIS 209, and PHYS 214.

Typically Offered
Spring

ECE 681 - Wind and Solar Engineering

Credits: 3

Wind and solar energy resource assessment, operation of renewable-energy systems, photovoltaic and wind-turbine physics, and design of complete systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 525 or ECE 519.

Typically Offered
Fall

ECE 684 - Power Laboratory

Credits: 3

Introduction to energy and power converters. Course includes lecture and laboratory experience in aspects of modeling and analysis of electric machines (synchronous and induction machines as well as transformers), power quality (harmonic measurement), control of DC-DC and DC-AC
converters, and motor-drive systems.

Requisites:
Prerequisite: ECE 624 and ECE 581.

Typically Offered
Spring

ECE 685 - Power Systems Design

Credits: 3

A comprehensive study of modeling of the electric power system components and computer simulation of interconnected power systems in steady state. Vector-matrix descriptions are emphasized.

Note:
Three hours of recitation a week.

Requisites:
Prerequisite: ECE 581.

Typically Offered
Fall

ECE 686 - Power Systems Protection

Credits: 3

Analysis of symmetrical and unsymmetrical faults on power systems using symmetrical components technique. Study of protective relaying for protection of power systems against faults. Vector-matrix descriptions and computer solutions are emphasized.

Note:
Three hours of recitation a week.

Requisites:
Prerequisite: ECE 581.

Typically Offered
Spring

ECE 690 - Problems in Electrical and Computer Engineering

Credits: 1-18

Typically Offered
Fall, Spring, Summer

ECE 694 - Optoelectronics

Credits: 3

Applied geometric and physical optics, optical radiation, and the interaction of light and matter. The theory and application of photodetectors, lasers, and other photoemitters. Introduction to fiber optical waveguides, sensors, and systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 525, ECE 557, and CHE 356.

Typically Offered
Fall

ECE 696 - Integrated Circuit Design

Credits: 3

Study of silicon integrated circuits with emphasis on CMOS analog and digital applications. The course covers basic device structure and modeling, circuit analysis, system design, IC design methodology and economics plus IC fabrication processes. Computer-aided tools are used to simulate and layout circuits designed by student groups.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 241 and ECE 525.

Typically Offered
Fall

ECE 715 - Electroacoustics

Credits: 3

Basic principles of sound; modeling of, and analogous circuits for, mechanical and acoustical systems; microphones and loudspeakers; Thiele-Small parameters; the analysis and design of, and measurements on, common loudspeaker systems and crossover networks. Projects involve the design, simulation, construction and performance-testing of a complete loudspeaker-and-enclosure system.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: ECE 511.

Typically Offered
Fall

ECE 722 - Audio Engineering

Credits: 3

Solid-state and hollow-state analog electronics applicable to high-fidelity audio. Emphasis is on the analysis, design, and construction of audio amplifiers. Projects include design, implementation, and performance-evaluation of a reference-quality audio power amplifier.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: ECE 525. Recommended prerequisite: ECE 526.

Typically Offered
Spring

ECE 724 - Analog Electronics

Credits: 3

Analysis, design, and evaluation of BJT and CMOS operational amplifiers. Core topics include frequency compensation and closed-loop stability, slew-rate optimization, wide-bandwidth design, low-noise design, and macromodeling for simulation.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 502 and ECE 526.

Typically Offered
Spring

ECE 725 - Integrated Circuit Devices and Processes

Credits: 3

Integrated circuit fabrication processes including oxidation,

diffusion, ion implantation, lithography, etching, crystal growth, process monitoring, and device characterization. Design of discrete and IC devices through laboratory experiments and computer simulations.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: ECE 525 and CHE 356.

Typically Offered
Spring

ECE 728 - Mixed Signal Measurements

Credits: 3

Signal classification, noise and uncertainty, TRMS conversion, quantization and ADCs, repetitive sampling and signal recovery techniques, vector voltmeters, basic network analyzers.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 512 or graduate standing.

Typically Offered
On sufficient demand

ECE 730 - Control Systems Analysis and Design

Credits: 3

Use of classical analysis techniques for control system compensation. State space control theory fundamentals are presented in addition to an introductory treatment of several major systems areas.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 530 or ME 640. ME 730.

Typically Offered
Spring

ECE 731 - Advanced Microcomputer System Design

Credits: 3

Design and engineering applications of 16 and 32 bit microprocessors. Utilization of peripheral and co-processor chips.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: ECE 631.

Typically Offered
Spring

ECE 733 - Real-Time Embedded Systems Design

Credits: 3

Design and implementation of a comprehensive team project of a complete embedded real-time system.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite or concurrent enrollment: CIS 721.

Typically Offered
Spring

ECE 736 - Discrete-Time and Computer-Control Systems

Credits: 3

Analysis and design of discrete-time, sampled-data, and computer-control systems using discrete-state equations and Z-transforms.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 530 or ME 640.

Typically Offered
Spring

ECE 746 - Fault Diagnosis in Digital Systems

Credits: 3

Hazards, fault detection in combinational circuits, and sequential machines using path sensitizing and fault-matrix methods, state table analysis, etc.; system reliability through logical redundance.

Note:
Three hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: ECE 541 or ECE 631.

Typically Offered
Spring-Even Years

ECE 749 - Computer Design II

Credits: 3

Study of alternate computer hardware structures. Investigation of engineering tradeoffs in implementation of alternative instruction sets and computing structures. Emphasis will be placed on a quantitative approach to cost/performance evaluations including simulation of hardware structures.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 649.

Typically Offered
Fall

ECE 758 - Electromagnetic Theory II

Credits: 3

Continuation of ECE 557.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 557.

Typically Offered
On sufficient demand

ECE 760 - Wireless Communications

Credits: 3

This course exposes seniors and first year graduate students to important physical layer concepts in wireless communications. Topics include: cellular architecture, large scale and small scale fading channel models, diversity receivers, DS-CDMA transmitter and receiver design, multi-user detection, multi-carrier CDMA and OFDM performance analysis.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 660.

Typically Offered
Spring

ECE 764 - Antennas and Microwave Circuits

Credits: 3

The design of communication circuits and systems operating at microwave frequencies. Topics include antennas, transmission lines, microstrip matching networks, S-parameters, frequency synthesizers, and downconverter components such as LNAs, mixers, and microstrip bandpass filters. Projects involve design, simulation with electronic design automation tools, and laboratory measurements.

Note:
Two hour lecture and three hour lab a week.

Requisites:
Prerequisite: ECE 502, ECE 512, ECE 526 and ECE 557.

Typically Offered
Fall

ECE 771 - Control Theory Applied to Bioengineering

Credits: 3

Development of mathematical models used in the study and analysis of physiological control systems providing techniques for varying pertinent biological parameters.

Note:
Three hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: ECE 530 or ME 640, and a basic physiology course.

Typically Offered
Spring

ECE 772 - Theory and Techniques of Bioinstrumentation

Credits: 2

Theoretical aspects of biological signals, electrodes, transducers, digital imaging and computer-based data acquisition directed toward ECE and other science department majors.

Note:
Two hours recitation per week.

Requisites:
Prerequisite or concurrent enrollment in ECE 773 (ECE majors only) and AP 773.

Typically Offered
Fall

ECE 773 - Bioinstrumentation Design Laboratory

Credits: 1

Design and testing of hardware and software for acquiring and analyzing biological signals.

Note:
Three hours lab per week.

Requisites:
Prerequisite: ECE 502 and concurrent enrollment in ECE 772.

Typically Offered
Fall

ECE 780 - Power Seminar

Credits: 1

Speakers from industry, academia, and government present topics related to power systems engineering.

Note:
One hour lecture a week.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall

ECE 824 - Advanced Power Electronics

Credits: 3

High-frequency switching dc/dc converters, resonant converters, analysis and control of power electronic systems, and thermal management.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 624.

ECE 828 - Topics in Instrumentation

Credits: 3

Selected topics related to the general field of electronic instrumentation.

Repeat for Credit
Repeatable. Three hours recitation a week.

Requisites:
Prerequisite: ECE 628.

Typically Offered
On sufficient demand

ECE 830 - Advanced Systems Theory

Credits: 3

State space description and analysis of continuous and discrete time dynamic systems including optimal control solutions. Both linear and nonlinear systems are considered.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 530 or ME 640.

Typically Offered
Fall

ECE 840 - Computer Engineering Methods for Analysis, Simulation, and Design

Credits: 3

Computer-aided and numerical techniques applicable to problems in electrical and computer engineering. Emphasis is on implementation of these techniques on the computer.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 512.

Typically Offered
Spring

ECE 841 - Network Theory

Credits: 3

Introduction to the theoretical tools, methods and algorithms to analyze networks, investigate their structure, and their behavior and properties, as well as several practical applications in computer networks, social networks and power grids.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: STAT 410 or STAT 510, high-level programming language.

Typically Offered
Spring

ECE 842 - Parallel Processing

Credits: 3

Parallel processing application in signal and image processing. Array processors, pipeline processors, systolic and wavefront arrays, interconnection networks, performance analysis.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 512, ECE 649.

Typically Offered
Fall-Odd Years

ECE 845 - Sequential Machines

Credits: 3

Theory and mathematical framework of digital hardware will be developed. Limitations and fault detection of these machines will be explored using the theoretical basis of sequential machines.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: MATH 510 and ECE 649.

Typically Offered
Spring

ECE 846 - Computer Engineering Methods for Analysis, Simulation, and Design II

Credits: 3

Continuation of ECE 840.

Requisites:
Prerequisite: ECE 840.

Typically Offered
Fall

ECE 849 - Topics in Computer Engineering

Credits: 3

Selected topics relating to current developments in computer engineering. Topics may include computer architectures, computer networking, multiprocessing, and computer interfaces.

Repeat for Credit
Repeatable. Three hours recitation a week.

Requisites:
Prerequisite: ECE 649.

Typically Offered
On sufficient demand

ECE 855 - Advanced Topics in Electromagnetic Theory

Credits: 3

Mathematical development of electromagnetic wave theory.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 758.

Typically Offered
On sufficient demand

ECE 861 - Applied Probability Theory & Random Processes

Credits: 3

Applications of probability theory, random variables and stochastic processes; tools relevant to both modeling uncertainty and inferencing in the presence of uncertainty; probabilistic methods applicable to problems in electrical and computer engineering arena including power systems, communication systems and networks, biomedical systems, etc.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 512.

Typically Offered
Fall

ECE 866 - Transform Processing of Digital Signals

Credits: 3

Orthogonal transforms in digital signal processing with emphasis on one- and two-dimensional signals, generalized Wiener filtering, feature selection in pattern recognition, and elements of adaptive filtering techniques.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 861.

Typically Offered
Spring

ECE 867 - Digital Image Processing

Credits: 3

Basic concepts and techniques of image formation, representation, analysis, restorations, enhancement, coding, segmentation, and description. Object recognition using shape descriptors and syntactic techniques. Image processing applications in remote sensing, computer vision, and medical diagnosis.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 512.

Typically Offered
Fall

ECE 870 - Neural Networks in Engineering

Credits: 3

Engineering applications of artificial neural networks and machine intelligence. Particular emphasis will be placed on determining appropriate applications of alternate computing approaches and establishing efficient hardware support to implement these computational approaches.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 670.

Typically Offered
Fall-Even Years

ECE 872 - Therapeutic Medical Devices and Systems

Credits: 3

This course will cover: (1) the fundamental principles of electromagnetic energy interactions with biological tissue, and (2) the design and analysis of electromagnetic energy-based therapeutic medical devices and systems. Topics covered include: tissue-energy interactions; neuromuscular electrical stimulation; rationale and applications of thermal therapy; devices for radiofrequency and microwave hyperthermia; thermal ablation; integration with medical imaging systems.

Requisites:
Prerequisite: an undergraduate course in electromagnetics (e.g. ECE 557); an undergraduate course in numerical methods/scientific computing (e.g. ECE 540)

Typically Offered
Spring

ECE 881 - Advanced Topics in Electric Energy Systems

Credits: 3

Subjects of current interest such as computer methods, distribution and transmission systems, systems planning and economics, extra high voltage transmission, exotic power sources.

Repeat for Credit
Repeatable. Three hours recitation a week.

Requisites:
Prerequisite: ECE 686.

Typically Offered
On sufficient demand

ECE 882 - Power Quality

Credits: 3

Description, analysis, modeling, and solution of difficulties relating to distortion of the waveshape in alternating-current power systems. Problems of voltage regulation. Focus on harmonics, noise, filtering, and communications interference in power systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 624 and ECE 685.

Typically Offered
Fall, Spring

ECE 885 - Power Systems Operation and Control

Credits: 3

Specific topics include economic dispatch, unit commitment, control of generation, power system security, and state estimation. Several analytical and computational techniques are used to solve different problems related to above mentioned topics.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 685.

Typically Offered
On sufficient demand

ECE 887 - Distribution System Engineering

Credits: 3

Analysis, design and planning of electric distribution systems. Standard terminologies related to distribution systems are covered.

Note:
Three hours recitation per week.

Requisites:
Prerequisite: ECE 685.

Typically Offered
Spring

ECE 888 - Power System Stability and Control

Credits: 3

Introduction to power system stability and control. System device modeling and control issues are introduced for the purpose of studying various aspects of power system stability. Transient, small signal, and voltage stability topics are covered. Several stability analysis projects for multimachine systems are included.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 581 and ECE 685.

Typically Offered
Other

ECE 890 - Advanced Electrical Theory

Credits: 1-18

For advanced study in specialized areas by M.S. students.

Requisites:
Prerequisite: M.S. student.

Typically Offered
Fall, Spring

ECE 895 - Solid-State Electronic Devices

Credits: 3

Introduction to quantum mechanics, crystal structures, and the semiconductor material properties. Diodes, bipolar transistors, and field-effect transistor structures. Analysis of second-order effects in transistors.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CHE 350, ECE 557, and ECE 696.

Typically Offered
Fall

ECE 896 - Graduate Seminar in Electrical and Computer Engineering

Credits: 0

Presentation and discussion of current advances and research inelectrical and computer engineering. Required of all graduate students in electrical and computer engineering.

Typically Offered
Fall, Spring

ECE 897 - Research in Electrical Engineering

Credits: 1-18

Special research problems in electrical engineering.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

ECE 898 - Master's Report

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

ECE 899 - Master's Thesis

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

ECE 931 - Advanced Topics in Control Theory

Credits: 3

Study of advanced topics in optimal, time-varying, and stochastic control theory, or other recent developments in the control systems area.

Repeat for Credit
Repeatable. Three hours recitation a week.

Requisites:
Prerequisite: ECE 830.

Typically Offered
On sufficient demand

ECE 949 - Advanced Topics in Computer Engineering

Credits: 3

Selected topics related to advanced computer hardware design, performance measurements, sequential machines, and/ or advanced computer architectures.

Repeat for Credit
Repeatable. Three hours recitation a week.

Requisites:
Prerequisite: ECE 845.

Typically Offered
On sufficient demand

ECE 962 - Advanced Topics in Communications

Credits: 3

Selected topics related to the design and performance analysis of communication systems. Topics may include advanced modulation techniques, optimum receiver design, nonlinear channels, multipath analysis, diversity systems, and others.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 861.

Typically Offered
On sufficient demand

ECE 963 - Detection & Estimation Theory

Credits: 3

Theoretical foundations of detection and estimation theories. Bayesian decision theory with applications to signal detection in discrete time; concept of sufficient statistic and minimum variance unbiased estimation; Bayesian estimation; best linear unbiased estimation; Kalman filtering and its variants; filtering, smoothing and prediction applications across various engineering fields.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ECE 861.

Typically Offered
Spring

ECE 965 - Information Theory

Credits: 3

Information as a measure of uncertainty, zero-memory and Markov sources, coding of information sources, channels and mutual information, reliable transmission via unreliable channels, error correcting codes.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 861.

Typically Offered
Fall

ECE 967 - Advanced Topics in Digital Signal Processing

Credits: 3

Selected topics related to adaptive digital filtering techniques; special purpose hardware for digital filtering; two-dimensional signal processing and classification.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 866 or ECE 968.

Typically Offered
On sufficient demand

ECE 968 - Advanced Digital Filtering

Credits: 3

Advanced treatment of the theory of digital filtering and digital signal processing. Emphasis is on analysis of random signals.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ECE 647 and ECE 861.

Typically Offered
Spring

ECE 971 - Advanced Topics in Bioengineering

Credits: 3

Study of complex physiological system simulation and analysis techniques, modern experimental and clinical electronic bioinstrumentation systems. Topics selected according to graduate student's interests.

Repeat for Credit
Repeatable. Three hours recitation a week.

Requisites:
Prerequisite: ECE 771 or ECE 772.

Typically Offered
On sufficient demand

ECE 999 - Dissertation Research

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

ECED 528 - Research and Inquiry in Early Childhood Education

Credits: 3

Study and application of fundamental concepts, principles, and methods of educational research in early childhood education with focus on preparing students to become reflective practitioners of action research and critical consumers of research.

Requisites:
Corequisite: ECED 553 or ECED 554.

Typically Offered
Spring

ECED 530 - Teaching & Learning in Early Childhood Education

Credits: 3

Application of developmental and educational theories to teaching and learning in early childhood education programs serving children aged birth through kindergarten, including children with special needs.

Requisites:
Prerequisite: ECED 310 and ECED 313. Corequisite: ECED 531.

Typically Offered
Fall, Spring

ECED 531 - Developmental Curriculum in Early Childhood Education

Credits: 3

The planning and application of developmental curriculum across the content areas to enhance the development and learning of young children.

Requisites:
Prerequisites: ECED 310 and ECED 313. Corequisite: ECED 530.

Typically Offered
Fall, Spring

ECED 543 - Reflective Practice: Infants and Toddlers

Credits: 3

Application of developmental principles and evidence-based practice to the diverse learning environments of infants and toddlers with and without special needs across content areas including the integration of the family and community and public policies that affect programs for young children.

Requisites:
Prerequisite: ECED 540, ECED 541

Typically Offered
Fall, Spring

ECED 544 - Reflective Practice: Preschoolers and Kindergartners

Credits: 3

Application of developmental principles and evidenced-based practice to the diverse learning environments for preschoolers and kindergarteners with and without special needs across content areas including the integration of the family and community and public policies that affect programs for young children.

Requisites:
Prerequisite: Admission to teacher education.

Corequisite: ECED 554 and ECED 555.

Typically Offered
Fall, Spring

ECED 553 - Early Childhood Practicum I: Infants and Toddlers

Credits: 1

Development and implementation of developmentally and functionally appropriate learning experiences, in a variety of formats, addressing content in the areas of early language and literacy, mathematics, science, social studies, the arts, and technology for infants and toddlers. Admission to teacher education required.

Requisites:
Corequisite: ECED 543.

Typically Offered
Fall

ECED 554 - Early Childhood Practicum II: Preschoolers

Credits: 1

Development and implementation of developmentally and functionally appropriate learning experiences, in a variety of formats, addressing content in the areas of early language and literacy, mathematics, science, social studies, the arts, and technology for the preschool child. Admission to teacher education required.

Requisites:
Prerequisite: ECED 540 and ECED 541.
Corequisite.: ECED 544.

Typically Offered
Fall, Spring

ECED 555 - Early Childhood Practicum III: Kindergartners

Credits: 1

Development and implementation of developmentally and functionally appropriate learning experiences, in a variety of formats, addressing content in the areas of early language and literacy, mathematics, science, social studies, the arts, and technology for the kindergarten child. Admission to teacher education required.

Requisites:
Prerequisite: ECED 540 and ECED 541.
Corequisite: ECED 544.

Typically Offered
Fall, Spring

ECED 556 - Early Childhood Practicum 4: Home Visiting

Credits: 1

Development and implementation of developmentally and functionally appropriate experiences, within the context of an individualized family plan, addressing development and content in the areas of early language and literacy, mathematics, science, social studies, the arts, and technology for infants and toddlers in home based settings. Admission to teacher education required.

Requisites:
Prerequisite: Admission to Teacher Education and ECED 543.

Typically Offered
Spring

ECED 566 - Emergent Literacy

Credits: 3

Exploration of literacy development from birth through kindergarten, including concepts relevant to pre-emergent, emergent, and developing literacy; procedures for designing developmentally and culturally appropriate experiences; factors impacting literacy acquisition and assessment; and intervention procedures for children at-risk for reading and writing problems.

Requisites:
Prerequisite: ECED 565. Restricted to ECE majors only.

Typically Offered
Spring

ECED 588 - Directed Lab Experiences in Early Care and Education Programs

Credits: 7

Practical experience working with young children in licensed group care settings, emphasis on program planning for children and relations with staff and families.

Requisites:
Prerequisites:
ECED 546
First aid/CPR certification
Negative TB test
Clearance by KBI and DCF
Senior standing
Approval of instructor

Typically Offered
Fall, Spring

ECED 597 - Home, School, and Community Partnerships

Credits: 3

Strategies to enhance home-school communication with specific focus on families as the primary decision-makers for young children, with or without special needs. Emphasis on the development of family focused and culturally sensitive collaborations involving parents, schools, and the community to support child development, learning, and well-being.

Requisites:
Prerequisite: FSHS 350 and ECED 428 or permission of instructor.

Typically Offered
Fall

ECED 598 - Student Teaching in Early Childhood, Unified

Credits: 9

Design, implementation, assessment of developmentally and individually appropriate evidence-based curriculum for children with and without disabilities birth through kindergarten. Prearrangement and consent of instructor required.

Requisites:
Prerequisite: ECED 543, ECED 544, ECED 553, ECED 554, ECED 555 and admission into teacher education.

Typically Offered
Fall, Spring

ECED 700 - Problems in Early Childhood Education

Credits: 1-6

Independent study of relevant aspects of early childhood development and education.

Requisites:
Prerequisite: Consent of Instructor.

Typically Offered
On sufficient demand

ECED 704 - Seminar in Early Childhood Education

Credits: 1-6

Interpretation and evaluation of information on varied topics relating to early childhood education and development.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

ECED 708 - Topics in Early Childhood Education

Credits: 1-3

Review of recent research and theory related to early childhood education and development.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

ECED 710 - Child Care: Components and Issues

Credits: 3

Professional development and leadership; skills, services, and resources supporting quality early childhood care and education.

Requisites:
Prerequisite: Fifteen hours of either social science and/or FSHS.

Typically Offered
Summer

ECED 720 - Challenging Behaviors in Early Childhood

Credits: 3

The application of developmental principles and evidence-based practices to design and implement a positive learning environment for young children, including children with disabilities. Creating an environment that supports young children's social emotional competence, teaches social skills, and promotes self-regulation is emphasized.

Requisites:
Prerequisite: ECED 428.

Typically Offered
Fall

ECED 728 - Assessment of Young Children

Credits: 3

Theory and practice of individual assessment of handicapped and normal children, infancy to age eight, including cognitive, language, fine and gross motor, social, and self-help skills. Focus on selection, administration, interpretation, and evaluation of screening and comprehensive evaluation instruments for assessment and individual program planning.

Requisites:
Prerequisite: ECED 310, ECED 428, and ECED 540.

Typically Offered
Fall

ECED 730 - Early Childhood Program Administration

Credits: 3

Professional practice and organizational management of early childhood care and education programs; financial and personnel management, program development, and community relations.

Requisites:
Prerequisite: FSHS 450 or consent of instructor

Typically Offered
Summer

ECED 740 - Play Facilitation

Credits: 3

The emphasis of this course is the empirical study and practice of play as an educational, evaluative, and therapeutic intervention with young children.

Requisites:
Prerequisite: ECED 540 or consent of instructor.

Typically Offered
Spring

ECED 797 - Home Visiting Programs for Young Children and Families

Credits: 3

Examination of the empirical literature that supports the provision of early intervention and education services to families with young children through a home visitation model; focus on programs that use home visitation; an understanding of the key principles in early intervention; and the development of skills necessary to implement a coaching model of service delivery to enhance family and child outcomes.

Requisites:
Prerequisites: ECED 543.

Typically Offered
Spring

ECED 830 - Advanced Program Development

Credits: 3

Analysis of the process and application of child development theory to early childhood program planning.

Requisites:
Prerequisite: LSHD 820.

Typically Offered
Other

ECED 883 - Practicum in Early Childhood Education

Credits: 1-18

Supervised experience in providing help and/or instruction in the several areas of human development and family studies presented in terms of the special interests of the students. Consent of practicum supervisor is required for each.

Requisites:
Prerequisite: ECED 540.

Typically Offered
Fall, Spring, Summer

ECED 884 - Practicum in Parent Education

Credits: 1-18

Supervised experience in providing help and/or instruction in the several areas of human development and family studies presented in terms of the special interests of the students. Consent of practicum supervisor is required for each.

Requisites:
Prerequisite: FSHS 670.

Typically Offered
Fall, Spring, Summer

ECED 894 - Readings in Early Childhood Education

Credits: 1-6

Implications of research findings in preparation for professional work and research in early childhood education.

Requisites:
Prerequisite: Twelve hours in social-behavioral science; and consent of instructor.

Typically Offered
Fall, Spring, Summer

ECED 899 - MS Research in Early Childhood Education

Credits: 1-6

Individual research problems which may form the basis for the master's thesis or report.

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

ECON 505 - South Asian Civilizations

Credits: 3

Interdisciplinary survey of the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including geography, history, religion, culture, language, literature, current economy, and significant social movements.

Note:
May not be counted toward economics major or minor.

Requisites:
Prerequisite: 3 hours of Social Science or junior standing.

Typically Offered
Fall-Even Years

Crosslisted:
ANTH 505, GEOG 505, HIST 505, POLSC 505, SOCIO 505

ECON 507 - The Japanese Economy

Credits: 3

Analyzes Japan's growth, productivity change, income distribution, government policies, agriculture, industrial

structure, labor relations education and technology, and international trade and finance. Emphases will be on U.S.-Japanese competition and comparisons.

Requisites:
Prerequisite: ECON 110.

Typically Offered
Spring

ECON 510 - Intermediate Macroeconomics

Credits: 3

An examination of the behavior of the economy as a whole, including an analysis of the national income account, consumption, investment, money, interest, the price, level, the level of employment, monetary and fiscal policy, and economic growth.

Requisites:
Prerequisite: ECON 110, and one of the following, ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Fall, Spring, Summer

ECON 520 - Intermediate Microeconomics

Credits: 3

An examination of the theories of consumer behavior and demand, and the theories of production, cost, and supply. The determination of product prices and output in various market structures, and an analysis of factor pricing. Introduction to welfare economics.

Note:
Students cannot receive credit for both ECON 520 and ECON 521.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Fall, Spring, Summer

ECON 521 - Intermediate Microeconomics Theory

Credits: 3

A mathematical approach to intermediate microeconomics. Emphasis is placed on the use of optimization techniques to examine consumer demand, production and cost, behavior of the firm, market structure and welfare.

Note:
Students cannot receive credit for both ECON 520 and ECON 521.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121; and MATH 205 or MATH 220.

Typically Offered
Fall

ECON 523 - Human Resource Economics

Credits: 3

An introduction to the economic forces influencing wage and employment determination, income differentials, unemployment, and the production and acquisition of human capital. Emphasis on public policy, labor unions, and other relevant institutions.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Spring

ECON 524 - Sports Economics

Credits: 3

An economic analysis of professional and amateur sports. Pay determination of professional athletes, monopsony power of owners, discrimination, the importance of leagues, competitive balance, antitrust issues, collective bargaining, the financing of sports stadiums, and current economic issues in sports.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Fall

ECON 527 - Environmental Economics

Credits: 3

Economics of environmental market failure and the

efficient use of exhaustible and renewable resources. Topics include the application of markets and government policies to greenhouse warming, air and water pollution, and recycling.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Spring

ECON 530 - Money and Banking

Credits: 3

Nature, principles, and functions of money; development and operation of financial institutions in the American monetary system, with emphasis on processes, problems, and policies of commercial banks in the United States.

Requisites:
Prerequisite: ECON 110.

Typically Offered
Fall, Spring, Summer

ECON 532 - Fiscal Operation of State and Local Government

Credits: 3

Designed for students who plan careers related to state or local government. Selected topics in state and local taxation and expenditure.

Requisites:
Prerequisite: ECON 110 and permission of instructor.

ECON 536 - Comparative Economics

Credits: 3

The transition by Russia, Ukraine, Eastern and Central Europe, and Central Asia to market economics; economic reform in China, India, and other countries; and Marxian critiques of capitalism.

Requisites:
Prerequisite: ECON 110 or ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Spring

ECON 540 - Managerial Economics

Credits: 3

Microeconomic topics applicable to understanding and analyzing firm behavior: optimization, demand, estimation, production, and cost theory. Applications to business problems.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121; an introductory-level statistics course (STAT 325, STAT 340 or STAT 350); and MATH 205 or MATH 220.

Typically Offered
Fall, Spring, Summer

ECON 555 - Urban and Regional Economics

Credits: 3

An examination of the determinants of the economic performance of urban and regional economies, including theory, problems, and policy.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Fall

ECON 580 - Senior Seminar in Economics

Credits: 3

Topics for class discussion include history of economic thought, research methods in economics, and current economic issues. Students will prepare and present papers written with faculty guidance. Required of all economics majors.

Requisites:
Prerequisite: ECON 510; and ECON 520 or ECON 521; and STAT 351, or STAT 511 or STAT 705 or concurrent enrollment in one of the three. ECON majors only.

Typically Offered
Fall, Spring

ECON 595 - Problems in Economics

Credits: 1-18

Individual study is offered in international trade, labor relations, money and banking, public finance, transportation, general economics.

Typically Offered
Fall, Spring, Summer

ECON 599 - Topics in Economics

Credits: 1-3

Courses on special topics to be taught on demand.

Requisites:
Prerequisite: To be set for each topics course.

Typically Offered
On sufficient demand

ECON 605 - Economic Applications of Game Theory and Strategic Behavior

Credits: 3

Basic principles of game theory including Nash equilibria, repeated games, and strategy with incomplete information. Lecture course.

Requisites:
Prerequisite: ECON 520 or ECON 521; and MATH 205 or MATH 220.

Typically Offered
Fall, Spring

ECON 620 - Labor Economics

Credits: 3

Economics of the labor market – theory and empirical evidence. Labor force composition and trends, labor supply, labor demand, human capital, wage differentials, migration, trade unions, and current issues.

Requisites:
Prerequisite: ECON 520 or ECON 521.

Typically Offered
Fall

ECON 627 - Contemporary Labor Problems

Credits: 3

Emphasis on current research and public policies dealing with such matters as full employment, poverty, discrimination, social security, unemployment insurance, health care, minimum wages, training, and education.

Requisites:
Prerequisite: ECON 620 or consent of instructor.

ECON 630 - Introduction to Econometrics

Credits: 3

An introduction to the analytical and quantitative methods used in economics. Applications to specific problems with an emphasis on computer analyses.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121; and MATH 205 or MATH 220; and STAT 351 or AGEC 501 or STAT 511 or STAT 705.

Typically Offered
Spring

ECON 631 - Principles of Transportation

Credits: 3

Examines the transportation market from the shippers' point of view by examining the impact of transportation on business firm decisions such as location, markets, and prices. Also covers the costs, prices, and service characteristics of railroads, motor carriers, water carriers, oil pipelines and airlines. The role and impact of government in the transportation market is examined from both a promotion and regulation perspective.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Fall, Spring

ECON 633 - Public Finance

Credits: 3

Course seeks answers to questions such as: Which goods

should be provided by the private sector and which by the public sector (government)? With what criteria are public expenditures evaluated? What is an equitable and efficient tax system? Who bears the tax burden? What aspects of existing taxes need reform?

Requisites:
Prerequisite: ECON 110 and ECON 120 or AGEC 120.

Typically Offered
Spring

ECON 640 - Industrial Organization and Public Policy

Credits: 3

An examination of measures and determinants of industrial concentration, and an analysis of market structure, conduct, and performance, and policies related to performance.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Spring

ECON 681 - International Trade

Credits: 3

Principles of international trade, determinants of the value of trade between any pair of countries, sources of gains from trade, main factors
determining the pattern of trade, commercial policy, the political economy of trade and strategic 41 trade policy.

Requisites:
Prerequisite: ECON 110 and one of the following: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Fall, Spring

ECON 682 - Development Economics

Credits: 3

Factors affecting the economic modernization of the less-developed countries. Emphasis on capital formation, human capital, investment allocation, technical progress, income distribution, population growth, and the international economics of development.

Requisites:
Prerequisite: ECON 110.

Typically Offered
Fall

ECON 684 - International Finance and Open Economy Macroeconomics

Credits: 3

Introduction to international finance and open-economy macroeconomics, including the foreign
exchange market, the balance of payments, international financial markets, and recent and ongoing financial crises. Coverers core theoretical material, the course will examine current policy issues.

Requisites:
Prerequisite: ECON 110; and ECON 120 or AGEC 120 or AGEC 121; and ECON 510.

Typically Offered
Spring

ECON 686 - Economics Forecasting

Credits: 3

Focus on forecasting macroeconomic variables such as sales activity, tax revenues and other important variables. Techniques of forecasting using econometrics.

Requisites:
Prerequisite: ECON 110; and ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Spring

ECON 688 - Health Economics

Credits: 3

This course applies the tools of microeconomics to the health-care sector. It analyzes the behavior of consumers and providers of medical care, the functioning of insurance markets, and the roles of government and the private sector. International comparisons are made.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
Fall-Odd Years

ECON 690 - Monetary, Credit, and Fiscal Policies

Credits: 3

Goals of aggregative economic policy, conflicts among goals, and measures to resolve conflicts; money markets; targets of central bank control; the relative strength of monetary and fiscal policies; rational expectations hypothesis and policy ineffectiveness debate; terms structure of interest rates.

Requisites:
Prerequisite: ECON 530.

ECON 695 - Undergraduate Research Methods in Economics

Credits: 3

Development of a research proposal and completion of a research project under the guidance of a faculty member. Instruction in research design, methods and data. The independent-work phase of the course will be structured with weekly targets for completing economic theory, data/case study description, methods description and analysis and interpretation.

Requisites:
Prerequisite: ECON 110; and ECON 120 or AGEC 120 or AGEC 121; and AGEC 630. Some prerequisites may be waived with instructor consent.

Typically Offered
Fall

ECON 699 - Seminar in Economics

Credits: 1-3

Seminars of special interest will be offered on demand.

Requisites:
Prerequisite: ECON 120 or AGEC 120 or AGEC 121.

Typically Offered
On sufficient demand

ECON 710 - History of Economic Thought

Credits: 3

Development of economic ideas and doctrines and the relation of these to conditions existing when they were formulated.

Requisites:
Prerequisite: ECON 510.

ECON 720 - Microeconomic Theory

Credits: 3

Demand, cost, and production theories; price and output determination in different market structures; the theory of factor market pricing; an introduction to general equilibrium and welfare analysis.

Requisites:
Prerequisite: ECON 520 or ECON 521; and MATH 205 or MATH 220.

Typically Offered
Fall

ECON 730 - Applied Econometrics

Credits: 3

Emphasis on applied econometrics methods. Topics include simple and multiple linear regression as well as other econometric models used in economics. Diagnosis and remedies of potential problems with linear models and data, leading to quantitative answers to empirical questions.

Requisites:
Prerequisite: ECON 630.

Typically Offered
Spring

ECON 735 - Mathematical Economics

Credits: 3

Application of mathematical tools of concrete problems in micro- and macro-economics; mathematical treatment of models of consumption, production, market equilibrium, and aggregate growth.

Requisites:
Prerequisite: ECON 520; and MATH 205 or MATH 220.

Typically Offered
Fall

ECON 801 - Topics in Monetary Theory

Credits: 3

Emphasis on recent literature of monetary economics; Federal Reserve control of the money stock; the demand for money; money and economic activity; monetary targets and indicators.

Requisites:
Prerequisite: ECON 510 and ECON 530.

ECON 805 - Macroeconomic Theory I

Credits: 3

An overview of macroeconomic theory including Classical, Keynesian, and Monetarist theory. An Introduction to modern analysis in macroeconomics with an emphasis on dynamic methods and general equilibrium analysis.

Requisites:
Prerequisite: ECON 120 and ECON 510.

Typically Offered
Spring

ECON 815 - Economic Analysis for Business

Credits: 3

Microeconomic and macroeconomic theory with selected business applications. Theory of consumer and producer behavior and price determination in individual markets. Theory of aggregate economic behavior and the effects of fiscal and monetary policies.

Requisites:
Prerequisite: ECON 110, ECON 120, and one semester of calculus (MATH 205 or MATH 220). Not available for graduate credit in economics.

Typically Offered
Spring

ECON 823 - Advanced International Economics

Credits: 3

Theoretical and policy issues related to the international monetary system, capital movements, exchange rate systems, the U.S. balance of payments, and trade of underdeveloped countries.

Requisites:
Prerequisite: ECON 681 or consent of instructor.

ECON 830 - Econometrics I

Credits: 3

Fundamentals of econometric analysis. The classical linear model, multi-collinearity, specification error, distributed lags, non-normal disturbances, dummy variables, generalized least squares, autocorrelation, heteroscedasticity. Applications to specific problems.

Requisites:
Prerequisite: ECON 520; and MATH 205 or MATH 220; and STAT 706.

Typically Offered
Spring

ECON 832 - Public Sector Analysis

Credits: 3

Conditions for economic efficiency in the public sector; public good production functions; nonmarket decision making; rationale for public sector growth; systems analysis, cost-benefit and related techniques of allocating public goods.

Requisites:
Prerequisite: ECON 633.

ECON 840 - Managerial Economics

Credits: 3

Economic analysis of production, cost, and demand functions. Application of economic models to managerial decision making.

Requisites:

Prerequisite: ECON 520; and MATH 205; and one course in statistics with a prerequisite in the same department.

Typically Offered
Fall

ECON 881 - Topics in International Trade and Development Economics

Credits: 3

Covers key topics of current interest international trade and development economics, including new theories of firm-level comparative advantage and offshoring, outsourcing, and multinational activities.

Requisites:
Prerequisite: ECON720, ECON940, or consent of instructor

Typically Offered
Spring-Odd Years

ECON 890 - Seminar in Economics

Credits: 1-3

Course will provide seminars on specific topics in economics.

Repeat for Credit
Repeatable. May be repeated for no more than six credit hours total.

Requisites:
Prerequisites vary with announced subject matter.

ECON 895 - Problems in Economics

Credits: 1-18

Advanced individual study is offered in selected subject matter.

Requisites:
Prerequisite: Background of courses needed for problems being studied. ECON 898. Master's Report in Economics. ECON 899. Master's Research in Economics.

Typically Offered
Fall, Spring, Summer

ECON 898 - Master's Report in Economics

Credits: 1-18

ECON 899 - Master's Research in Economics

Credits: 1-18

ECON 905 - Macroeconomic Theory II

Credits: 3

A study of advanced topics in macroeconomic theory including general equilibrium analysis, economic growth, business cycle theory, and other developments in macroeconomic theory.

Requisites:
Prerequisite: ECON 805 and ECON 735.

Typically Offered
Fall

ECON 910 - Topics in Macroeconomics

Credits: 3

Exploration of seminal and current research in macroeconomic topics such as growth, business cycles, or public policy. Topics will be related to the research interests of the professor and students.

Requisites:
Prerequisite: ECON 805 and ECON 905.

Typically Offered
Fall, Spring

ECON 915 - Macroeconomic Modelling

Credits: 1-3

Examines current topics in macroeconomics with an emphasis on empirical modelling. The course will be structured to allow the student an in-depth look at influential articles in the literature through presentations and required summary papers, and apply similar skills in an assigned original research paper.

Requisites:
Prerequisite: ECON 735 and ECON 805.

ECON 920 - Labor Economics Seminar

Credits: 3

A critical analysis of wage theories, collective bargaining, and unemployment problems.

Requisites:
Prerequisite: ECON 620 or consent or instructor.

ECON 925 - Location of Economic Activities

Credits: 3

An examination of the theory of location including central place theory, location of the individual producer, industrial location patterns, and urban land-use models. Also includes application of theoretical models to current urban problems.

ECON 927 - Advanced Labor Economics

Credits: 3

An examination of studies in labor supply, labor demand, immigration, and current topics in labor economics.

Requisites:
Prerequisite: ECON 730 or concurrent enrollment in ECON 720.

ECON 930 - Econometrics II

Credits: 3

Continuation of Econometrics I. Stochastic regressors, asymptotic results, instrumental variable estimation, systems of equations, maximum likelihood estimation, nonlinear least squares, and other miscellaneous topics in econometrics.

Requisites:
Prerequisite: ECON 830.

Typically Offered
Fall

ECON 935 - Time Series Econometrics

Credits: 3

Discussion of recent advances in tome series econometrics. Economic forecasting, vector autoregressive modeling, unit root testing, cointegration, and other topics.

Requisites:
Prerequisite: ECON 930 or consent of instructor.

Typically Offered
Fall

ECON 938 - Microeconometrics

Credits: 3

A survey of recent advances in microeconometrics, including panel data, treatment effects, and other topics, to provide students with the analytical tools used in economic research.

Requisites:
Prerequisite: ECON 830.

Typically Offered
Fall

ECON 940 - Advanced Microeconomic Theory I

Credits: 3

An examination of demand, production, and cost theories; a discussion of duality theory and the application of the Le Chatelier principle; an analysis of price and output determination in different market structures.

Requisites:
Prerequisite: ECON 520 and ECON 735.

Typically Offered
Spring

ECON 945 - Advanced Microeconomic Theory II

Credits: 3

A study of advanced topics in economic theory, including general equilibrium theory, welfare economics, and risk and uncertainty.

Requisites:
Prerequisite: ECON 940.

Typically Offered
Fall

ECON 947 - Industrial Organization

Credits: 3

Theory of industrial organization and its analytical techniques. Game theory; monopoly pricing; product and quality selection; vertical control; static and dynamic theories of oligopoly; product differentiation, price dispersion, and advertising; asymmetric information and strategic behavior.

Requisites:
Prerequisite: ECON 735.

ECON 948 - Empirical Industrial Organization

Credits: 3

Analysis of market outcomes resulting from behavior and strategy of economic agents in imperfectly competitive markets, using econometric methods. Topics may include: models of consumer demand and methods of estimation; identifying and measuring market power and market effects of mergers; static models of entry and industry structure; single-agent dynamic structural models; dynamic oligopoly games; production, technology and industry structure; and other recent advances in empirical industrial organization.

Requisites:
Prerequisite: ECON 940 and ECON 830, or consent of instructor.

ECON 955 - Theory and Methods of Regional Economic Analysis

Credits: 3

A consideration of differences in regional and urban growth; comparison of alternative growth theories; methods of analyzing regional economics such as input-output analysis, linear programming, industrial complex, and spatial interaction models.

Requisites:
Prerequisite: ECON 925 or consent of instructor.

ECON 981 - International Trade Theory and Policy

Credits: 3

Discussion of recent literature in trade theory and policy under imperfect competition. International trade in imperfectly competitive international markets, strategic trade policies, political economy of trade protectionism, welfare effects of trade liberalization and economic integration, and other issues.

Requisites:
Prerequisite: ECON 735.

ECON 999 - PhD Research in Economics

Credits: 1-18

Typically Offered
Fall, Spring, Summer

EDACE 502 - Independent Study in Adult Learning and Leadership

Credits: 1-3

Selected topics in professional education.

Note:
Maximum of three hours applicable toward degree requirements.

Requisites:
Prerequisite: Consent of department chair.

Typically Offered
Fall, Spring

EDACE 714 - International Education

Credits: 3

Contemporary overview of the field of international education and an introduction to three of its parts. Comparative education, intercultural education, and development education.

EDACE 725 - Adult Basic Education Techniques

Credits: 3

Emphasis on providing students with an understanding of the selection, utilization, and development of adult basic education reference, resources, and other materials.

Typically Offered
On sufficient demand

EDACE 733 - Practicum in Adult Learning and Leadership

Credits: 1-6

Related occupational or professional experiences in approved industry, school, Cooperative Extension Service, or similar agency setting under faculty supervision.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDACE 750 - Women, Education, Leadership, and Work

Credits: 3

Emphasizes the collective and individual educational needs of women in and out of the work force and the part that occupational/educational preparation contributes to their participation in the work force.

EDACE 754 - Adult Basic Education

Credits: 3

Evolving adult basic and high school equivalency education concepts will be examined. Program implementation, supervision, methods, and materials are emphasized.

Requisites:
Prerequisite: Adult teaching experience or consent of instructor.

EDACE 765 - Adult Learners and Integrating Technology into Curriculum

Credits: 3

This course includes an in-depth study of methods for integrating innovative technologies into the curriculum for adult learners. With an in-depth understanding of adult learners, students will analyze learning theories and appropriate technologies for relevance, effectiveness, and alignment with course curriculum.

Requisites:
Recommended Prerequisite: EDACE 790.

Typically Offered
Fall, Spring, Summer

EDACE 775 - Readings in Adult Learning and Leadership

Credits: 1-3

Readings in research and application in specialized areas in education.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of Instructor.

EDACE 780 - Introduction to Adult Learning and Leadership

Credits: 3

A survey of adult learning and leadership field. Consideration given to articulation with other levels of education. Identification of changing needs within the field are reviewed.

Requisites:
Prerequisite: Consent of instructor.

EDACE 782 - Educational Gerontology

Credits: 3

For both the practitioner and those interested in educational gerontology as a field of inquiry. It will examine education for and about aging, with particular reference to the role, needs, and ability of persons in the later years as learners.

Typically Offered
On sufficient demand

EDACE 785 - Designing Classroom Instruction and Curriculum for Adult Learners

Credits: 3

This course focuses on the systematic approach to instructional design for adult learners. A comprehensive discussion of all major components of curriculum design from instructional objectives, course sequencing, instructional strategies, formative assessments and summative evaluations will be included. A major focus will also be on transfer of learning.

Requisites:
Recommended prerequisite: EDACE 765 and EDACE 790.

Typically Offered
Fall, Spring, Summer

EDACE 786 - Topics in Adult Learning and Leadership

Credits: 1-3

Examination of current topic in area of specialization of faculty.

Note:
Varied topics offered each semester so course may be repeated.

Repeat for Credit
Repeatable

EDACE 790 - Characteristics of the Adult Learner

Credits: 3

For teachers and administrators in adult and occupational programs who need a familiarity with the major characteristics of adulthood which affect the adult as a learner.

Typically Offered
Fall, Spring, Summer

EDACE 792 - Hospital and Industry Adult Learning and Leadership

Credits: 3

An introduction to principles, roles, organization, procedures, and problems of adult learning and leadership in hospitals, industry, and related agencies.

Typically Offered
On sufficient demand

EDACE 795 - Problems in Adult Learning and Leadership

Credits: 1-18

Independent study of specific problems in the areas of adult learning and leadership.

Requisites:
Prerequisite: Consent of instructor.

EDACE 815 - Introduction to Community Educational Development

Credits: 3

A comprehensive review of factors related to community change and the role of educational programs in dealing with them. Emphasis is on educational and economic problem-solving approaches and change-implementing programs.

EDACE 816 - Foundations of Social Justice Education: Research, Theory, and Practice

Credits: 3

This course focuses on the principles of social justice education that promote equitable, sustainable, and transformative change in various formal and non-formal educational settings across the lifespan. The course integrates theoretical and practical aspects of social justice in local, national and international settings such as K-12 formal education, higher education, adult education, community development, and family education, and agricultural education.

Typically Offered
Fall, Summer

EDACE 817 - Reflective Practice in Social Justice Education

Credits: 3

This course focuses on the application of principles of social justice education in informal and formal educational settings. Student-conceptualized and -implemented theory-to-practice social justice education projects serve as the capstone or culmination of the graduate certificate, with projects presenting powerful opportunities for students to foster social change and positively impact the communities in which they work.

Requisites:
Prerequisite: EDACE 816.

Typically Offered
Fall, Spring, Summer

EDACE 818 - Critical and Social Issues in Adult Learning

Credits: 3

Designed for adult learning and students and college or university personnel in sociology and related fields dealing with adults, this course focuses on the economic historical and sociocultural context in which learning takes place. Included is an in-depth examination of the relationship between adult learning and culture.

Typically Offered
Fall, Spring, Summer

EDACE 820 - Principles of Teaching Adults

Credits: 3

This course will explore the theory and practice of teaching adults. Collaborative and active learning techniques will be emphasized in face-to-face and online environments. Students will examine the strengths, weaknesses, and appropriate application of a variety of methods to different adult education environments.

Typically Offered
On sufficient demand

EDACE 822 - International Adult Education and Literacy

Credits: 3

This course provides an introduction to the foundations of global, political, social-economic and educational issues facing international adult education and literacy students for English as a Second Language learners.

Requisites:
Prerequisite: EDACE 820.

Typically Offered
Spring, Summer

EDACE 824 - Teaching Online in Adult Learning

Credits: 3

This course examines online adult learning theories, online pedagogies, current research, and trends in e-education for the workplace and higher education.

Typically Offered
Spring

EDACE 825 - Theory and Practice of Continuing Education

Credits: 3

Specific instruction on facilitating continuing education programs; emphasis on serving the institution, part-time students, community, and other interests.

Typically Offered
On sufficient demand

EDACE 830 - Program Planning in Adult Learning and Leadership

Credits: 3

An examination of the basic situations in which adult education occurs and fundamental steps by which learning is made more effective in those situations.

Requisites:
Prerequisite: EDACE 790.

EDACE 832 - Interpersonal and Intrapersonal Dynamics in Adult Learning and Leadership

Credits: 3

This course explores various psychological and

sociological factors that impact leadership. Through examining topics like verbal and nonverbal communication, active listening, learning and presentation styles, emotional intelligence, conflict, and motivation, students gain a deeper understanding of how these factors affect their personal leadership styles and impact adults they are leading.

Typically Offered
Spring, Summer

EDACE 834 - Leading Adults in a Globalized and Diverse World

Credits: 3

This course provides an introduction to the foundations of adult education leadership in the context of managing a culturally diverse workforce. Concepts of globalization as well as cross- cultural and international environments as they relate to adult education leadership are emphasized through theory to practice projects and research.

Typically Offered
Fall

EDACE 835 - Developing Teams and Adult Leaders

Credits: 3

This course will examine how teams and leaders can be developed using adult learning and leadership theories and principles.

Typically Offered
Spring

EDACE 836 - Group Dynamics in Adult Learning and Leadership

Credits: 3

This course focuses on group and team behavior and processes in the adult education environment. Various factors that impact group behavior, processes, and effectiveness will be examined and participants will learn skills needed to more effectively manage and facilitate groups and teams of adults to achieve organizational objectives, accomplish tasks, and fulfill individual members' needs.

Typically Offered
Spring, Summer

EDACE 837 - Quality Programs and Staff Management in Adult Learning and Leadership

Credits: 3

Utilizes the use of adult education theories of program administration to enhance student understanding of staff and team dynamics. Focuses on developing interpersonal skills so that students can be more effective leaders, problem solvers, motivators, coaches, and change managers.

Typically Offered
Fall, Summer

EDACE 838 - Volunteer Leadership Education

Credits: 3

Introduce students to managing and leading volunteers using an adult model. Volunteers are very similar to employees—both have to be managed, coached and trained.

Repeat for Credit
Not repeatable.

Typically Offered
Fall, Spring, Summer

EDACE 839 - Experiential Learning and Leadership Dynamics

Credits: 3

Framed in the theory of experiential learning, students will apply theories and principles learned throughout the leadership dynamics program to a professional problem/setting. Students will present their experiences to a panel of academic and professional practitioners.

Typically Offered
Fall, Spring, Summer

EDACE 845 - Social Media and Adults in the 21st Century

Credits: 3

This course addresses the most popular social media and helps students understand the promise and challenge that social media has brought to 21st century working adults. Example topics include but are not limited to Social Media and adult learning, Social Media in the workforce, and new technology literacy in 21st century.

Typically Offered
Spring

EDACE 847 - Adult Learning and Motivation

Credits: 3

Core course of adult learning perspectives and motivation for learning.

Typically Offered
Fall, Spring, Summer

EDACE 850 - Self-Directed Learning

Credits: 3

Self-directed or independent learning is an important aspect of adult education because it represents a significant portion of all learning by adults. The concept was instrumental in distinguishing the fields of adult education. During this course, students will explore self-directed learning from both an academic and a personal perspective. Topics include its history and development, its research base, areas of current interest and implications for adult education practice.

Typically Offered
Summer

EDACE 851 - The Historical and Contemporary Community College

Credits: 1

Focus on developing an understanding of historical and contemporary issues that have shaped and continue to impact community colleges. Students will develop and improve skills that are outlined in the leadership competencies published by the American Association of Community Colleges.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 852 - Field Study: The Historical and Contemporary Community College

Credits: 1

Field studies exposes students to a systematic approach to identify and analyze historical issues and issues facing contemporary community college leaders. The implications of issues for community colleges are to be considered from a leadership perspective.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 851.

Typically Offered
On sufficient demand

EDACE 853 - Access, Equity, and Success

Credits: 2

Students will explore the assets, experiences, and institutional challenges of community college students based upon personal characteristics such as race/ethnicity, socioeconomic status, age, gender, sexuality, disability, military status, and religion; and the national "best-practice" strategies currently being used to increase enrollment, persistence, and program completion for these diverse student groups.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 854 - Field Study: Access, Equity, and Success

Provide an opportunity for students to reflect about challenges in changing community college cultures and structures from a traditional student-deficit model to a student-asset model accounting for the increasing diversity among community college students.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 853

Typically Offered
On sufficient demand

EDACE 855 - Aligning Vision, Planning, and Resources

Credits: 2

Study ways to understand, work with, and improve upon the financial model of community colleges and will help develop skills needed to do so.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 856 - Field Study: Vision, Planning and Resources

Credits: 1

Students will identify and analyze financial issues being faced by community colleges throughout the United States. Students will explore methods to analyze and develop viable financial solutions to address the identified issues. The legacy mission of community colleges has grown in tandem with expectations. Yet public funding of most community colleges has decreased, is less predictable, and has not kept pace with enrollment growth. These pressures compel fresh thinking about mission, priorities, resource generation, and cost containment.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 855

Typically Offered
On sufficient demand

EDACE 857 - Effective Leadership and Theory

Credits: 4

Students will be introduced to leadership issues in higher education through individual, interpersonal, team, and leadership theory and practical applications. Acentral premise of this course is to examine effective leadership practices and theories as lenses for examining leadership issues and comparing and contrasting practical applications in community colleges and competencies by their leaders while considering the terrain in which they function.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 858 - Field Study Effective Leadership

Credits: 1

Students will analyze community college cases studies and leadership issues and make recommendations as to how best meet the challenges described. Students will differentiate among leader competencies and lenses and assess their potential relevance to addressing community college issues and priorities. Students will also examine issues impacting colleges and implications for effective leadership development.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 857

Typically Offered
On sufficient demand

EDACE 859 - Effective Leadership Institute

Credits: 1

Students will travel to urban and rural community colleges and districts to meet with their respective chancellors, presidents, and leadership teams. Students will interact with board of trustee members, state educational association leaders, and other national community and technical college leaders.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 860 - Innovative Higher Education Programs for Adults

Credits: 3

Designed to provide a conceptual understanding of innovative systems and structures currently serving higher education needs of adult learners. The course will provide a historical basis for the development of these programs as well as future trends. Included will be discussions of corporate colleges, external degree programs and distance/online learning.

Typically Offered
On sufficient demand

EDACE 861 - Fostering Desired Culture: Fundamentals & Strategies for Org Development

Credits: 2

Focus on helping students to create organizational structures designed to thrive by fostering entrepreneurialism and innovation throughout the organization. This course will also focus on consideration of inclusion and equity in organizational design and development.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 862 - Field Study: Organizational Development

Credits: 1

Students will engage with community college leaders throughout the country concerning contemporary organizational challenges. Using research, students analyze a community college situation and make recommendations to the leader as to how best address the contemporary organizational challenges.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 861

Typically Offered
On sufficient demand

EDACE 863 - Creating a Culture of Evidence and Inquiry

Credits: 2

Students will explore how to develop and foster of cultures of evidence and inquiry from enrollment to outcomes. Other important topics include development and use of actionable information to make decisions and measure effectiveness, and robust common measures to benchmark and improve institutional performance

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 864 - Field Study Enrollment to Outcomes

Credits: 1

Designed to enable participants to apply the principles of evaluation to developing a program evaluation for a student success initiative.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 865 - Principles of Workplace Learning

Credits: 3

This course provides an overview of various aspects of workplace learning initiatives as found in the related professional literature and from various practice-related venues. Major topics include evolution of the process of workplace learning and the profession of training; assessing and analyzing workplace learning needs; designing and delivering workplace learning programs; and measuring and evaluating the impact of workplace learning initiatives.

Typically Offered
Fall, Spring, Summer

EDACE 875 - Program Evaluation in Adult Learning and Leadership

Credits: 3

This course will provide an overview of various methods and strategies for evaluating educational programs for adults. Students will have the opportunity to examine the literature that is related to the program evaluation process in adult education settings. Opportunities to study the manner in which the process of program evalution is conducted in modern programs for adults in governmental, educational, and private and public sector organizations will also be provided.

Typically Offered
Fall, Spring, Summer

EDACE 878 - The Role, Organization, and Function of Community Colleges

Credits: 3

This course is designed to give the student an overview of community colleges. Emphasis on philosophy, purposes, curriculum, organization, professional staff, student-personnel programs, and the role for the comprehensive community college in higher education.

Typically Offered
Fall

EDACE 879 - The Community College Curriculum and Instructional Services

Credits: 3

Evaluation of community college curricula; reasons for revision, aims and objectives. Designed to familiarize student with the entire curricular offerings of the comprehensive community college.

Typically Offered
On sufficient demand

EDACE 880 - Significant Literature of Adult Learning

Credits: 3

A seminar studying the significant literature of adult learning from a current and historic perspective.

Typically Offered
Fall, Spring, Summer

EDACE 882 - Introduction to Educational Research

Credits: 2

Introduce students to educational research methods, paying particular attention to the ways in which research can be used to understand and improve daily education practice, particularly in higher education. Key differences between qualitative, quantitative, mixed methods, and action research designs are highlighted.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 883 - Field Study: Educational Research

Credits: 1

The purpose of this Field Study in introductory educational research methods is to enable participants to apply concepts learned in EDACE 882 Introduction to Educational Research to critiquing various journal articles reporting

primary research and further developing their understanding of research questions and various research methodologies, as well as, to provide opportunities to be consumers of research.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 882.

Typically Offered
On sufficient demand

EDACE 886 - Seminars in Adult Learning and Leadership

Credits: 1-18

These seminars will consider research and professional development on the special interests of the students in the several fields of education represented.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDACE 898 - Master's Report

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

EDACE 899 - Master's Research

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

EDACE 916 - Foundations of Adult Learning and Leadership

Credits: 3

A study of adult learning and leadership historical perspectives, contemporary institutions and programs, teaching-learning process, administrative practices, and conceptual roles.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDACE 920 - Educational Value Choices

Credits: 2

Students explore the prevalence of value choices confronting educational leaders in a community college setting, the influence personal values have on educational value choices, and the how educational leaders can maintain integrity in navigating the choices.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 921 - Field Study Ed Value Choices: Access, Equity, and Success

Credits: 1

Focuses on the practical application of leadership integrity in approaching educational value choices within a community college setting.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 920.

Typically Offered
On sufficient demand

EDACE 922 - Policy Formation and Public Process

Credits: 2

Designed to provide students with a thorough background to the principal public policy issues that are impacting American community college education. The background and analysis will be viewed through a specific theory of public policy and decision making as a means of structure.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 923 - Field Study Policy and Public Process

Credits: 1

The opportunity to: (1) examine the theory of public policy and political decision making; and (2) work in-depth on a chosen issue of public policy related to community college education

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 922

Typically Offered
On sufficient demand

EDACE 924 - Effective Governance and Leadership

Credits: 2

Investigate the contributory roles of all employees and employee structures within the framework of college governance.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 925 - Field Study Governance and Leadership

Credits: 1

Analyze identified problems in college governance; identify the role and responsibilities of key players in the development and implementation of policies and strategies; develop both detailed and wide-ranging response strategies to identified problems; and, implement a shared collective vision of problem solution.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 924

Typically Offered
On sufficient demand

EDACE 926 - Leadership for Transformation

Credits: 2

Explore change and transformation theory and practice in contemporary community colleges. A widely-used change process will be used as an anchor from which to examine in depth real-world transformation efforts underway in the community college.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 927 - Field Study Leadership for Transformation

Credits: 1

This field experience exposes students to change process, transformation theory and practice in contemporary community colleges. Students will meet with current community college leaders who will address the change process, transformation, vision and strategy, champions, innovation, communication and celebration of successes in a community college setting.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 926.

Typically Offered
On sufficient demand

EDACE 928 - Designing a Comprehensive Plan for Success

Credits: 2

Designed to review and incorporate the tenets of a leadership framework for designing a desired transformation in a community college or district. Upon completion of this course, students will be able to identify, describe, and design the key components for planning, implementing, and evaluating an institutional transformation initiative to address a complex issue relevant to the college/district and the communities, state, or region it serves.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 929 - Field Study Plan for Success

Credits: 1

Provide an opportunity for students to reflect about challenges in introducing and institutionalizing desired culture change and effective best practices to develop the envisioned future. Students will identify and articulate leadership and organizational skills necessary for transformational work.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 928

Typically Offered
On sufficient demand

EDACE 930 - Implementing Leadership Competencies

Credits: 2

Students will identify the major competencies necessary to become a more effective and efficient leader and how these competencies align with those identified by the American Association of Community College Leaders (AACC). The course includes practical application of leadership, completing a self-assessment of core leadership competencies, and developing a personal leadership growth plan. Also, students will work in teams to develop a leadership institute that can be used in a community college setting.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 931 - Field Study (Institute) Leadership Competencies

Credits: 1

Provides students with the opportunity to participate daily in discussions, develop a leadership institute, engage in reflection activities, and participate in a process for effective interviewing.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 930

Typically Offered
On sufficient demand

EDACE 937 - Organization and Administration of Adult Learning and Leadership

Credits: 3

A critical study of organizational procedures and administrative practices as related to the implementation and maintenance of effective program for adults.

EDACE 940 - Adult Development and Learning

Credits: 3

Study all pertinent adult development theories.

Typically Offered
Fall, Spring, Summer

EDACE 960 - Introduction to Doctoral Studies

Credits: 3

Provides an overview of the course sequence and dissertation process. The objective is to start students preparing for their dissertation early so they can finish in a timely manner. This course also addresses work-life balance between being a leader, a student, and having a family and personal life outside of work.

Repeat for Credit
Not repeatable.

Typically Offered
Fall, Spring, Summer

EDACE 970 - Dissertation Development

Credits: 4

Introduction to the essential organizational and writing skills required for completing a dissertation. Upon completion of this course, students will be able to identify and describe the key steps in developing and writing the dissertation proposal and dissertation.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Typically Offered
On sufficient demand

EDACE 971 - Field Study Dissertation Development I

Credits: 1

Review the main components of the dissertation. Students will select the research topic under investigation and develop an argument that demonstrates the need for the study.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 970.

Typically Offered
On sufficient demand

EDACE 972 - Field Study: Dissertation Development II

Credits: 1

Designed to provide an overview of the writing and organization skills necessary for the completion of a literature review and research methodology germane to writing a dissertation. Upon completion of this the course, students will be able to design and conduct a literature review and research methodology that addresses the research topic under investigation.

Requisites:
Prerequisite: Enrollment in the Ed.D. in Community College Leadership.

Corequisite: EDACE 971

Typically Offered
On sufficient demand

EDACE 975 - Scholarly Writing

Credits: 3

Enables students to develop the writing skills they need to become successful writers in their academic and post-academic careers. Course topics focus on students' disciplines and include annotated bibliographies, critiques, and literature reviews.

Repeat for Credit
Not repeatable.

Typically Offered
Fall, Spring, Summer

EDACE 980 - The Dissertation Process

Credits: 3

Dissertation proposal development is one of the major challenges encountered toward earning a doctoral degree. This course outlines the basic components of a dissertation study with a focus on the proposal—the dissertation's first three chapters. It then focuses on developing and writing chapter one. It is important that each student has a general idea for his or her dissertation research topic prior to the class start date. In addition to working with the course instructor, each student is expected to work closely with their major advisor.

Repeat for Credit
Not repeatable.

Typically Offered
Fall, Spring, Summer

EDACE 986 - Advanced Seminars in Adult Learning and Leadership

Credits: 1-18

These seminars will critically consider recent research in the designated fields. The emphasis will be upon individual studies and small group interaction. Enrollment is restricted to those students who have been admitted to the doctoral program in education and who have completed substantial amounts of graduate study in the designated fields.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDACE 991 - Internship in Adult Learning and Leadership

Credits: 1-6

Field experiences in the development of programs in cooperating schools and educational or related agencies under the supervision of College of Education graduate faculty member.

Note:
A maximum of six credit hours.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDACE 999 - Doctoral Research

Credits: 1-18

Requisites:
Prerequisite: Sufficient training to carry on the line of research undertaken and consent of instructor. Prerequisite: Consent of Instructor.

EDCEP 502 - Independent Study in Counseling and Educational Psychology

Credits: 1-3

Selected topics in professional education.

Repeat for Credit
Repeatable for a maximum of three hours toward degree requirements.

Requisites:
Prerequisite: Consent of Department Chair.

Typically Offered
Fall, Spring, Summer

EDCEP 525 - Interpersonal Relations in the Schools

Credits: 1

A didactic and experiential course designed to develop an understanding of human relations skills in the schools. Provides knowledge and skills necessary to work effectively with students, parents, and school personnel. Particular emphasis is on the basis for interpersonal relations in education, communication skills, the facilitative relationship, working with students in groups, and conducting meetings with parents and school personnel.

Requisites:
Prerequisite: EDCI 320, EDSP 323, EDCEP 315. Concurrent enrollment required for EDSEC 455, EDSEC 477.

Typically Offered
Fall, Spring, Summer

EDCEP 715 - Principles of Assessment

Credits: 3

Principles of development, administration, evaluation, and constructive instructional use of paper-pencil, product, and performance assessments. Focus on norm-and criterion-referenced uses of teacher-made and published measures as an integral part of effective decision making in education.

Typically Offered
Fall, Spring, Summer

EDCEP 725 - The Teacher and Child Abuse

Credits: 3

An exploration of child abuse and neglect with specific references to legal and moral responsibilities of teaching. Suggestions for detection, reporting, and responsive instruction for suspected cases of child abuse and neglect.

Requisites:
Prerequisite: Junior standing.

Typically Offered
On sufficient demand

EDCEP 775 - Readings in Counseling and Educational Psychology

Credits: 1-3

Readings in research and application in specialized areas in education.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

EDCEP 786 - Topics in Counseling and Educational Psychology

Credits: 1-3

Examination of current topic in specialization of faculty.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

EDCEP 795 - Problems in Counseling and Educational Psychology

Credits: 1-18

Selected students are permitted to secure specialized training appropriate to the needs of the individual. The student's project may involve intensive library investigation in a special field or the collection and analysis of data pertinent to a given problem. All work is done independently under the direction of a faculty member. As many conferences are held as necessary to assure successful completion of a project & nbsp.

Requisites:
Prerequisite: Background of courses necessary for the problem undertaken and consent of instructor.

Typically Offered
Fall, Spring, Summer

EDCEP 802 - Stress Management for Teachers, Counselors, and Administrators

Credits: 3

Systematic training in stress-management strategies and techniques for the professional educator and for use in classroom and counseling settings. Includes knowledge of self-directed and instrumental techniques, psychophysiology of stress, issues in stress management, and role of teacher and counselor in delivering stress-management training.

Typically Offered
On sufficient demand

EDCEP 810 - Mental Health in Schools

Credits: 3

Examines mental health and risk factors in the context of schools and student learning. Topics include: characteristics and behaviors of at-risk students; and prevention, intervention, and referral strategies to facilitate and promote mental health and a positive learning environment.

Typically Offered
Summer

EDCEP 812 - History and Philosophy of Higher Education

Credits: 3

History and development of higher education with a study of the philosophy, objectives, and functions of various types of institutions.

Typically Offered
Fall

EDCEP 815 - Using Tests in Counseling

Credits: 3

Focus on the use of tests as an integral part of counseling. Emphasizes interpretation of scores, issues of psychological and educational measurement, and selection and evaluation of instruments.

Requisites:
Prerequisite: EDCEP 715.

Typically Offered
Spring

EDCEP 816 - Research Methods in Education

Credits: 3

This course is designed to provide students with an overview of quantitative and qualitative research methods in education and to equip them with the knowledge to be competent consumers and producers of educational research.

Typically Offered
Fall, Spring, Summer

EDCEP 817 - Statistical Methods in Education

Credits: 3

An introductory yet comprehensive survey of common statistical analyses encountered in educational research. Computer oriented.

Requisites:
Prerequisite: A first course in college mathematics and STAT 702 or EDCEP 816.

Typically Offered
Fall, Summer

EDCEP 818 - Principles of Student Affairs Administration

Credits: 3

Principles of practice, current professional issues, and future trends in college and university student affairs administration

Typically Offered
Spring

EDCEP 819 - Survey Research

Credits: 3

Evaluation, interpretation, use, and production of survey research in education.

Requisites:
Prerequisite: EDCEP 816

Typically Offered
Spring

EDCEP 821 - Fundamentals of Program Evaluation

Credits: 3

Theory, approaches, and fundamental skills for planning and implementing program evaluation; focus on research (and evaluation) designs and methods; includes evaluation professional standards and ethics.

Requisites:
Prerequisite: EDCEP 816 or equivalent.

Typically Offered
Fall

EDCEP 822 - Counseling Adolescents

Credits: 3

This is a foundation course for secondary school counselors and addresses issues relevant to secondary school counseling programs.

Typically Offered
Summer

EDCEP 823 - Counseling Theory

Credits: 3

Theories, methods, and problems in counseling, relating the counseling process to dynamics of human behavior.

Typically Offered
Fall, Summer

EDCEP 824 - Development Across the Lifespan for School Counselors

Credits: 3

Advanced studies in physical, intellectual, emotional, social, and personality development across the lifespan with the focus on the importance of these factors to the educational process.

Typically Offered
Summer

EDCEP 829 - Learning Principles

Credits: 3

Exploration of learning theories and an overview of research on factors that enhance academic performance, including psychosocial variables, learning styles, and learning strategies. The course covers strategies for enhancing student academic peformance, ranging from assessment to implementation.

Typically Offered
Spring

EDCEP 830 - Diversity in Higher Education.

Credits: 3

Addresses diversity in higher education administration and practice. Examples of topics examined in the context of diversity include recruitment and retention, program development, campus climate, and multicultural student organizations.

Typically Offered
Summer

EDCEP 831 - Current Issues in Higher Education

Credits: 3

Current issues in higher education are examined. Students learn to identify current issues and how professional administrators effectively address these issues. Individual topics or issues that are part of the larger campus climate are studied.

Typically Offered
Spring

EDCEP 835 - Foundations of Academic Advising

Credits: 3

Examines the foundations of academic advising as essential componenets of student success and retention in higher education. Topics include developmental advising; research on academic advising; models and delivery systems; advising skills, including diverse populations; and evalution, assessment, and reward systems for advisors and advising programs.

Typically Offered
Fall

EDCEP 836 - Interpersonal Relations for Academic Advising

Credits: 3

This course focuses on developmental communications/interpersonal relations skills for academic advisors. Topics to be addressed include influences on the helping process, such as personal characteristics, verbal and nonverbal responses and behaviors, and ethical considerations.

Typically Offered
On sufficient demand

EDCEP 838 - Student Development Theory

Credits: 3

Study of the American college student and how he/she is influenced by institutional policies, practices, and other environmental variables. Special attention will be given to contemporary student development theory and research.

Typically Offered
Fall

EDCEP 839 - Assessment of Academic Advising

Credits: 3

The role of quality academic advising is key to student

success, graduation, and completion as identified in the research and literature on the undergraduate student experience. However, the quality and the effectiveness of the academic advising experiences must be assessed. This course will focus on a review of the foundations of academic advising, the key terms and processes of assessment, and the strategies and processes used to assess academic advising.

Requisites:
Prerequisite: EDCEP 816

Typically Offered
On sufficient demand

EDCEP 851 - Multicultural Aspects of Academic Advising

Credits: 3

This course introduces students to the various cultural, ethnic, racial, and linguistic issues associated with advising practice.

EDCEP 852 - Career Development for School Counselors

Credits: 3

Addresses the knowledge and competencies necessary for school counselors to use education, career, and labor market information resources, and career guidance and counseling techniques, methods, and technology in developing programs, services, and activities to meet the career development needs of students.

Typically Offered
Fall

EDCEP 854 - College Student Athletes

Credits: 3

Study of college student athletes. Topics include the role of intercollegiate athletics, pressures and challenges on student athletes, student development theory, life skills programming, National Collegiate Athletic Association policy, diversity, and gender issues.

Typically Offered
Summer

EDCEP 856 - Counseling Children

Credits: 3

The nature and philosophy of counseling in the elementary school; the function of specialized child appraisal and counseling techniques in the unique interrelationships of the professional school counselor and the teacher in the team approach to elementary school counseling.

Typically Offered
Spring

EDCEP 857 - Counseling Program Management

Credits: 3

This course addresses the issues, knowledge, and competencies relevant to planning, implementing, and evaluating comprehensive school counseling programs to meet the needs of all students.

Typically Offered
Spring

EDCEP 858 - Group Processes

Credits: 3

Designed to acquaint students with group procedures as basic tools in counseling, guidance, and other education services.

Typically Offered
Fall, Summer

EDCEP 859 - Introduction to Research Synthesis and Meta-Analysis in the Social Sciences

Credits: 3

The course is an introduction to conducting systematic reviews of the literature and statistically analyzing the results. This course will focus on: (a) methods for conducting replicable, systematic reviews of the literature, and (b) statistical methods for analyzing the study effects (meta-analysis). Focus will be on examining studies with continuous, binary and correlations coefficient outcomes. Statistical methods will include fixed-effects, random-effects models, prediction intervals, meta regression, and

publication bias. The course will emphasize basic theory and underlying
statistical methods, computational approaches, and the interpretation of results from published studies.

Requisites:
Prerequisite: EDCEP 817, EDCEP 917

Typically Offered
On Sufficient Demand

EDCEP 860 - Trauma and Crisis Counseling

Credits: 3

Study of children and adults and the educational, psychological, social, and career development issues they face as a result of trauma and post-traumatic stress. Particular emphasis will be given to counseling theories and best practices for working with students and clients experiencing these issues.

Typically Offered
Fall

EDCEP 863 - Trends in Career Development

Credits: 3

This course addresses the role of work in people's lives across the life span, with an emphasis on the application of career development theories, research, practice, and resources to higher education. Topics are presented to help professionals in higher education facilitate students' academic and career development, planning, and decision-making within the context of the changing world of work.

Typically Offered
Spring

EDCEP 864 - Current Issues in Intercollegiate Athletics

Credits: 3

Examines policies and procedures of the NCAA, roles and responsibilities within a department of intercollegiate athletics the historical relationship between intercollegiate athletics and higher education institutions, the creation of the NCAA and its policies, roles and responsibilities within a department of intercollegiate athletics, and relevant research. Topics include student-athlete health and well-being, marketing, fundraising, external relations, sports information, coaching, and academic support.

Typically Offered
Spring

EDCEP 871 - Leadership, Advocacy, and Consultation for Counselors

Credits: 3

This course acquaints students with the major models of consultation that may be used by counselors for intervention with individuals and organizations. Techniques, issues and ethical considerations are also addressed.

Typically Offered
Spring

EDCEP 875 - Administration of College Student Personnel Services

Credits: 3

Planning, budgeting, personnel supervision and evaluation, office management, administrative use of computers, program evaluation and related applications in the primary college student personnel services.

Requisites:
Prerequisite: EDCEP 818 and EDCEP 838.

Typically Offered
Fall

EDCEP 877 - Practicum in Counseling

Credits: 3

This is a developmental counseling skills course addressing influences on the helping process such as personal characteristics, theoretical orientation, verbal and nonverbal behaviors, and ethical considerations. Includes research applications, case conceptualization, evaluation, simulation, and supervised individual and group practice in the field.

Requisites:
Prerequisite: 24 credit hours of prescribed counseling curriculum.

Typically Offered
Fall, Spring

EDCEP 885 - Practicum in Higher Education

Credits: 3

Supervised practical experience in a higher education setting.

Requisites:
Prerequisite: Completion of 18 credit hours in the M.S. in College Student Development program

Typically Offered
Fall, Spring

EDCEP 886 - Seminar in Counseling and Educational Psychology

Credits: 1-18

Intensive discussion of a problem of current professional interest based on study of pertinent original literature.

Repeat for Credit
Repeatable with consent of Supervisory Committee.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDCEP 887 - Counseling Internship

Credits: 1-3

This supervised internship includes activities that a regularly employed school counselor would be expected to perform. The student will engage in individual counseling, group work, developmental classroom guidance, use within an ethical framework and a sensitivity to individual characteristics.

Requisites:
Prerequisite: 36 credit hours of School Counseling prescribed curriculum.

Typically Offered
Fall, Spring

EDCEP 898 - Master's Report

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

EDCEP 899 - Master's Research

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

EDCEP 917 - Experimental Design in Educational Research

Credits: 3

Philosophy, planning, and evaluation of research in education. Experimental designs appropriate for educational research with special emphasis on multivariate procedures. Computer oriented.

Requisites:
Prerequisite: EDCEP 817.

Typically Offered
Spring, Summer

EDCEP 923 - Higher Education Law

Credits: 3

This course will provide students with an overview of legal issues in higher education, with an emphasis on legal developments and trends in student affairs administration in particular.

Typically Offered
Spring-Even Years

EDCEP 924 - Theories of Vocational Counseling

Credits: 3

A historical and contemporary analysis of systems and

theories of vocational psychology and their implications for use in the counseling setting.

Requisites:
Prerequisite: EDCEP 852 or EDCEP 863.

Typically Offered
On sufficient demand

EDCEP 925 - Higher Education Finance

Credits: 3

The purpose of this course is to provide an overview of finance in higher education. Current challenges related to public funding of higher education, from both the federal and state government, will be addressed in this course. Additional focus will be devoted to the structure and function of financial aid systems as well as to options for the reform of those systems.

Typically Offered
Spring-Even Years

EDCEP 926 - Enrollment Management in Higher Education

Credits: 3

Examines enrollment management theories, concepts, and research and the application of these to higher education administration. Students demonstrate enrollment management strategies through the development of a comprehensive enrollment management plan for use in a college or university setting.

Typically Offered
Fall-Odd Years

EDCEP 927 - Higher Education Administration

Credits: 3

Administration theory applied to the organization and administration of colleges and universities; special reference to structure, governing boards, administrative roles, decision-making, and analysis of selected problems.

Typically Offered
Spring-Even Years

EDCEP 930 - Approaches to Academic Advising: Linking Theory, Research, and Practice

Credits: 3

This is an advanced study of foundational and emerging academic advising approaches. It aims to deepen student knowledge of the interdisciplinary scholarship and theory that underpin these approaches. Approaches will be from critical perspectives including applicability with different student groups and at different institutions; an evaluation of outcome research; and an exploration of assessment strategies.

Requisites:
Prerequisite: Admission to doctoral program Leadership in Academic Advising.

Typically Offered
Other

EDCEP 932 - Ethical Issues and Practice in Academic Advising

Credits: 3

This course explores ethical theories and principles, moral development frameworks, and value issues confronting academic advising leadership. It is based on the premise that all advising professionals are ethicists that make decisions every day. The course incorporates a comprehensive, interdisciplinary approach to ethical theories and practice in academic advising leadership.

Requisites:
Prerequisite: Admission to the doctoral program Leadership in Academic Advising.

Typically Offered
Other

EDCEP 934 - Research in Academic Advising

Credits: 3

This course examines specific applications of theoretical, quantitative, qualitative, and mixed research methods in academic advising. The course provides a framework for the development of a research proposal directly related to critical questions in the field.

Requisites:

Prerequisite: Admission to the Leadership in Academic Advising doctoral program.

Typically Offered
Other

EDCEP 937 - Administration of Academic Advising

Credits: 3

Examines and applies relevant theories, concepts, and models of academic advising, as well as issues and other factors related to the administration of academic advising in higher education.

Typically Offered
On sufficient demand

EDCEP 948 - Advanced Student Development Theory in College Student Affairs

Credits: 3

In-depth examination of the major young adult and adult development models and their implications within the context of student affairs in higher education.

Typically Offered
Fall-Even Years

EDCEP 951 - Multicultural Counseling

Credits: 3

Adaptations of generic counseling skills to meet the needs of diverse populations.

Typically Offered
Summer

EDCEP 955 - Legal and Ethical Issues in Counseling

Credits: 3

Examination of ethical standards developed by professional organizations of counselors. Current interpretations of standards and applications are developed through case studies, essays, reading, and literature review.

Typically Offered
Spring - Even Years

EDCEP 958 - Advanced Group Counseling

Credits: 3

The examination of selected group counseling theories and their relevance for the practice of group counseling in a variety of settings.

Requisites:
Prerequisite: EDCEP 858.

Typically Offered
Spring

EDCEP 959 - Practicum in Group Counseling

Credits: 3

Supervised group counseling experience in a variety of settings.

Requisites:
Prerequisite: EDCEP 858 and EDCEP 958.

Typically Offered
On sufficient demand

EDCEP 967 - Appraisal and Psychopathology

Credits: 3

Advanced application of appraisal models and methods for use with clientele. Specific personality tests and classification systems will be addressed.

Repeat for Credit
GC 12/1/21 TMS;

Requisites:
Prerequisite: EDCEP 715 and EDCEP 815

Typically Offered
Spring - Even Years

EDCEP 977 - Advanced Counseling Practicum

Credits: 3

Intense supervised practice in counseling. Particular emphasis will be given to the development of skills for intervention into human problems and time-limited case management.

Requisites:
Prerequisite: EDCEP 823, EDCEP 877, and EDCEP 887.

Typically Offered
Fall, Spring

EDCEP 985 - Advanced Counseling Theory

Credits: 3

Reading and analysis of primary sources in major counseling theories. Written reaction papers, presentations, discussion, and development of a major paper on a personal theory.

Requisites:
Prerequisite: EDCEP 823 and EDCEP 887.

Typically Offered
Fall

EDCEP 986 - Advanced Seminar in Counseling and Educational Psychology

Credits: 3

These seminars will critically consider recent research in the designated fields. The emphasis will be upon individual studies and small group interaction.. Enrollment is restricted to those students who have been admitted to the doctoral program in education and who have completed substantial amounts of graduate study in the designated fields.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDCEP 987 - Counseling Supervision Practicum

Credits: 3

An advanced course in the theory, techniques, and problems of supervising persons being trained as counselors. Course emphasis is on actual supervisory experiences with beginning counselors. Open to advanced doctoral students only with consent of instructor.

Typically Offered
On sufficient demand

EDCEP 991 - Internship in Counseling and Educational Psychology

Credits: 1-18

Studies of and field experiences in the development of programs in cooperating schools and educational or related agencies under the supervision of Counseling and Educational Psychology graduate faculty members. A maximum of 6 credit hours may be chosen from the areas listed.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDCEP 999 - Doctoral Research

Credits: 1-18

Individual investigation in the field of a student's specialization.

Requisites:
Prerequisite: Sufficient training to carry on the line of research undertaken.

Typically Offered
Fall, Spring, Summer

EDCI 505 - Introduction to Online Teaching and Learning

Credits: 3

Provides an overview of the history, current status, and anticipated future directions of online teaching and learning (OTL). Examines the impact of OTL within K-12 contexts.

Requisites:
Pre-Requisite: Admission to Teacher Education or valid K-12 teaching license.

Typically Offered
Summer

EDCI 506 - Online Instructional Design and Development I

Credits: 3

This course introduces participants to (a) key instructional systems design approaches to design and prototype online lessons for diverse learners and contexts, and (b) technology tools to develop and implement these lessons.

Requisites:
Prerequisite: Admission to Teacher Education or valid K-12 teaching license; EDCI 505.

Typically Offered
Summer

EDCI 507 - Online Instructional Design and Development II

Credits: 3

Participants develop online teaching and learning modules employing a variety of technology tools.

Requisites:
Prerequisite: Admission to Teacher Education or valid K-12 teaching license; EDCI 505; EDCI 506.

Typically Offered
Summer

EDCI 550 - Schooling and Popular Culture

Credits: 3

An examination of the symbiotic relationship of American public schools and American popular culture. The course will consider how schools are reflected in the popular culture and how the representation of schooling in popular culture affects public opinion, public policy, and schools themselves.

Typically Offered
Fall, Spring, Summer

EDCI 580 - Internship in Educational Studies

Credits: 6-9

The internship is the culminating experience for theBachelor of Science degree in Educational Studies (B.S.E.S.). Depending upon student academic and career interests, and in consultation with the program advisor and the faculty advisory committee, the student will receive a placement in an appropriate public or private site to serve a professional internship.

Typically Offered
Fall, Spring, Summer

EDCI 700 - Introduction to Bilingual/ESL Education

Credits: 3

This course focuses on the history and foundations of bilingual education, as well as an in-depth examination of contemporary programming models and trends in bilingual education. The dynamics of bilingualism at the individual, system, and societal levels will also be an emphasis of study.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Summer

EDCI 701 - Administration and Supervision of Vocational Education

Credits: 2-3

Emphasis on the duties and responsibilities of administrative and supervisory personnel responsible for the promotion, development, and coordination of comprehensive vocational-technical education programs at the local level.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Spring

EDCI 702 - Curriculum, Instruction, and Assessment

Credits: 3

Develops core concepts and skills necessary for effective teaching in elementary and secondary schools. The course examines curriculum, pedagogy, and assessment techniques.

Typically Offered
Spring

EDCI 703 - MAT Secondary Math Methods

Credits: 3

Principles of teaching applied to mathematics instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Typically Offered
Fall

EDCI 704 - Science Methods and Practicum for Teaching and Learning

Credits: 3

This course addresses principles of teaching applied to science instruction in the secondary school. These principles include: motivation; organization of subject matter; lesson planning for direct, inquiry, and social/personal instructional emphases; assessment; meeting the needs of individual students; organization and management of the classroom; and methodology and materials of the secondary school science classroom.

Typically Offered
Fall, Spring

EDCI 705 - MAT Social Studies Methods

Credits: 3

Principles of teaching applied to social studies instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Typically Offered
Fall

EDCI 706 - MAT Secondary English/Language Arts

Credits: 3

Principles of teaching applied to language arts instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of secondary and middle schools.

Typically Offered
Fall

EDCI 707 - FACS Methods and Practicum for Teaching and Learning

Credits: 3

This course focuses on the principles of teaching applied to Family and Consumer Sciences instruction; organization of subject matter, unit and lesson planning, evaluation and assessment, classroom management, motivation, learning styles, methodology and materials related to teaching Family and Consumer Sciences in the middle school and secondary classroom.

Typically Offered
Fall

EDCI 708 - Business Methods and Practicum for Teaching and Learning

Credits: 3

Principles of teaching applied to business education instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Typically Offered
Fall

EDCI 709 - Agricultural Education Methods and Practicum for Teaching and Learning

Credits: 3

Principles of teaching applied to agriculture education instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Typically Offered
Fall

EDCI 710 - Social Foundations of K-12 Education

Credits: 3

Examines the historical, political, philosophical, economic, legal, and sociological intersections of public education in the United States of America; emphasizes freedom, democracy, truth, power, and choice as core concepts of social change and social justice.

Typically Offered
Fall, Spring

EDCI 711 - Art Methods and Practicum for Teaching and Learning

Credits: 3

Principles of teaching applied to art instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools. Field-based experience to help the pre-professional teacher practice the incorporation of art with reading methods and demonstrate application of technology into teaching and assessment in the secondary and middle schools.

Typically Offered
Fall

EDCI 712 - MAT Foreign Language Methods

Credits: 3

Principles of teaching applied to foreign language instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Typically Offered
Fall

EDCI 713 - Occupational Analysis

Credits: 2-3

An introduction to various techniques used in analyzing occupations and jobs. Emphasis on developing and organizing related instructional materials and content.

Requisites:
Prerequisite: Prior or concurrent enrollment in EDSEC 620.

Typically Offered
Fall, Spring, Summer

EDCI 714 - Reading and the Bilingual Child

Credits: 3

The course will focus on appropriate instructional literacy and reading skill development among second language learners. A particular emphasis will be the development of literacy skills among students whose dominant language is other than English.

Requisites:
Prerequisite: Junior standing/Target Language Proficiency.

Typically Offered
Spring, Summer

EDCI 715 - Literacy and Diverse Learners in the Content Areas

Credits: 3

An examination of contemporary literacy and diverse learners in the secondary school content areas in light of learning theory and adolescents' stages of development. Course is designed for middle level and secondary teachers.

Typically Offered
On sufficient demand

EDCI 716 - Teaching Diverse Learners

Credits: 3

Examines teaching in a culturally diverse society. Emphasizes historically underrepresented students, culturally and linguistically diverse learners, abilities, exceptionalities, gender, religion, socioeconomic status, sexual orientation and preference. Additionally, this course explores environments that are healthy, respectful, supportive, and challenging for all students.

Typically Offered
Spring

EDCI 718 - Introduction to Educational Technology

Credits: 3

This course examines the roles that technology, teachers, and learners may take in any educational context; ways of integrating technology into teaching and learning; and issues involved in using technology in K-12 settings.

Note:
Course is offered on the web.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

EDCI 719 - Physical Education and Health Methods and Practicum for Teaching and Learning

Credits: 3

This course provides students opportunities to study, discuss, organize, and practice instructional methods designed specifically for secondary and middle school physical education/health programs.

Requisites:
Prerequisite: Admission to Curriculum and Instruction Graduate Program.

Typically Offered
Fall

EDCI 720 - ESL/Dual Language Methods

Credits: 3

An exploration of contemporary approaches, methods, and strategies for the appropriate instruction of second language learners. Also provided is a foundational perspective on ESL/Dual Language approaches, including the communicative, cognitive, and grammatical.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Summer

EDCI 721 - Learning Strategies and Study Skills

Credits: 3

An exploration of research-based strategies for empowering learners and connecting contemporary youth with the skills needed to develop mental stamina and engage in cross-disciplinary academic tasks.

Requisites:
Prerequisite: Senior standing or greater.

Typically Offered
On sufficient demand

EDCI 723 - Computer Applications in Subject Areas

Credits: 1-3

Theory and practice of using computer software to enhance teaching and learning in specific subject areas. Subjects covered will vary.

Repeat for Credit
Repeatable. May be repeated for credit in different subject areas.

Requisites:
Prerequisite: Junior standing.

Typically Offered
On sufficient demand

EDCI 724 - Fundamentals of Teaching Music

Credits: 1

Techniques, materials, and experiences for a variety of music classes will be examined through discovery. Furthermore, lesson plan development, writing, and implementation will be examined in detail.

Typically Offered
Fall, Spring

EDCI 725 - Music Methods for Elementary Schools

Credits: 1

The study of the musical characteristics of children and development of appropriate curriculum, instructional materials and techniques, and related technology for teaching musical understanding, literacy, multi-cultural connections, and creative improvisation in grades K-6 instrumental, vocal, and general music.

Typically Offered
Spring

EDCI 726 - Music Program in Middle and Secondary Schools

Credits: 1

Organization and administration of the comprehensive music program in middle and secondary high schools; including the study of vocal and instrumental ensemble development, as well as techniques, materials and appropriate instructional technologies.

Typically Offered
Fall

EDCI 727 - Advanced Methods in Music Education

Credits: 1

Advanced instructional methods and technologies related to the teaching of music in grades preK-12 implemented through field experiences

Typically Offered
Fall, Spring

EDCI 729 - Middle-Level Mathematics for Teachers

Credits: 3

This course reviews math concepts, problems and applications to help prepare teachers to pass the Middle School Mathematics Praxis Exam. The course helps teachers gain pedagogical content knowledge in relation to teaching mathematics.

Typically Offered
Fall, Summer

EDCI 730 - Education of the Disadvantaged

Credits: 3

Consideration of the life-space of the disadvantaged learner and its relationship to curriculum, organization, and interpersonal relationships in schools. The development of realistic, relevant goals for the teacher of the disadvantaged.

Requisites:
Prerequisite: Junior standing.

Typically Offered
On sufficient demand

EDCI 731 - ESL/Dual Language Linguistics

Credits: 3

Explores the theoretical underpinnings of language acquisition and linguistics that educators need to understand, in order to better plan appropriately adapted curriculum and instruction for second language learners. The course encompasses problematic aspects of English language learning, the ways in which languages may differ, and certain universal aspects of languages.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Summer

EDCI 732 - Practicum in Career Education

Credits: 1-6

Related occupational or professional experiences in approved industry, school, Cooperative Extension Service, or similar agency setting under faculty supervision.

Typically Offered
On sufficient demand

EDCI 733 - Curriculum Materials for Ethnic Diversity

Credits: 3

An examination and analysis of recent materials and practices of schools serving multiethnic student bodies, particularly minorities from disadvantaged backgrounds. Materials include any items used by the school in implementing the curriculum.

Requisites:
Prerequisite: Junior standing.

Typically Offered
On sufficient demand

EDCI 735 - Gender Implications for Education

Credits: 3

Implications of the research base on sex-role stereotyping in educational institutions. Examination of resource materials, teaching strategies, and policies intended to facilitate non-sexist educational environments.

Requisites:
Prerequisite: Senior standing.

Typically Offered
On sufficient demand

EDCI 737 - Practicum in Business and Office Occupations

Credits: 1-6

Related occupational or professional experiences in approved industry, school, Cooperative Extension Service, or similar agency setting under faculty supervision.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDCI 739 - Coordination of Cooperative Vocational Education

Credits: 2-3

Emphasis on legal aspects and other minimum requirements essential to conducting cooperative vocational education programs at the secondary and postsecondary levels.

Typically Offered
Fall, Spring, Summer

EDCI 740 - Culture and Language in Classroom Practice

Credits: 3

Examines ways teachers can address diversity in their classrooms with attention to issues such as critical reflection on practice; effective collaboration with families; diversification of the learning environment; use and adaptation of the grade-level curriculum; the differentiation of classroom instruction for cultural and linguistic diversity; and advocacy skill development

Requisites:
Prerequisite: Junior standing.

Typically Offered
Spring

EDCI 742 - ESL/Dual Language Assessment

Credits: 3

An in-depth examination of key issues/challenges in the appropriate language assessment of culturally and linguistically diverse students. Among focal topics in theory, research and practice discussed will be: pre-and post-instructional assessment, authentic and alternative assessment, language testing and placement for programming in ESL/Dual language classrooms.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Spring, Summer

EDCI 745 - ESL/Dual Language Elementary Practicum

Credits: 3

The practicum is a portfolio-based experience providing the student with application experiences in ESL/Dual Language methods, assessment, and multicultural competence as well as the opportunity to demonstrate understanding of second language acquisition. Students will be required to spend 60 hours in a school setting where they can practice and implement ESL/BE lessons/ methodology.

Requisites:
Prerequisite: EDCI 720, EDCI 731, EDCI 742, and EDCI 733 or EDCI 740.

Typically Offered
Fall, Spring

EDCI 746 - ESL/Dual Language Secondary Practicum

Credits: 3

The practicum is a portfolio-based experience providing the student with application experiences in ESL/Dual Language methods, assessment, and multicultural competence as well as the opportunity to demonstrate understanding of second language acquisition. Students will be required to spend 60 hours in a school setting where they can practice and implement ESL/BE lessons/ methodology.

Requisites:
Prerequisite: EDCI 720, EDCI 731, EDCI 742, and EDCI 733 or EDCI 740.

Typically Offered
Fall, Spring

EDCI 749 - Environmental Education

Credits: 1-3

The selection, adaptation, and development of environmental education K-12 curriculum materials: procedures for an integrated curricular implementation; the selection of appropriate instructional strategies. Background in environmental studies recommended.

Typically Offered
On sufficient demand

EDCI 755 - Multicultural Issues in Teaching

Credits: 3

Examines the socio-cultural forces that influence the American educational system. Considers curriculum and instruction implications of human differences, and analyzes ways to promote equitable, quality education.

Requisites:
Prerequisite: Senior standing.

Typically Offered
Fall

EDCI 756 - Tradebooks across the Curriculum

Credits: 3

This course examines the use of children's literature in the K-8 literacy classroom. It focuses on recently published books in several literary genres across curricular areas.

Requisites:
Prerequisite: EDEL 585, EDSEC 586, or EDSEC 582.

Typically Offered
Spring, Summer

EDCI 758 - Reading/Writing Connections

Credits: 3

This course examines teaching language arts in an integrated manner, exploring the relationships between reading and writing from a developmental perspective. Teaching methods for a holistic environment are highlighted.

Requisites:
Prerequisite: EDEL 585, EDSEC 586, or EDSEC 582.

Typically Offered
Summer

EDCI 760 - Action Research in Education

Credits: 3

This course introduces the theoretical and practical dimensions of school-based action research about curriculum and instruction topics, and students conduct an action research project. Access to the research site is required.

Typically Offered
Fall

EDCI 770 - Advanced Approaches in World Lang Ed

Credits: 3

The study of contemporary approaches, methods, and research-based best practices for world language instruction. Provides a venue to analyze and discuss programmatic and curricular decisions and how that impacts teaching and learning.

Requisites:
Prerequisite: EDSEC 500 and EDSEC 520.

Typically Offered
On sufficient demand

EDCI 771 - Assessment in World Language Education

Credits: 3

The course will study how to create, implement, and analyze world language assessments to enhance instruction and support learning

Requisites:
Prerequisite: EDCI 770

Typically Offered
Fall, Spring, Summer

EDCI 772 - Current Trends and Research in World Language Education

Credits: 3

Analyze current trends in world language education. Recent research will be stressed. Explore how this applies to curricular and instructional decisions.

Typically Offered
Fall, Spring, Summer

EDCI 773 - Contemporary Technology in World Language Education

Credits: 3

The course will study the pedagogical implications of instructional technologies to enhance and support world language education. There will be a focus on the constant evolution of technology and how it can enhance the teaching and learning of world language education.

Typically Offered
Fall, Spring, Summer

EDCI 775 - Readings in Curriculum and Instruction

Credits: 1-3

Readings in research and application in specialized areas in education.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

EDCI 776 - Teaching in Middle Schools

Credits: 3

Several instructional approaches consistent with the characteristics of the emerging adolescent student (grades 5-9) will be examined in relation to current research. Direct development of alternative curricular programs. Appropriate use of interdisciplinary activities and nontraditional materials will be emphasized.

Requisites:
Prerequisite: EDCEP 315.

Typically Offered
On sufficient demand

EDCI 779 - Primary School Education

Credits: 3

A course for those interested in the kindergarten and primary school child. Emphasis will be placed on curriculum development, pertinent research, and innovative practices in early education.

Requisites:
Prerequisite: Senior standing.

Typically Offered
Summer

EDCI 780 - Kindergarten Education

Credits: 3

A specialized study of the kindergarten in the American school: methods and materials for working with the kindergarten child, including communication and explanation skills and readiness for reading.

Requisites:
Prerequisite: Senior standing.

Typically Offered
On sufficient demand

EDCI 781 - Teaching the Theoretical Foundations of Constitutional Government

Credits: 1

Examines the theories (e.g., natural rights, classical republicanism, and constitutionalism) and theorists (e.g., Aristotle, Locke, Hobbes, and Montesquieu) that most influenced constitutional thinking in the United States. Explores how to teach effectively about these theories and theorists.

Typically Offered
Fall, Spring, Summer

EDCI 782 - Teaching the Historical Origins of Constitutional Government

Credits: 1

Examines seminal ideas, documents, and events in the creation of the United States Constitution such as problems with the Articles of Confederation, the characteristics of good government, the debates at the Philadelphia Convention, the Federalist Papers, and the Antifederalist Papers. Explores how to teach effectively these ideas, documents, and events.

Typically Offered
Fall, Spring, Summer

EDCI 783 - Teaching the Development of Constitutional Principles

Credits: 1

Examines the development of political ideas and constitutional thinking since the Founding. Focuses on how the Bill of Rights, the amendment process, judicial review, and the Fourteenth Amendment are used to empower and limit government. Explores how teach effectively about developments in constitutional thought.

Typically Offered
Fall, Spring, Summer

EDCI 784 - Teaching the Institutions of Government

Credits: 1

Examines the powers, limits, and development of political institutions such as Congress, the President, the Supreme Court, and political parties. Explores how teach effectively about these institutions.

Typically Offered
Fall, Spring, Summer

EDCI 785 - Teaching the Bill of Rights

Credits: 1

Examines the rights protected by the United States Constitution and the ways that rights empower citizens, limit government, and contribute to constitutional government. Explores how to teach effectively about rights.

Typically Offered
Fall, Spring, Summer

EDCI 786 - Topics in Curriculum and Instruction

Credits: 1-3

Examination of current topic in area of specialization of faculty.

Note:
Varied topics offered each semester so course may be repeated.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

EDCI 787 - Teaching Citizenship

Credits: 1

Examines development of the rights, responsibilities, and challenges of citizenship in the United States. Explores how teach effectively about citizenship.

Typically Offered
Fall, Spring, Summer

EDCI 788 - Teaching the Constitutional Principles of America's Founders.

Credits: 3

Develops constitutional principles; explores perspectives of constitutional interpretation, change, and preservation; raises questions about the immediate and enduring significance of America's founding principles and documents; and introduces sound pedagogical practices to teach about them.

Typically Offered
Fall

EDCI 789 - Methods and Materials in Civic Education

Credits: 3

Focuses on the pedagogical aspects of civic education and engagement such as research-based approaches to concept attainment, skill development, discussion, and deliberation as well as analysis of curriculum materials and programs that apply these pedagogies.

Typically Offered
Spring

EDCI 790 - Engaged Citizens: Public Policy Issues and Processes

Credits: 3

Examines the teaching of the workings of constitutional government through the lens of the public policymaking processes and the roles of individual voters, organized publics, the media, and state and local governments in that process.

Typically Offered
Summer

EDCI 791 - Teaching Science and Mathematics in the Elementary School

Credits: 4

Develops knowledge, skills, and dispositions to effectively teach elementary science and mathematics. Introduces content, methods, and materials. Explores curriculum integration.

Requisites:
Prerequisite: Admission to MAT Program.
Corequisite: EDCI 800.

EDCI 792 - Teaching Social Studies, Reading, and Literacy in the Elementary School

Credits: 4

Develops knowledge, skills, and dispositions to effectively teach elementary social studies, reading, and language arts. Introduces content, methods, and materials. Explores curriculum integration.

Requisites:
Prerequisite: Admission to MAT Program.
Corequisite: EDCI 800.

Typically Offered
Fall

EDCI 793 - Teaching Health, Movement, and Fine Arts in Elementary Schools

Credits: 4

Develops knowledge, skills, and dispositions to effectively teach health, movement, and fine arts. Introduces content, methods, and materials. Explores curriculum integration.

Requisites:
Prerequisite: Admission to MAT Program.

Typically Offered
Spring

EDCI 794 - Advanced Methods of Teaching

Credits: 3

Examines popular theories, important principles, research-based strategies, and best practices associated with effective teaching. Provides a venue to apply theory to practice; connect ideas and actions; and link content and pedagogy.

Typically Offered
Fall, Spring, Summer

EDCI 795 - Problems in Curriculum and Instruction

Credits: 1-18

Independent study of a specific problem in curriculum or instruction.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

EDCI 796 - Brain-Based Literacy Instruction

Credits: 3

This course provides advanced study of theory and research regarding literacy acquisition related to brain development and function. The intended audience includes K-12 regular classroom teachers, reading teachers, resource room teachers, teacher aides, and other professionals concerned with meeting the literacy needs of children and young adults. The following topics are covered in the course: Cognitive functions, memory systems, sensitive/ critical periods for brain development related to literacy, implications for classroom environment and stress upon student performance, executive functions and research-based instructional strategies found to increase student performance.

Typically Offered
On Sufficient Demand

EDCI 797 - Secondary Content Field Colloquium I

Credits: 2

This course is designed to explore key concepts within the secondary content field. Focus will be on advancing the development of disciplinary content knowledge and pedagogical content knowledge.

Typically Offered
Summer

EDCI 798 - Secondary Content Field Colloquium II

Credits: 2

This course is designed to explore additional key concepts within the secondary content field. Focus will be on advancing the development of disciplinary content knowledge and pedagogical content knowledge.

Typically Offered
Fall

EDCI 799 - Secondary Content Field Colloquium III

Credits: 2

Class explores the content knowledge of the candidate in regards to the middle and secondary content curriculum, identifies areas of strength and weakness in content knowledge, and provides enrichment and remediation to prepare the candidate for the internship experience.

Typically Offered
Intersession

EDCI 800 - Teaching Practicum

Credits: 1-6

Participate in supervised field experience in K-12 schools. Apply principles of curriculum, instruction, and assessment to plan, teach, and reflect.

Requisites:
Prerequisite: Admission to MAT Program.
Corequisites: EDCI 791, EDCI 792.

Typically Offered
Fall

EDCI 801 - Internship in K-12 Schools

Credits: 4

Supervised experience teaching in discipline-specific K-12 school classrooms.

Typically Offered
Fall, Spring

EDCI 803 - Curriculum Development

Credits: 3

An overall view of the entire school curriculum, patterns of organization, outlining of instructional fields, and specific helps in curriculum development for administrators and classroom teachers.

Typically Offered
Fall, Spring, Summer

EDCI 810 - In-Service Education for Beginning Family and Consumer Sciences Teachers

Credits: 2-3

For beginning teachers who desire assistance with career and technical program management, instructional planning and delivery, professional role development, and the organization of information related to career and technical family and consumer sciences teaching.

Requisites:
Prerequisite: EDSEC 500.

Typically Offered
Fall, Spring, Summer

EDCI 812 - History of Education

Credits: 3

The history of education is explored critically through multiple perspectives. Complex forces governing changes in education are exposed--forces that are felt but unseen. By studying historical contexts, much about schooling today is seen as problematic and open to question--not as inevitable. This study pushes past a passive acceptance of the status quo via a vigorous, fresh analysis.

Typically Offered
Spring

EDCI 813 - Comparative Philosophies of Education

Credits: 3

Philosophical thought in education is examined critically through multiple perspectives. The learning environment, the role of the learner, and the role of the teacher are issues central to analysis in the course as they manifest themselves in learning and teaching for social change and social justice. The questions of what are freedom, democracy, truth, power, and choice are central to the examination.

Typically Offered
Fall

EDCI 814 - Understanding and Teaching Reading

Credits: 3

Foundational issues in K-12 reading instruction. Focus on the reading process, the nature of the learner, the text, and the instructional setting.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
On sufficient demand

EDCI 816 - Approaches to Reading Instruction

Credits: 3

A foundational study of research-based approaches, materials, and methods for effective K-12 reading instruction.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Fall

EDCI 817 - Reading Comprehension

Credits: 3

Reviews comprehension theory and research; explores strategies for developing reading comprehension in readers. K-12; examines evaluative devices for assessing comprehension abilities.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
On sufficient demand

EDCI 818 - Theoretical Models of Reading

Credits: 3

Advanced study of reading with an emphasis on foundational theories and seminal research studies reflecting the complexity of the reading process.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Spring-Odd Years

EDCI 820 - Contemporary Issues in Language Arts

Credits: 3

An analysis of current methods, issues, and trends in teaching, speaking, listening, and writing through the study of significant literature and research findings.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
On sufficient demand

EDCI 821 - Advanced Methods in the Teaching of K-12 Mathematics

Credits: 3

Advanced study of selected topics in K-12 mathematics emphasizing new programs, trends, controversial topics, and new recommendations for persistent problems; findings of recent research stressed.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
On sufficient demand

EDCI 822 - Contemporary Issues in Social Studies

Credits: 3

Current methods, materials, issues, and trends in developing social consciousness among K-12 students. Social science strategies usable by students.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
On sufficient demand

EDCI 823 - History of Mathematics Education

Credits: 3

This course will examine the issues and forces behind the evolution of mathematics education reform from 1820-present. Historical readings, mathematics curricula, analysis of political and social change, and research in both psychology and mathematics education will be analyzed to establish a foundation for understanding current reform efforts.

Typically Offered
Fall

EDCI 825 - Research in Mathematics Teaching and Learning

Credits: 3

This course will focus on seminal and contemporary

research in mathematics teaching and learning. Emphasis will be placed on current trends in K-12 classrooms, the relationship between curriculum and instruction to current mathematics education research, critical analysis of research practices, solving and analyzing problems, and designing goals and outcomes for instructional strategies.

Typically Offered
Summer

EDCI 826 - Contemporary Technologies in Mathematics Education

Credits: 3

The purpose of this class is to explore the theoretical implications of using technology as a tool for teaching mathematics in K-12 classrooms. The course content will focus on the continual evolution of technology and how this evolution can assist in the teaching and learning of mathematics.

Typically Offered
Fall

EDCI 827 - Theoretical Models of Mathematics Teaching and Learning

Credits: 3

This course will focus on the theories of learning, which provide a foundation for the standards for mathematical practice. The course will specifically address historical and contemporary theories related to mathematics teaching and learning.

Typically Offered
Spring-Even Years

EDCI 828 - Assessment in Mathematics Education

Credits: 3

This course will provide participants with assessment tools necessary to enhance learning for diverse student populations. The course will explore ways to document student performance and progress for instructional and accountability purposes. Participants will become familiar with quantitative and qualitative concepts and practices used to evaluate student learning in the classroom.

Typically Offered
Summer-Even Years

EDCI 830 - Contemporary Issues in Family and Consumer Sciences Education

Credits: 3

Advanced study of evolving trends and materials for Family and Consumer Sciences programs; application to teaching and curriculum.

Requisites:
Recommended prerequisite: EDSEC 621 and teaching experience.

Typically Offered
Summer

EDCI 831 - Contemporary Issues in Teaching and Learning

Credits: 3

Advanced study of selected topics and contemporary issues in curriculum and instruction emphasizing new programs, trends, instructional strategies, and curricular issues. Findings of recent research are stressed.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Spring, Summer

EDCI 834 - Improving Science Teaching

Credits: 3

Evaluation and implementation of psychological and philosophical foundations will be stressed in improving K-12 science teaching.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
On sufficient demand

EDCI 835 - Supervision of Student Teaching

Credits: 3

Organization and functions of student teaching programs; orienting, supervising, and evaluating student teachers in elementary and secondary schools.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Spring

EDCI 840 - Literacy Assessment

Credits: 3

An overview of the collection, analysis, and interpretation of data from formal and informal assessment methods and instruments to enhance literacy instruction by documenting growth and literacy development.

Requisites:
Prerequisite: EDCI 816.

Typically Offered
Fall-Odd Years

EDCI 841 - Supporting Struggling Readers

Credits: 3

Explores the identities of "struggling readers" across grade levels to address the importance of interest, motivation, gender, culture, and language on learning to read with an emphasis on differentiated instruction to support literacy development and lifelong reading.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Spring-Even Years

EDCI 844 - Curriculum Development in Family and Consumer Sciences

Credits: 3

The course focuses on current trends in career and technical family and consumer sciences curricula. Designed to assist family and consumer sciences teachers and supervisors in the articulation of secondary programs, analysis, and development of curriculum models for specific school situations.

Requisites:
Prerequisite: EDSEC 620.

Typically Offered
Fall, Summer

EDCI 845 - ELD/Dual Language Methods

Credits: 3

This course is an exploration of contemporary approaches, methods, and strategies for the appropriate instruction of second language learners. The course examines the theories of Second Language Acquisition and the need to consider the biographies of students within the scope of classroom teaching and learning. Also explores foundational perspectives on EFL/dual language approaches, including the communicative, cognitive, and grammatical.

Typically Offered
Fall, Spring, Summer

EDCI 846 - ELD/Dual Language Culture and Language in Classroom Practice

Credits: 3

This course examines the many ways in which school educators may build the capacities for cultural and linguistic diversity in the classroom. Special emphasis is placed upon readiness for mutually accommodative professional practices with *culturally and linguistically diverse* [CLD] students and families in the following areas: foundations of culture and language; critical reflection on practice; maximizing the assets that CLD students and families bring to learning; school and classroom ecology; curriculum conscientiousness; the differentiation of instruction for cultural and linguistic diversity; and a framework for advocacy in practice.

Typically Offered
Fall, Spring, Summer

EDCI 847 - ELD/Dual Language Assessment

Credits: 3

This course provides an overview of current issues regarding the assessment of CLD students within classroom practice. Examines pre-instructional student assessment; the acculturation process and asset discovery; issues of

language proficiency beyond the measurements; focus on pre-assessment, formative, and summative assessment; using interactive grouping configurations and learning strategies as an integral part of the assessment process; assessments for students in special education settings.

Typically Offered
Fall, Spring, Summer

EDCI 849 - Directed Professional Development/Secondary

Credits: 5

Research and teaching under supervision in the secondary school. Open only to outstanding liberal arts graduates enrolled in the special program for the professional preparation of such graduates for teaching in critical areas in secondary schools.

Typically Offered
On sufficient demand

EDCI 851 - Research and Practice in Classroom Technology

Credits: 2

Curriculum, educational technology, and assessment research and theory and examined and aligned with national models and standards for the integration of technology into instruction to support teacher effectiveness and student achievement. Internet access and e-mail are required. Familiarity with a web page construction kit is recommended.

Requisites:
Prerequisite: Introductory educational technology course or equivalent.

Typically Offered
Fall

EDCI 858 - Online Course Design Project/e-Portfolio

Credits: 2

The portfolio as a professional development tool is developed using Association for Educational Communications and Technology standards. An online instructional design course project with assessment is developed and placed on an e-portfolio website.

Requisites:
Prerequisite: Admission to Digital Teaching and Learning Specialty.

Typically Offered
Fall, Spring, Summer

EDCI 862 - Instructional Systems Design

Credits: 3

This course examines ways to design instructional modules based on key principles of instructional systems design.

Note:
Graduate Level Course

Requisites:
Prerequisite: EDCI 718 or equivalent course

Typically Offered
Fall

EDCI 863 - Online Teaching and Learning

Credits: 3

This course examines ways to design and develop online instructional modules based on key principles of instructional systems design.

Requisites:
Prerequisite: EDCI 718 or equivalent course and EDCI 862 or equivalent course

Typically Offered
Spring

EDCI 864 - Social/Cultural Issues in Educational Technology

Credits: 3

This course addresses social and cultural issues pertaining to the integration of educational and communications technologies (ECT) into teaching and learning; examines concerns relating to equitable access to ECT; explores the impact of ECT adoption and use upon diverse social/cultural groups; and addresses designing and developing culturally cognizant, appropriate, and relevant ECT.

Requisites:
Prerequisite: EDCI 718 or equivalent course.

Typically Offered
Summer

EDCI 865 - Hypermedia for Educators

Credits: 3

Examines hypermedia as teaching and learning tools; also explores issues, research, and theory about learning from nonlinear media. Advanced techniques for designing hypermedia on the Web.

Requisites:
Prerequisite: EDCI 718.

Typically Offered
On sufficient demand

EDCI 866 - Educational Technology Change Management

Credits: 3

This course introduces participants to the knowledge and skills needed to become agents of positive technological change within their workplaces. Topics covered include diffusion of innovations, needs assessment, change management, systemic change, human performance technology, socio-cultural cognizance, and inclusion/equity.

Requisites:
Prerequisite: EDCI 718 or admission into the Ed.D. program

Typically Offered
Summer

EDCI 871 - World Language Education Practicum

Credits: 3

Participate in a supervised field experience in a PK-12 world language classroom. Apply the principles of best practice in world language curriculum and instruction planning, instruction, assessment, and reflection.

Requisites:
Corerequisites: EDCI 770, EDCI 771, EDCI 772, EDCI 773

Typically Offered
Fall, Spring, Summer

EDCI 873 - The Science Curriculum

Credits: 3

National curriculum programs and projects at both elementary and secondary levels. Evaluation of appropriateness of content as it relates to a philosophy of science education. Modes for investigating scientific phenomena and their subsequent use in teaching the processes of the scientists.

Requisites:
Prerequisite: EDCI 803.

Typically Offered
On sufficient demand

EDCI 874 - The Mathematics Curriculum

Credits: 3

Historical and current trends and influences in mathematics curriculum. Analysis of research on teaching, learning, and assessment in mathematics education.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
On sufficient demand

EDCI 876 - The Social Studies Curriculum in the Secondary School

Credits: 3

New trends, materials, and ideas in teaching K-12 social sciences, based on recent research and experimental programs.

Requisites:
Prerequisite: EDCI 803.

Typically Offered
On sufficient demand

EDCI 877 - The Foreign Language Curriculum

Credits: 3

New trends and materials in teaching the foreign languages, based on recent research and experimental programs.

Requisites:
Prerequisite: EDCI 803.

Typically Offered
On sufficient demand

EDCI 878 - The Language Arts Curriculum

Credits: 3

The changing scene in the teaching of English: trends, materials, and ideas in literature, composition, and grammar that have emerged from recent research and discovery.

Requisites:
Prerequisite: EDCI 803.

Typically Offered
On sufficient demand

EDCI 882 - Teaching and Learning Models

Credits: 3

Advanced study of ways to organize the curriculum, instructional strategies, and the teaching environment to promote learning. Various models of teaching are analyzed and critiqued.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Fall

EDCI 886 - Seminar in Curriculum and Instruction

Credits: 1-18

Intensive discussion of research or problems of current professional interest based on study of pertinent original literature.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
On sufficient demand

EDCI 887 - Educational Technology Proseminar I

Credits: 3

Examines contemporary issues related to the role of technology in teaching and learning. Topics covered reflect current theory, research and practice within the discipline of educational technology. This is the first of a two-course sequence examining a wide range of issues; the second course is EDCI 888.

Requisites:
Prerequisite: EDCI 718 or equivalent course

Typically Offered
Fall

EDCI 888 - Educational Technology Proseminar II

Credits: 3

Examines contemporary issues related to the role of technology in teaching and learning. Topics covered reflect current theory, research and practice within the discipline of educational technology. This is the second of a two-course sequence examining a wide range of issues; the first course is EDCI 887.

Requisites:
Prerequisite: EDCI 718 or equivalent course

Typically Offered
Spring

EDCI 890 - Master's Project

Credits: 1-6

Students select and prepare a project designed to improve their professional practice. It may be the construction of a professional portfolio or project to represent the student's learning throughout the master's degree program.

Requisites:

Prerequisite: Teaching experience.

Typically Offered
Fall, Spring, Summer

EDCI 898 - Master's Report

Credits: 1-18

A master's report is generally shorter than a thesis and presents the results of a more limited original investigation or a problem or topic within the student's classroom or educational field approved by the candidate's supervisory committee.

Requisites:
Prerequisite: Permission by department head.

Typically Offered
Fall, Spring, Summer

EDCI 899 - Master's Thesis

Credits: 1-18

A master's thesis presents the results of an original investigation or a problem or topic within the student's classroom or educational field approved by the candidate's supervisory committee.

Requisites:
Prerequisite: Permission by department head.

Typically Offered
Fall, Spring, Summer

EDCI 900 - Introduction to Ed.D. Doctoral Studies

Credits: 3

This course guides Ed.D. students in becoming acclimated to doctoral studies and research. Students are engaged in discussion and dialogue about the purpose of doctoral studies in education, as well as the responsibilities associated with doctoral studies and research: academic integrity, research ethics, and inclusive learning environment. Specifically, students explore doctoral studies as a way to transform ideas, epistemologies, and theories into praxis for addressing problems of practice and policy in schools.

Typically Offered
Summer

EDCI 901 - Literature Reviews for Doctoral Research

Credits: 3

This course explores the purpose and development of literature reviews in educational research. Students learn methods of engaging, organizing, and synthesizing literature. Students examine different theoretical frameworks and think about how certain theories can be used to address their problems of practice and policy in schools. Students will begin reviewing literature for doctoral research.

Typically Offered
Summer

EDCI 907 - Curriculum Theory

Credits: 3

Theoretical concepts underlying significant curriculum developments. A systematic critique of current curricular theory. Consideration of model generation.

Requisites:
Prerequisite: EDCI 803.

Typically Offered
Fall

EDCI 910 - Multicultural Curriculum Programming

Credits: 3

Application of multicultural curriculum principles to total school programming with particular emphasis on the cultural pluralism phenomenon. Includes analytic review of instruments on multicultural/multiracial curriculum evaluation as well as planning skills for equitable thrusts. Primarily involves elementary and secondary focus with some attention to postsecondary programming.

Typically Offered
Fall, Summer

EDCI 912 - Historical Research Methods in Education

Credits: 3

Historical research is the contextual link of the past to the present. Offering new perspectives and analyses, this course is an introduction to the methodology of historical research in education and an introduction to historical writing about educational issues. A historical research paper/project is the culminating experience.

Repeat for Credit
Not repeatable.

Typically Offered
Fall-Even Years

EDCI 920 - Narrative Inquiry in Education

Credits: 3

This course examines theoretical underpinnings of narrative inquiry, narrative analysis, narrative data collection, narrative writing, and contemporary narrative research issues in education.

Requisites:
Prerequisite: EDLEA 838.

Typically Offered
Other

EDCI 929 - Supervision in Career and Technical Education

Credits: 2-3

Philosophy and principles of effective supervision related to occupational education programs; application of principles to problems met by student teacher supervisors.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Fall, Summer

EDCI 930 - Leadership in Literacy

Credits: 3

A seminar to prepare reading professionals to work as literacy leaders, advocates, and coaches to support district and school literacy professional development.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Summer-Even Years

EDCI 940 - Organization and Administration of Career and Technical Education

Credits: 3

An overview of the organization of occupational education programs in agriculture, business, distributive education, health, family and consumer science, trade and industry, technical, and related fields and their administration. Emphasis on federal-state-local relationships.

Requisites:
Prerequisite: EDSEC 701.

Typically Offered
Fall, Summer

EDCI 943 - Principles of College Teaching

Credits: 3

Principles of learning, learning theory, educational objectives, methods and techniques, college students, and evaluation in the classroom. Emphasis upon preservice and in-service help in improving instruction at the college level.

Typically Offered
Fall, Spring

EDCI 945 - Clinical Practicum in Reading

Credits: 3

Supervised K-12 practicum with candidates working with individuals and small groups of readers using a wide range of evidence-based instructional practices, approaches, and curricular materials.

Requisites:
Prerequisite: EDCI 816, EDCI 818, EDCI 840, and EDCI 841. Prior or concurrent enrollment in EDCI 930.

Typically Offered
Summer

EDCI 972 - Advanced Study of the Reading Process

Credits: 3

Survey of selected theories of the reading process. Investigation of the interrelationships of the reading act: cognitive processes; language; social-emotional factors; and experience. Emphasis upon recent developments in the field.

Requisites:
Prerequisite: EDCI 816.

Typically Offered
On sufficient demand

EDCI 975 - Internship in Reading

Credits: 1-4

Professional field experience for candidates to demonstrate expertise by supporting reading development, analyzing building and district needs, developing action plans, and conducting related professional development.

Requisites:
Prerequisite: EDCI 945.

Typically Offered
Fall, Spring

EDCI 986 - Advanced Seminar in Curriculum and Instruction

Credits: 1-18

These seminars will critically consider recent research in the designated fields. The emphasis will be upon individual studies and small group interaction. Enrollment is restricted to those students who have been admitted to the doctoral program in education and who have completed substantial amounts of graduate study in the designated fields.

Typically Offered
On sufficient demand

EDCI 991 - Internship in Curriculum and Instruction

Credits: 1-18

Studies of and field experiences in the development of programs in cooperating schools and educational or related agencies under the supervision of College of Education graduate faculty members. A maximum of 6 credit hours may be chosen from the areas listed.

Requisites:
Prerequisite: Only TELRN non-licensure track students and Ed.D. students may enroll in EDCI 991 and/or list EDCI 991 on their Program of Study. Permission of department head.

Typically Offered
Fall, Spring, Summer

EDCI 999 - Research in Curriculum and Instruction

Credits: 1-18

Doctoral research demonstrates the candidate's ability to conduct significant original research related to curriculum and instruction, to analyze the information obtained from the research, and to present the results in a dissertation format appropriate to the educational field.

Requisites:
Prerequisite: EDCEP 817.

Typically Offered
Fall, Spring, Summer

EDEL 502 - Independent Study in Elementary Education

Credits: 1-3

Selected topics in professional education. Maximum of 3 hours applicable toward degree requirements.

Requisites:
Prerequisite: Consent of department chair.

Typically Offered
Fall, Spring, Summer

EDEL 520 - Physical Education/Health Methods for PK-6 Schools

Credits: 3

This class includes both theoretical and practical guidelines

for analysis and implementation of children's physical education/health. The course focuses on applications of the Kansas standards for elementary educators PK-6 grades.

Requisites:
Prerequisite: Admission to Teacher Education
Corequisites: EDCI 320, EDEL 521.

Typically Offered
Spring

EDEL 585 - Teaching Internship in Elementary School

Credits: 1-15

Observation and teaching participation under the direction of selected elementary teachers.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Admission to Professional Semester.

Typically Offered
Fall, Spring

EDEL 620 - Foreign Language Elementary School Methods

Credits: 3

Methods of teaching and organization for the foreign language program in the elementary school.

Requisites:
Prerequisite: A score of "2" or "Advanced" on the Oral Proficiency Interview (OPI) is required.
Prerequisite or corequisite: EDCEP 315. Concurrent enrollment required for EDEL 621.

Typically Offered
Spring

EDEL 621 - Foreign Language Elementary School Practicum

Credits: 1

A teaching experience to apply the methods of teaching and organization for the foreign language program in the elementary school.

Requisites:
Prerequisite: Concurrent enrollment required for EDEL 620.

Typically Offered
Spring

EDLEA 502 - Independent Study in Educational Leadership

Credits: 1-3

Selected topics in professional education.

Note:
Maximum of three hours applicable toward degree requirements.

Requisites:
Prerequisite: Consent of department chair.

Typically Offered
Fall, Spring, Summer

EDLEA 770 - Educational Change and Technology

Credits: 2

This course deals with educational change, teaming, and information literacy. Three thrusts are considered: the emerging technologies and educational change, shaping change with technology, and the use of technology/information literacy to transform teaching and learning.

Requisites:
Prerequisite: Teaching experience.

Typically Offered
Spring

EDLEA 775 - Readings in Educational Leadership

Credits: 1-3

Readings in research and application in specialized areas in education.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of department chair.

Typically Offered
Fall, Spring, Summer

EDLEA 786 - Topics in Educational Leadership

Credits: 1-3

Examination of current topic in area of specialization of faculty.

Note:
Varied topics offered each semester so course may be repeated.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of department chair.

Typically Offered
Fall, Spring, Summer

EDLEA 795 - Problems in Educational Leadership

Credits: 1-18

Selected students are permitted to secure specialized training appropriate to the needs of the individual. The student's project may involve intensive library investigation in a special field or the collection and analysis of data pertinent to a given problem. All work is done independently under the direction of a faculty member.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

EDLEA 801 - Ethical Dimensions of Educational Leadership

Credits: 3

The course rests on the assumption that leadership is a subset of ethics rather than ethics being a subset of leadership. We will examine the ethics of what leaders are, what they do, and how they do it. Students will assess the public and private ethics of leaders, the ethical obligations of leaders and followers, the ways in which leaders shape the ethical environment of institutions, and the temptations of power. We will examine ethical issues related to leadership through case studies concerning leaders in a variety of contexts and cultures. The course looks at how leaders convey values through actions, language, and as role models. It aims to expand students' ethical point of view by first considering personal ethics, then moving on to look at leadership and the common good, and finishing with an examination of ethics in learning communities.

Typically Offered
Fall

EDLEA 810 - Historical and Philosophical Analysis of Leadership in Education

Credits: 3

This course seeks to insure that students understand the historical and philosophical background that forms the foundation for current educational systems, offerings, and practices, with a focus on educational leadership. Students will be expected to gather information and research from both primary and secondary sources, be reflective practitioners, and apply higher level cognitive and affective skills. Abilities in writing and critical analysis will be required as students apply, analyze, synthesize, and evaluate a variety of writings regarding the history and philosophy of education in the United States, as well as international influences.

Typically Offered
Summer

EDLEA 811 - Philosophy of Education

Credits: 3

A critical analysis of major educational philosophies with discussion of their impact on the problem of education for democracy.

Requisites:
Prerequisite: Twelve hours of education and consent of instructor.

Typically Offered
Fall, Spring, Summer

EDLEA 819 - Introduction to Education Finance

Credits: 3

An examination of P-12 public school fiscal policy construction and daily operational issues, including evaluation of local, state, and federal fiscal support, tax structures, distributional formulas, finance reform strategies, and budget preparation and administration.

Typically Offered
Summer

EDLEA 825 - Strategic Leadership in Education

Credits: 3

This course deals with an overview of educators becoming strategic leaders at the program, building, and district levels. Two central thrusts are considered: (1) professional and ethical leadership, and (2) information management and evaluation leadership. Emphasis is placed on knowledge, skills and attributes to identify contexts, developing with others vision and purpose, utilizing information, framing problems exercising leadership processes to achieve common goals, and acting ethically for educational communities.

Typically Offered
Fall, Summer

EDLEA 827 - Political and Community Leadership in Education

Credits: 3

A study of the relationship between the school and the community, with special emphasis on the development of a comprehensive community education program. Organizational patterns, financing, program development, and interaction with other community agencies are analyzed.

Requisites:
Prerequisite: One year of teaching experience.

Typically Offered
Other

EDLEA 828 - Scholarly Orientation to Graduate Studies

Credits: 3

This course offers graduate students opportunities to learn how to write in a scholarly way, manage bibliography, understand formatting and citational guidelines of American Psychological Association, conduct index-driven library searches for scholarly sources, and develop an understanding of academic standards of graduate studies in education.

Typically Offered
Fall, Summer

EDLEA 830 - Introduction to Educational Facility Planning

Credits: 3

An introduction to the principles and processes involved in providing an appropriate physical infrastructure for P-12 education. Emphasis is placed on planning, financing, constructing, maintaining, and utilizing physical resources.

Typically Offered
Summer

EDLEA 831 - Educational Law

Credits: 3

An examination of the legal status of educational institutions in the United States; the legal rights and responsibilities of educators including due process, tort liability, and contracts; student rights; landmark court decisions; federal and state legislation impacting on education, and resources available to assist in developing solutions to legal problems.

Typically Offered
Fall, Summer

EDLEA 834 - Strategies for Educational Change

Credits: 3

This course provides educators with conceptual knowledge concerning the problems and processes of educational change. Case studies of change are analyzed in the attempt to develop models of educational change.

Typically Offered
Summer

EDLEA 835 - The Principalship

Credits: 2

Analysis of the principal's role as he or she interacts with various referent groups. Applicable to both elementary and secondary administration.

Requisites:
Prerequisite: One year of teaching experience.

Typically Offered
Fall

EDLEA 836 - School-Community Relations

Credits: 3

Interrelationships that exist between the school and the community and the role of the teacher and administrator in such relationships.

Typically Offered
Other

EDLEA 838 - Qualitative Research in Education

Credits: 3

An overview of theoretical and philosophical perspectives informing qualitative research is presented. In addition, methods (design, data collection, data analysis, and reporting) used in qualitative research for educational settings are examined and applied.

Typically Offered
Fall, Spring

EDLEA 841 - District, Building, and Program Leadership in Education

Credits: 3

This course deals with an overview of educators becoming leaders of instruction at the district, building, and program level. Four thrusts are being considered (1) instruction, (2) curriculum, (3) staff development, and (4) supervisory leadership. Considerable emphasis is placed on knowledge, skills, and attributes of learning leadership. Themes of planning, conducting, and assessing performance are covered in depth.

Typically Offered
Spring, Summer

EDLEA 845 - Leadership for Diverse Populations

Credits: 3

Designed for educators to increase their knowledge of self and others regarding issues of diversity. An emphasis is placed on understanding the role of educators inpromoting practices and policies supportive of all stakeholders in the educational organization.

Typically Offered
Summer

EDLEA 848 - Understanding Theoretical Frameworks

Credits: 3

Students will explore a variety of philosophical stances that underpin research methods. Examines the nature of reality (ontology) and knowledge (epistemology). Students are expected to develop a personal philosophy of inquiry that will help inform their theoretical and methodological approaches to research.

Requisites:
Recommended Prerequisite: EDLEA 838.

Typically Offered
Fall

EDLEA 855 - Administrative Leadership in Curriculum

Credits: 3

This course identifies the major roles and responsibilities of

school administrators in curriculum-related activities. Administrative skills necessary for developing and evaluating the curriculum will be examined.

Typically Offered
Other

EDLEA 865 - Administrative Leadership in Staff Development

Credits: 3

This course focuses on the role of the administrator in developing, implementing, and evaluating staff development programs. Superintendent, building-level administrator, and staff development director leadership skills will be analyzed.

Typically Offered
Fall, Spring, Summer

EDLEA 875 - Administrative Leadership in Staff Supervision

Credits: 3

This course identifies the major roles and responsibilities of superintendents and building-level administrators as supervisors of staff in a K-12 school district.

EDLEA 885 - Technology Leadership for Administrators

Credits: 3

A course designed to provide an in-depth analysis of administrator technology leadership skills necessary for integrating technology in education. The roles and technologies of technology leadership will be studied in the context of staff development, supervision, and curriculum articulation. Considerable attention will be given to strategies necessary for creating district and building technology plans.

Typically Offered
Fall, Summer

EDLEA 886 - Seminar in Educational Leadership

Credits: 1-18

Intensive discussion of a problem of current professional interest based on study of pertinent original literature.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

EDLEA 889 - Practicum in Educational Leadership

Credits: 1-3

Supervised on-the-job experience in school leadership.

Typically Offered
Fall, Spring

EDLEA 898 - Master's Report

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

EDLEA 899 - Master's Research

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

EDLEA 901 - The School District Leader

Credits: 3

An examination of research and practice, looking at the role of the school superintendent through the standards for School Leaders, as developed by the Interstate School Leaders Licensure Consortium (ISLLC) and adapted by the state of Kansas for licensure requirements for the district leadership license. Emphasis is placed on leading school improvement efforts, and forming and sustaining purposeful learning communities.

Typically Offered
Fall

EDLEA 902 - District Leader Internship

Credits: 1-3

Satisfies the internship requirement for the district leadership license recommendation. Students are required to document a minimum 150 clock hours guided field experience through a formal internship and other coursework (i.e., additional internship requirements beyond EDLEA 902 are also imbedded in many courses in the licensure sequence to assist in reaching the 150 clock hour requirement).

Typically Offered
Fall, Spring

EDLEA 910 - Educational Human Resource Administration

Credits: 3

Human resource administration practices in education are considered along with the implications of collective negotiations and professional accountability for human resource policies.

Typically Offered
Spring, Summer

EDLEA 928 - Organizational Leadership in Education

Credits: 3

This course is an examination of the knowledge, skills, and attributes necessary to understand and improve organizations. It includes leadership theory, implementing plans, managing resources, and applying appropriate processes and procedures in varied educational settings.

Typically Offered
Other

EDLEA 929 - Narrative and Arts-Based Inquiry in Qualitative Research

Credits: 3

Students will be introduced to narrative and arts-based inquiry to inform their qualitative research projects. Students will identify a genre from narrative and arts-based inquiry to prepare representational and methodological reflection pieces to inform their future research. Topics covered include critical autoethnography, creative non-fiction, visual representation, mixed-medium art and more.

Requisites:
Prerequisite: EDLEA 838.

Typically Offered
Other

EDLEA 938 - Advanced Data Analysis in Qualitative Methods

Credits: 3

An overview and application of data analysis methods in qualitative inquiry. In addition representation of findings, documentation of methods, analytic frameworks, processes of analysis, ethical dilemmas, and human subject approval explored.

Requisites:
Prerequisite: EDLEA 838

Typically Offered
Spring

EDLEA 948 - Data Representation and Writing in Qualitative Research

Credits: 3

Topics covered in this course would vary each semester based on students' writing projects. Topics may include, but not limited to, building methodological arguments, connecting theoretical and methodological frameworks, navigating issues in various genres of data representation, triangulation, and aligning findings with research purpose and questions.

Note:
Course is repeatable.

Requisites:
Prerequisite: EDLEA 838.

Typically Offered
Fall

EDLEA 950 - Advanced School Business Management

Credits: 3

An advanced course in school finance policy and budgeting practices, with particular consideration for hands-on application to school district leadership in Kansas.

Typically Offered
Fall

EDLEA 958 - Case Study in Qualitative Research

Credits: 3

This is an advanced research course on qualitative case study design and application in social science research. Topics include types of case studies, defining the case, site, and sample selection, data collection methods, within-case and cross-case analysis, and writing case reports. Students will conduct and critique a case study appropriate to their discipline.

Requisites:
Recommended Prerequisite: EDLEA 838.

Typically Offered
Spring

EDLEA 968 - Discourse Analysis

Credits: 3

Students will be exposed to the broad and complex field of discourse analysis. Students will learn about different theoretical and methodological approaches to analyzing the various forms and conceptualizations of "discourse". The course will weave together theory and method, as it will cover discourse analysis as both method and methodology.

Requisites:
Prerequisite: EDLEA 838 or equivalent.

Typically Offered
Summer

EDLEA 978 - Qualitative Data Management and Analysis Using Nvivo

Credits: 3

Students will have opportunity to explore the relationships between current technologies and the theory and methods of research. Students will learn to use qualitative analysis software, Nvivo, with specific data sets for preparation of data files, management of text and image, creation of codes, memos, queries models, and formation of reports.

Requisites:
Prerequisite: EDLEA 838 or equivalent. EDLEA 938 is highly recommended prior to taking this course.

Typically Offered
Summer

EDLEA 986 - Advanced Seminars in Educational Leadership

Credits: 1-18

These seminars will critically consider recent research in the designated fields. The emphasis will be upon individual studies and small group interaction. Enrollment is restricted to those students who have been admitted to the doctoral program in education and who have completed substantial amounts of graduate study in the designated fields.

Typically Offered
On sufficient demand

EDLEA 988 - Differentiated Research

Credits: 3

Students will complete a research project of their choice by breaking the project into smaller components, setting goals, maintaining accountability, and preparing deliverables towards the completion of the project. Projects can include theory, methodological work, book chapters, publishable papers, dissertation proposal or chapter drafts, grant work, and more.

Requisites:
Recommended Prerequisite: EDLEA 838 or an advanced research course.

Typically Offered
Fall

EDLEA 991 - Doctoral Internship in Educational Leadership

Credits: 1-12

Studies of and field experiences in the development of programs in cooperating schools and educational or related agencies under the supervision of Educational Leadership graduate faculty members.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

EDLEA 999 - Research in Educational Leadership

Credits: 1-18

Individual investigation in the field of a student's specialization.

Typically Offered
Fall, Spring

EDSEC 502 - Independent Study in Secondary Education

Credits: 1-3

Selected topics in professional education.

Note:
Maximum of three hours applicable toward degree requirements.

Requisites:
Prerequisite: Consent of department chair.

Typically Offered
Fall, Spring, Summer

EDSEC 520 - Block II Lab: Content Area Methods and Field Experience

Credits: 2

Field-based experience to help the pre-professional teacher practice the incorporation of specific content area with reading methods and demonstrate application of technology into teaching and assessment in the secondary and middle schools.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 500, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.

Typically Offered
Fall, Spring

EDSEC 528 - Social Studies Colloquium III

Credits: 3

Application and integration of theories and practices of content disciplines into instruction. Emphasis on design and presentation of lessons through lenses of social studies disciplines.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 544 and EDSEC 545, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, EDCI 320.

Typically Offered
Fall, Spring

EDSEC 530 - Art Methods for Secondary and Middle Schools

Credits: 3

Principles of teaching applied to art instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 531, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.

Typically Offered
Fall

EDSEC 531 - Art Methods Practicum

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate art education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320. Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 530, and EDCEP 525.

Typically Offered
Fall

EDSEC 532 - Business Methods for Secondary and Middle Schools

Credits: 3

Principles of teaching applied to business instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 533, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.

Typically Offered
Fall, Spring

EDSEC 533 - Business Methods Practicum

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate business education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320. Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 532, and EDCEP 525.

Typically Offered
Fall

EDSEC 534 - Family and Consumer Science Methods for Secondary and Middle Schools

Credits: 3

Principles of teaching applied to family and consumer sciences instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 535, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.

Typically Offered
Fall

EDSEC 535 - Family and Consumer Science Methods Practicum

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate family and consumer science education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320. Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 534, and EDCEP 525.

Typically Offered
Fall

EDSEC 536 - Language Arts Methods for Secondary and Middle Schools

Credits: 3

Principles of teaching applied to language arts instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 537, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.

Typically Offered
Fall, Spring

EDSEC 537 - Language Arts Methods Practicum

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate language arts education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 536, and EDCEP 525.

Typically Offered
Fall, Spring

EDSEC 538 - Mathematics Methods for Secondary and Middle Schools

Credits: 3

Principles of teaching applied to mathematics instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 539, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.

Typically Offered
Fall, Spring

EDSEC 539 - Mathematics Methods Practicum

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate mathematic education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 538, and EDCEP 525.

Typically Offered
Fall, Spring

EDSEC 540 - Modern Language Methods for Secondary and Middle Schools

Credits: 3

Principles of teaching applied to modern language instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 541, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.

Typically Offered
Fall

EDSEC 541 - Modern Language Methods Practicum

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate modern language education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320. Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 540, and EDCEP 525.

Typically Offered
Fall

EDSEC 542 - Science Methods for Secondary and Middle Schools

Credits: 3

Principles of teaching applied to science instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 543, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.

Typically Offered
Fall, Spring

EDSEC 543 - Science Methods Practicum

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate science education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320. Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 542, and EDCEP 525.

Typically Offered
Fall, Spring

EDSEC 544 - Social Studies Methods for Secondary and Middle Schools

Credits: 3

Principles of teaching applied to social studies instruction in the secondary and middle schools including: motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools.

Note:
Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 545, and EDCEP 525.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320.

Typically Offered
Fall, Spring

EDSEC 545 - Social Studies Methods Practicum

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate social studies education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320. Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 544, and EDCEP 525.

Typically Offered
Fall, Spring

EDSEC 546 - Physical Education/Health Methods for Secondary and Middle Schools

Credits: 3

This course provides students opportunities to study, discuss, organize, and practice instructional methods designed specifically for secondary and middle school physical education/health programs. Emphasis will be placed on understanding of the objectives, characteristics, and activities available to satisfy student growth and development. The course addresses movement education, rhythm games of low organization, body manipulative, object manipulative, and specific sport skills.

Requisites:
Prerequisite: EDCI 320
Corequisite: EDSEC 477, EDSEC 547

Typically Offered
Fall

EDSEC 547 - Physical Education/Health Practicum for Secondary and Middle Schools

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate physical education/health education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCEP 315, EDSP 323, and EDCI 320. Concurrent enrollment required for EDSEC 455, EDSEC 477, EDSEC 546 and EDCEP 525.

Typically Offered
Fall

EDSEC 548 - Technology Education Methods for Secondary and Middle Schools

Credits: 3

This course addressed the principles of teaching applied to technology education instruction in the secondary and middle schools including motivation, organization of subject matter, lesson/unit planning, assessment and reporting, organization and management of the classroom, and methodology and materials of the secondary and middle schools. This course will also address the technology education curriculum, instructional practices for individual learners and learning, and college and career readiness practices for students.

Requisites:
Prerequisite: EDCI 320.
Corequisite: EDSEC 477, EDSEC 549.

Typically Offered
Fall

EDSEC 549 - Technology Education Practicum for Secondary and Middle Schools

Credits: 2

This field-based experience provides the opportunity for students to plan, teach, and evaluate technology education lessons within a placement at the middle or secondary level. This practicum also requires students to incorporate reading methods and apply instructional technology in their instruction.

Requisites:
Prerequisite: EDCI 320.
Corequisite: EDSEC 477, EDSEC 548.

Typically Offered
Fall

EDSEC 560 - Art for Exceptional Children

Credits: 3

Use of art courses and activities to meet the needs of the mentally retarded, physically impaired, emotionally disturbed, or gifted child.

Note:
Three hours lecture.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Spring

EDSEC 582 - Teaching Internship in Music

Credits: 6-12

Observation and teaching under the direction of selected music teachers in elementary, middle level, and secondary school music programs.

Requisites:
Prerequisite: Admission to Professional Semester.

Typically Offered
Fall, Spring

EDSEC 586 - Teaching Internship in Secondary Schools

Credits: 1-12

Observation and teaching participation under the direction of selected secondary teachers.

Requisites:
Prerequisite: Admission to Professional Semester.

Typically Offered
Fall, Spring

EDSEC 587 - Supervised Practicum for Athletic Coaches

Credits: 2

Observation and coaching participation under the direction of selected coaches in public school, club, city recreation, or other nonpublic school sport settings.

Requisites:
Recommended prerequisite: EDSEC 250.

Typically Offered
Fall, Spring, Summer

EDSEC 611 - Coordination Techniques

Credits: 1

Acquaints students with techniques in selecting, implementing, and coordinating occupational programs between the school and the business community.

Requisites:
Prerequisite: EDSEC 620.

Typically Offered
Spring

EDSEC 614 - Laboratory Techniques in Teaching Science

Credits: 3

Rationale for laboratory in secondary school science. The design and implementation of laboratory activities and demonstrations in a high school science program.

Note:
Concurrent enrollment recommended for EDSEC 542 and EDSEC 543.

Typically Offered
Fall, Spring

EDSEC 620 - Principles and Philosophy of Career and Technical Education

Credits: 2-3

Principles of career and technical education in Kansas and other states and countries; principles and philosophy underlying such education, relation of career and technical education to school objectives and community, state, and national needs.

Crosslisted:
AGED 620

EDSEC 621 - Program Planning in Career and Technical Education

Credits: 2-3

The program development and planning process; development of guides for teaching and evaluating reimbursable secondary programs.

Requisites:
Prerequisite: EDSEC 620.

Typically Offered
Fall, Spring, Summer

EDSP 502 - Independent Study in Special Education

Credits: 1-3

Selected topics in professional education. Maximum of three hours applicable toward degree requirements.

Requisites:
Prerequisite: Consent of department chair.

Typically Offered
Fall, Spring, Summer

EDSP 509 - Introduction to Autism Spectrum Disorder

Credits: 3

Designed to prepare teacher candidates with the ability to recognize and build upon the strengths and needs of students with autism spectrum disorders (ASD). Employ various instructional strategies and locate appropriate educational materials for students with ASD.

Typically Offered
Spring

EDSP 615 - Manual Communications II

Credits: 3

This course is a continuation in the instruction of American Sign Language. This will include approximately 400 additional signs. There will be further discussion about the grammar and syntax of American Sign Language. Research will be conducted in the use of various manual communication systems with special populations, including aphasic, developmentally disabled, and others.

Requisites:
Pre-Requisite: Manual Communications I or equivalent.

Typically Offered
On sufficient demand

EDSP 709 - Autism Spectrum Disorder

Credits: 3

Designed to prepare teacher candidates with the ability to recognize and build upon the strengths and needs of students with autism spectrum disorders (ASD). Employ various instructional strategies and locate appropriate educational materials for students with ASD.

Typically Offered
Spring

EDSP 711 - Characteristics of Exceptionalities

Credits: 3

Provide an overview of exceptionality as it pertains to students. The processes of IEP development and characteristics of both high and low incidence populations will be examined. Each area of exceptionality will be reviewed in terms of etiology, diagnosis, prevalence, remediation, and educational strategies.

Typically Offered
Fall, Spring

EDSP 742 - Interventions: Emotional and Behavioral Disorders

Credits: 3

Educational planning assessment, instructional methods, curricular modification, media and materials, teacher competencies, and model programs for students with emotional and behavioral disorders.

Requisites:
Prerequisite: EDSP 323 or EDSP 324, EDSP 710.

Typically Offered
Fall, Spring, Summer

EDSP 743 - Interventions: Academic Disabilities

Credits: 3

Educational planning, instructional methods, and curricula modifications for students with academic learning disabilities.

Requisites:
Prerequisite: EDSP 323 or EDSP 324 and EDSP 710.

Typically Offered
Fall, Spring

EDSP 745 - The Consulting Process in Special Education

Credits: 3

A course to prepare special education teachers with skills for consulting effectively with classroom teachers, related services personnel, administrators, and parents about curriculum and program alternatives for exceptional

children. Emphasis is upon developing collaborative consultation processes through communication, cooperation, and coordination techniques.

Requisites:
Prerequisite: EDSP 323 or EDSP 324 or EDSP 500, and EDSP 742 or EDSP 743.

Typically Offered
Summer

EDSP 775 - Readings in Special Education

Credits: 1-3

Readings in research and application in specialized areas in education.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: FSHS 110.

Typically Offered
Fall, Spring, Summer

EDSP 777 - Social Emotional Learning and Behavior Management Strategies

Credits: 3

Theoretical and practical applications of behavior analysis in schools with emphasis on preventing and remediating behavior problems of students with disabilities.

Typically Offered
Fall, Spring

EDSP 778 - Technology for Special Education

Credits: 3

Designed to help special educators develop an awareness of assistive technology (AT) and related legislative guidelines, which can assist in the lives and learning of students receiving special education. This course will explore assistive technology devices and services and software appropriate for students with special needs. Internet resource and AT evaluation systems related to special education will also be covered.

Requisites:
Prerequisite: EDETC 318 Instructional Media or related professional experiences.

Typically Offered
Fall

EDSP 785 - Practicum I

Credits: 3

Observation and participation in teaching individuals with exceptional educational needs under the supervision of selected teachers in special education.

Requisites:
Prerequisite: EDSP 323 or EDSP 324, EDSP 710, EDSP 742, EDSP 743.

Typically Offered
Fall, Spring

EDSP 786 - Topics in Education

Credits: 1-3

Examination of current topic in specialization of faculty. Varied topics offered each semester so course may be repeated.

Requisites:
Prerequisite: EDCEP 215.

Typically Offered
Fall, Spring, Summer

EDSP 787 - Field Experiences in Special Education

Credits: 1-3

Observation and supervised activities in schools, camps, clinics, or institutions related to student's area of special interest or preparation.

Typically Offered
On sufficient demand

EDSP 795 - Problems in Special Education

Credits: 1-18

Selected students are permitted to secure specialized training appropriate to the needs of the individual. The student's project may involve intensive library investigation in a special field or the collection and analysis of data pertinent to a given problem. All work is done independently under the direction of a faculty member. As many conferences are held as necessary to assure successful completion of a project necessary for the problem undertaken and consent of instructor.

Requisites:
Prerequisite: Background of courses necessary for the problem undertaken and consent of instructor.

Typically Offered
Fall, Spring, Summer

EDSP 800 - Practicum II

Credits: 3

Observation and participation in teaching individuals with exceptional educational needs under the supervision of selected teachers in special education.

Requisites:
Prerequisite: EDSP 785 Practicum I

Typically Offered
Fall, Spring

EDSP 830 - Assessment in Special Education

Credits: 3

A study of assessment procedures used in the pre-referral, identification, and instructional phases of program planning for students with special needs.

Typically Offered
Fall

EDSP 833 - Administration of Special Education Programs

Credits: 2-3

The study of administrative units for special education, placement procedures, federal and state legislation, and program reimbursement and funding.

Requisites:
Prerequisite: EDADL 818 or EDADL 811.

Typically Offered
On sufficient demand

EDSP 841 - Interventions: Low Incidence Special Education

Credits: 3

Curriculum content, methods, and organization of educational programs for children and youth with low incidence special education needs.

Requisites:
Prerequisite: EDSP 724 and EDSP 743.

Typically Offered
Spring

EDSP 844 - Special Education in Secondary Schools

Credits: 2

Educational perspectives in service delivery options, educational planning, general instructional approaches, learning strategies, and adaptations and modifications of instructional materials and settings for the secondary student in special education.

Requisites:
Prerequisite: EDCEP 315, EDSP 710 and EDSP 743.

Typically Offered
Spring-Odd Years

EDSP 845 - Special Education Programming: Parental Involvement

Credits: 2

An in-depth consideration of the role of home and parents in the educational programming for exceptional children. Emphasis on practical and positive strategies used in working with parents.

Requisites:
Prerequisite: EDSP 710.

Typically Offered
Fall

EDSP 846 - Interventions: Early Childhood Special Education

Credits: 3

Strategies, policies, and procedures for the education of young children (0-5 years of age) with disabilities. Areas of emphasis include Individual Service Plans, interagency collaboration, and specific strategies for parents and young children.

Requisites:
Prerequisite: EDSP 710.

Typically Offered
Spring

EDSP 848 - Transitions in Special Education

Credits: 3

A study of transition models, curricula, assessment, career development, community resources and agencies, and materials.

Requisites:
Prerequisite: EDSP 710.

Typically Offered
Summer

EDSP 849 - Interventions: Autism Spectrum Disorders

Credits: 3

Assessment, curriculum content, educational considerations, interventions, and organization of programs for children and youth with Autism Spectrum Disorders.

Requisites:
Prerequisite: EDSP 728 and EDSP 742.

Typically Offered
Summer

EDSP 853 - College Students with Disabilities

Credits: 3

This course is designed to familiarize higher education personnel with the increasing number of students with disabilities who now attend our institutions of higher education. The course will examine the legal foundations for students with disabilities in higher education, provide a framework for understanding the unique needs of students with learning disabilities, attention deficit disorders, mental health issues, as well as those on the autism spectrum, and examine the role of higher education personnel in helping these individuals be successful thriving college students.

Typically Offered
On sufficient demand

EDSP 860 - Special Education Law

Credits: 3

Analysis of legislation, litigation, and administrative rulings related to special education. The course will emphasize the development of legally sound policies and procedures to ensure that schools provide an educationally meaningful and legally correct education for students with disabilities.

Typically Offered
On Sufficient Demand

EDSP 885 - Practicum in Education of Individuals with Low Incidence Special Education Needs

Credits: 1-6

Observation and participation in teaching individuals with low incidence special educational needs under the supervision of selected teachers in Special Education programs.

Requisites:
Prerequisite: EDSP 742, EDSP 743, EDSP 785, and EDSP 841.

Typically Offered
Fall, Spring

EDSP 886 - Seminar in Special Education

Credits: 1-18

Intensive discussion of research or problems of current professional interest based on study of pertinent original literature.

Typically Offered
On sufficient demand

EDSP 888 - Externship in Special Education

Credits: 1

The course provides a forum for self-directed development of competencies in Special Education. Students conduct self-assessment and develop strategies for ongoing professional development.

Requisites:
Prerequisite: EDSP 885.

Typically Offered
Fall, Spring, Summer

EDSP 889 - Advanced Practicum: Autism Spectrum Disorders

Credits: 1-6

Observation and participation in teaching individuals with Autism Spectrum Disorders under the supervision of selected teachers in Special Education programs.

Requisites:
Prerequisite: EDSP 849 and EDSP 885 (6 hours).

Typically Offered
On sufficient demand

EDSP 898 - Master's Report

Credits: 1-18

Requisites:
Prerequisite: Permission by department head.

Typically Offered
Fall, Spring, Summer

EDSP 899 - Master's Research

Credits: 1-18

Requisites:
Prerequisite: Permission by department head.

Typically Offered
Fall, Spring, Summer

EDSP 986 - Advanced Seminar in Special Education

Credits: 0-18

These seminars will critically consider recent research in the designated fields. The emphasis will be upon individual studies and small group interaction. Enrollment is restricted to those students who have been admitted to the doctoral program in education and who have completed substantial amounts of graduate study in the designated fields.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

EDSP 991 - Internship in Special Education

Credits: 1-18

Studies of and field experiences in the development of programs in cooperating schools and educational or related agencies under the supervision of College of Education graduate faculty members. A maximum of 6 credit hours may be chosen from the areas listed.

Requisites:
Prerequisite: Consent of department head.

Typically Offered
Fall, Spring, Summer

EDSP 999 - Research in Special Education

Credits: 1-18

Individual investigation in the field of a student's specialization.

Requisites:
Prerequisite: Sufficient training to carry on the line of research undertaken.

Typically Offered
Fall, Spring, Summer

ENGL 500 - Writing Center Theory and Practice

Credits: 3

Readings in the field of writing center studies, with attention to topics such as ESL, literacy, and multiculturalism. Literacy studied as it intersects with race, gender, class, ethnicity, and social and institutional structures. Application of theory through a research project and peer tutoring apprenticeship.

Requisites:
Prerequisite: ENGL 200 or equivalent.

Typically Offered
Fall, Spring, Summer

ENGL 501 - Topics in Classical Literature in Translation

Credits: 3

A detailed study of Greek and/or Roman literature in translation in a small discussion setting. Either an open survey of classical literature or the consideration of a specific question.

Typically Offered
Fall, Spring

ENGL 510 - Introduction to Professional Writing

Credits: 3

Intensive practice in applying rhetorical principles to a number of genres common in non-academic professions and workplaces; an introduction to allied topics such as document design and editing.

Requisites:
Prerequisite: ENGL 200 or ENGL 210.

Typically Offered
Fall, Spring, Summer

ENGL 516 - Written Communication for the Sciences

Credits: 3

Theory and intensive writing practice for students in the basic and applied sciences.

Requisites:
Prerequisite: Junior standing and ENGL 125 or ENGL 200. Will not substitute for ENGL 415.

Typically Offered
Fall, Spring

ENGL 525 - Women in Literature

Credits: 3

Study of literary works by or about women. Emphasis on historical and cultural contexts.

Typically Offered
Fall, Spring, Summer

ENGL 545 - Literature for Adolescents

Credits: 3

Selecting, reading, and evaluating books for adolescents. Required for those seeking middle school and high school certification in English.

Requisites:
Prerequisite: ENGL 125 or ENGL 200.

Typically Offered
Fall, Spring

ENGL 570 - Law, Politics, and Literature

Credits: 3

Classic and contemporary works of literature, including novels, plays, short stories, and poems, are used to explore themes in law and politics.

Requisites:
Prerequisite: ENGL 200 or junior standing or POLSC 301 or junior standing.

Typically Offered
Fall, Spring, Summer

Crosslisted:
POLSC 670

ENGL 580 - Selected World Literature

Credits: 3

Addresses writing by authors whose native origins lie outside Europe or the United States. Content may vary with instructor. May examine literature from several countries or regions, concentrate on literature from one country or region, or focus on a topic which transcends national or regional boundaries. Works are written in or translated into English. Repeatable once with a change of topic.

Typically Offered
Fall, Spring

ENGL 595 - Literary Studies Abroad

Credits: 3

Travel abroad, with selected readings, lectures, and discussions which explore the relationships between literary texts and their physical and cultural environments. Topic varies with instructor.

Repeat for Credit
Repeatable. Repeatable for credit with change of topic.

Typically Offered
On sufficient demand

ENGL 599 - Special Research in English

Credits: 1-18

Individual investigation in authors, genres, periods of literature, or language. Background of preparation needed for investigation undertaken.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring

ENGL 604 - Expository Writing Workshop

Credits: 3

Course emphasizes stylistic analysis of modern non-fiction prose in the sciences, social sciences, and humanities. Extensive writing required.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 605 - Readings in Medieval Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester's offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 610 - Readings in Renaissance Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester's offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 620 - Readings in Seventeenth-Century British Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They

may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester's offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 625 - Readings in Eighteenth-Century British Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester's offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 630 - Readings in Nineteenth-Century British Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods.

Repeat for Credit
Repeatable with a change of subject matter.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 635 - Readings in Twentieth-and Twenty-First Century British Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester's offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 640 - Readings in Early American Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester's offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 645 - Readings in Nineteenth-Century American Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester's offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 650 - Readings in Twentieth- and Twenty-First-Century American Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods.

Repeat for Credit
Repeatable with a change in subject matter.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 655 - Readings in American Ethnic Literature

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester's offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 660 - Readings in Major Authors

Credits: 3

This course is one within a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods.

Repeat for Credit
Repeatable with a change of subject matter.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 661 - Advanced Creative Writing: Prose Fiction

Credits: 3

Advanced writing of prose fiction.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ENGL 461 or instructor permission.

Typically Offered
Fall, Spring, Summer

ENGL 662 - Playwriting

Credits: 3

Theoretical study and practical application of techniques of playwriting with regard to plot, characters, and production; emphasis on the one-act form.

Typically Offered
Fall, Spring

ENGL 663 - Advanced Creative Writing: Poetry

Credits: 3

Advanced writing of poetry.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ENGL 463 or instructor permission.

Typically Offered
Fall, Spring, Summer

ENGL 665 - Advanced Creative Writing: Nonfiction

Credits: 3

Advanced writing of prose creative nonfiction.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ENGL 465 or instructor permission.

Typically Offered
Fall

ENGL 669 - Advanced Creative Writing: Special Topics

Credits: 3

Advanced topics vary.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor consent.

Typically Offered
Fall, Spring, Summer

ENGL 670 - Topics in British Literature

Credits: 3

This course addresses topics not confined to a single period in a national literature. Specific course content will vary by semester and instructor. It may emphasize cross-national subjects, literary criticism, the development of a theme or genre over time, new perspectives from social, intellectual, or cultural studies, or non-traditional texts and topics.

Repeat for Credit
Repeatable with a change of subject matter.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 680 - Topics in American Literature

Credits: 3

This course addresses topics not confined to a single period in a national literature. Specific course content will vary by semester and instructor. It may emphasize cross-national subjects, literary criticism, the development of a theme or genre over time, new perspectives from social, intellectual, or cultural studies, or non-traditional texts and topics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 690 - Topics in Literature for the Young

Credits: 3

This course addresses topics not confined to a single period in a national literature. Specific course content will vary by semester and instructor. It may emphasize cross-national subjects, literary criticism, the development of a theme or genre over time, new perspectives from social, intellectual, or cultural studies, or non-traditional texts and topics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 695 - Topics in Literature

Credits: 3

This course addresses topics not confined to a single period in a national literature. Specific course content will vary by semester and instructor. It may emphasize cross-national subjects, literary criticism, the development of a theme or genre over time, new perspectives from social, intellectual, or cultural studies, or non-traditional texts and topics.

Repeat for Credit
Repeatable with a change in subject matter.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 698 - Capstone Seminar

Credits: 3

A writing- and discussion-intensive course that provides a culminating experience to the English major.

Note:
Topic varies according to instructor.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Twenty-one (21) credit hours in English beyond ENGL 310.

Typically Offered
Fall, Spring

ENGL 700 - Old English

Credits: 3

The elements of Old English grammar, with readings in prose and poetry.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Fall, Spring, Summer

ENGL 703 - Critical Approaches to Children's Literature

Credits: 3

Introduction to advanced study of children's and young adult literature.

Typically Offered
Fall, Spring

ENGL 705 - Theories of Cultural Studies

Credits: 3

An overview of theoretical approaches to the study of culture and their current application in English studies.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 710 - Studies in a Literary Genre

Credits: 3

The specific contents will vary by semester and instructor, but the studies courses will reflect concerns with literary and rhetorical forms and genres; with specific authors, periods, or literary movements; with perspectives from social, intellectual, and cultural studies; with literary themes; or with language or linguistics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.

Repeat for Credit
Repeatable with a change in subject matter.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 720 - Studies in a Major Author

Credits: 3

The specific contents will vary by semester and instructor, but the studies courses will reflect concerns with literary and rhetorical forms and genres; with specific authors, periods, or literary movements; with perspectives from social, intellectual, and cultural studies; with literary themes; or with language or linguistics.

Repeat for Credit
Repeatable with a change in subject matter.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 725 - Studies in Children's/Young Adult Literature

Credits: 3

Addresses topics not confined to a single period in a national literature. May emphasize cross-national subjects, literary criticism, the development of a theme or genre over time, new perspectives from social, intellectual, or cultural studies, or nontraditional texts and topics.

Typically Offered
Fall, Spring, Summer

ENGL 730 - Studies in a Literary Period

Credits: 3

The specific contents will vary by semester and instructor, but the studies courses will reflect concerns with literary and rhetorical forms and genres; with specific authors, periods, or literary movements; with perspectives from social, intellectual, and cultural studies; with literary themes; or with language or linguistics.

Repeat for Credit
Repeatable with a change of subject matter.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

ENGL 740 - Studies in Literary Theory

Credits: 3

The specific contents will vary by semester and instructor, but the studies courses will reflect concerns with literary and rhetorical forms and genres; with specific authors, periods, or literary movements; with perspectives from social, intellectual, and cultural studies; with literary themes; or with language or linguistics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 745 - Cultural Studies

Credits: 3

A topics course in Cultural Studies that applies a theoretical approach or approaches.

Typically Offered
Fall

ENGL 753 - Theories of Composition and Rhetoric

Credits: 3

An introduction to major theories of composition and/or rhetoric.

Typically Offered
Fall, Spring, Summer

ENGL 755 - Studies in Composition and Rhetoric

Credits: 3

The specific contents will vary by semester and instructor, but the studies courses will reflect concerns with literary and rhetorical forms and genres; with specific authors, periods, or literary movements; with perspectives from social, intellectual, and cultural studies; with literary themes; or with language or linguistics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 756 - Business Communication

Credits: 3

A writing-intensive course intended for advanced undergraduate students, graduate students, and working professionals in business.

Requisites:
Prerequisite: ENGL 200 or ENGL 210 or ENGL 415 or ENGL 417 or ENGL 516 or graduate standing.

Typically Offered
Fall, Spring, Summer

ENGL 757 - Studies in Language and Linguistics

Credits: 3

The specific contents will vary by semester and instructor, but the studies courses will reflect concerns with literary and rhetorical forms and genres; with specific authors, periods, or literary movements; with perspectives from social, intellectual, and cultural studies; with literary themes; or with language or linguistics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 758 - Scientific Writing

Credits: 3

A writing-intensive course intended for advanced undergraduate students, graduate students and working professionals in science.

Requisites:
Prerequisite: ENGL 200 or ENGL 210 or ENGL 415 or ENGL 417 or ENGL 516 or graduate standing.

Typically Offered
Fall, Spring, Summer

ENGL 759 - Studies in Technical Communication

Credits: 3

The specific contents will vary by semester and instructor, but the studies courses will reflect concerns with literary and rhetorical forms and genres; with specific authors, periods, or literary movements; with perspectives from social, intellectual, and cultural studies; with literary themes; or with language or linguistics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.

Typically Offered
Fall, Spring, Summer

ENGL 761 - Creative Writing Workshop: Short Fiction

Credits: 3

Advanced writing of short prose fiction.

Repeat for Credit
Repeatable twice for credit.

Requisites:
Prerequisite: ENGL 661 or Instructor permission.

Typically Offered
Fall, Spring, Summer

ENGL 762 - Advanced Playwriting

Credits: 3

Further study in the writing of drama; emphasis on problems of writing the full-length play.

Requisites:
Prerequisite: ENGL 662.

Typically Offered
Fall, Spring, Summer

ENGL 763 - Creative Writing Workshop: Poetry

Credits: 3

Advanced writing of poetry.

Repeat for Credit
Repeatable twice for credit.

Requisites:
Prerequisite: ENGL 663 or Instructor permission.

Typically Offered
Fall, Spring, Summer

ENGL 765 - Creative Writing Workshop: Creative Nonfiction

Credits: 3

Advanced writing of creative nonfiction.

Repeat for Credit
Repeatable twice for credit.

Requisites:
Prerequisite: ENGL 665 or instructor permission.

Typically Offered
Fall, Spring, Summer

ENGL 769 - Creative Writing Workshop/Special Topic

Credits: 3

Special topics vary.

Repeat for Credit
Repeatable with change of topic.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Fall, Spring, Summer

ENGL 771 - Creative Writing Workshop: Novel/Novella

Credits: 3

Repeat for Credit
Repeatable twice for credit.

Requisites:
Prerequisite: ENGL 661 or Instructor permission.

Typically Offered
Fall, Spring, Summer

ENGL 790 - History of the English Language

Credits: 3

The development of British and American English from Indo-European origins to the present.

Requisites:
Prerequisite: Graduate standing or Instructor permission.

Typically Offered
Fall, Spring, Summer

ENGL 795 - Literary Theory

Credits: 3

A historical survey of literary theory and criticism.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Other

ENGL 797 - Professional Writing Internship

Credits: 0-18

Faculty-supervised professional experience, emphasizing application of writing skills in professional contexts. Student projects must be approved by on-site supervisor and faculty supervisor. Report must be submitted at the end of the semester.

Requisites:
Prerequisite: ENGL 510 or ENGL 665 or ENGL 759 or ENGL 765.

Typically Offered
Fall, Spring, Summer

ENGL 799 - Problems in English

Credits: 1-18

Independent study in major authors, genres, and periods of English and American literature and language.

Requisites:
Prerequisite: Background of courses needed for problem undertaken.

Typically Offered
Fall, Spring, Summer

ENGL 801 - Graduate Studies in English

Credits: 3

A survey of the methods and aims of advanced level

research and scholarship in language and literature. Taken in the first year of study toward the M. A. in English as an orientation to the profession.

Typically Offered
Fall, Spring, Summer

ENGL 805 - Practicum in Teaching University Expository Writing

Credits: 1

Required of GTAs teaching Expository Writing in the English Department. Instruction in the theory and practice of teaching in a university expository writing program. Cannot count in the student's program of study.

Repeat for Credit
Repeatable. May be repeated with different content.

Requisites:
Prerequisite: graduate status and a GTAship in the English Department.

Typically Offered
Fall, Spring

ENGL 820 - Seminar in Language

Credits: 3

Intensive research concerned with one or more topics in the structure and history of the English language.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring, Summer

ENGL 825 - Seminar in Literature

Credits: 3

Intensive research concerned with one or more literary genres, periods, authors, or issues/problems.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring, Summer

ENGL 830 - Seminar in Cultural Studies

Credits: 3

Intensive research concerned with one or more topics central to the theory and practice of Cultural Studies.

Requisites:
Prerequisite: Graduate standing.

ENGL 840 - Seminar in Composition and Rhetoric

Credits: 3

Intensive research on materials germane to the history, structure, and processes central to the concerns of Composition and Rhetoric.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring, Summer

ENGL 862 - Workshop in Playwriting

Credits: 3

Advanced writing of drama.

Requisites:
Prerequisite: ENGL 762 or THTRE 762 or proof of equivalency. Proficiency.

Crosslisted:
THTRE 862

ENGL 899 - Research in English

Credits: 1-18

Requisites:
Prerequisite: Permission, Director of Graduate Studies.

Typically Offered
Fall, Spring, Summer

ENTOM 589 - Turfgrass Insects and Their Management

Credits: 1

Biology, diagnosis and integrated management of turfgrass insect pests.

Note:
Two hours lecture and two hours lab a week, for the last five weeks of the semester.

Requisites:
Prerequisite: HORT 582 or concurrent enrollment and HORT 515 or concurrent enrollment.

Typically Offered
Fall

Crosslisted:
HORT 589

ENTOM 602 - Forensic Entomology

Credits: 3

The study of insects, and other arthropods, their physiology and life cycle in association with criminal events is the realm of Forensic entomology. The purpose is uncovering and revealing information useful to an investigation. This is an introductory course designed to provide a basic understanding of the interaction between the discipline of entomology and the legal system. We will discuss the importance of insects in forensics related to aspects in criminal investigations (case studies). An emphasis will be placed on collection, preservation, identification, analysis, and presentation of information derived from arthropod samples collected as evidence.

Requisites:
Recommended Prerequisite: ENTOM 301, ENTOM 305, OR ENTOM 312

Typically Offered
Fall or Spring

ENTOM 605 - Introduction to Insects of Stored Products

Credits: 3

Biology, ecology, and behavior of stored-product insects and current practices involved in their control.

Repeat for Credit
Not repeatable.

Requisites:
Prerequisite: ENTOM 300, or ENTOM 301, or ENTOM 305, or ENTOM 312

Typically Offered
Spring-Even Years

ENTOM 612 - Insect Pest Diagnosis

Credits: 2

Diagnosis of plant damage by insects and mites, recognition of harmful insects and mites and beneficial insects. Emphasis on field crop pests but pests of other crops will be considered if there is sufficient interest.

Note:
One hour lecture and two hours lab a week.

Requisites:
Recommended Prerequisite: ENTOM 300, ENTOM 312 or ENTOM 710.

Typically Offered
Fall

ENTOM 620 - Insecticides: Properties and Laws

Credits: 2

Introduction to insecticides as arthropod control agents, including their classification, formulation, properties, mode of action, metabolism, resistance, benefits and environmental impact, and federal and state laws that regulate the development, sale, use and storage of insecticides.

Note:
Two hours of lecture a week.

Requisites:
Recommended Prerequisite: CHM 110.

Typically Offered
Spring-Even Years

ENTOM 621 - Introduction to Biological Control

Credits: 3

The theory and practice of biological control with an emphasis on natural enemies of insect pests. Relationship and importance of insect ecology and integrated pest management to biological control. Experimental approaches, evaluation, recognition and life histories of beneficial species will be covered.

Repeat for Credit
Not repeatable.

Requisites:
Prerequisite: ENTOM 300, or ENTOM 301, or ENTOM 305, or ENTOM 312

Typically Offered
Spring-Even Years

ENTOM 625 - Integrative Behavioral Ecology

Credits: 3

This course is designed to provide an introductory overview of the genetics, ecology, and evolution of insect behavior, emphasizing research done in insect systems. The topics covered in this course will include: (1) Conceptual and empirical framework for studying behavior, (2) the genetics of behavior, (3) "kinds" of behaviors, and (4) detailed examples of each "kind" of behavior.

Note:
Three hours lec a week.

Requisites:
Recommended Prerequisite: BIOL 450.

Typically Offered
Spring

ENTOM 630 - Introduction to Molecular Entomology

Credits: 2

Introduction to use of molecular techniques to address fundamental and applies entomological problems, including systematics, marker-assisted selection of resistant genotypes of plants, mechanisms of insecticide resistance, insect transgenesis, risk assessment of genetically modified organisms, and other topics.

Repeat for Credit
Not repeatable.

Requisites:
Prerequisite: CHM 110

Typically Offered
Fall-Even Years

ENTOM 635 - Insect Evolution

Credits: 3

This course covers the evolution and biodiversity of insects. Topics covered include insects in the fossil record, insect phylogenies, the traits responsible for insect diversity, and the evolution of traits like wings, color, mimicry, learning, behavior, farming, parasitic lifestyles and social living.

Typically Offered
Fall-Even Years

ENTOM 645 - Introduction to Insect Chemical Ecology

Credits: 3

The overall objective of this course is to familiarize the student with the interactions among organisms, including insects and other arthropods, which are mediated by naturally produced chemicals.

Repeat for Credit
Not repeatable.

Requisites:
Prerequisite: ENTOM 300, or ENTOM 301, or ENTOM 305, or ENTOM 312

Crosslisted:
Spring - Odd Years

ENTOM 649 - Introduction to Arthropod Vectors of Human Pathogens

Credits: 3

This course focus will be vectors of medical and veterinary importance. Students will learn several underlying aspects involved in pathogen-vector-vertebrate host interactions, including those associated with cellular, molecular and innate immune response of insects to pathogens they

transmit. Students will be introduced to current research programs and topics of interest in the field of medical entomology.

Requisites:
Prerequisite: ENTOM 300, or ENTOM 301, or ENTOM 305, or ENTOM 312

Typically Offered
Fall

ENTOM 655 - Plant Resistance to Insects

Credits: 2

Plant resistance in crop plants including transgenic plants. Insect behavior, physiology, and ecology as affected by resistance. Discussion of methods of assessing and quantifying plant resistance.

Requisites:
Recommended Prerequisite: ENTOM 732 and PLPTH 732.

Typically Offered
Fall-Even Years

ENTOM 657 - Introduction to Toxicology of Insecticides

Credits: 3

Study of synthetic and naturally occurring insecticides with emphasis on distribution and elimination, metabolism, mechanism of action, resistance mechanisms, and current advances in new insecticide discovery and new approaches to insect control. The lab focuses on providing hands-on experience with techniques frequently used by toxicologists.

Repeat for Credit
Not repeatable.

Requisites:
Recommended Prerequisite: CHM 350, or BIOCH 521, or ENTOM 620

Typically Offered
Spring-Even Years

ENTOM 660 - Introduction to Insect Genetics

Credits: 3

The course will initially describe the variety of genetic systems found in insects. Laboratory and statistical techniques will be discussed for studying genetic variation in insect populations. The final part of the course will focus on means for genetic manipulation of populations. The laboratory session will be used to discuss and/or demonstrate techniques for studying insect genetics.

Repeat for Credit
Not repeatable.

Requisites:
Prerequisite: ENTOM 300, or ENTOM 301, or ENTOM 305, or ENTOM 312

Typically Offered
Spring-Even Years

ENTOM 675 - Introduction to Insect Physiology

Credits: 4

Functions of insect systems for development, metamorphosis, and reproduction. Physiological and biochemical mechanisms underlying insect activities, behavior, and ecological adaptations.

Repeat for Credit
Not repeatable.

Requisites:
Prerequisite: ENTOM 300, ENTOM 305, or ENTOM 312

Typically Offered
Spring-Even Years

ENTOM 680 - Aquatic Entomology

Credits: 3

Biology and ecology of aquatic insect orders and families, their roles in aquatic ecosystems, relationships to people, and use as sensitive biomonitoring agents to detect ecological disturbances. Labs teach sampling techniques and use of keys to identify aquatic insects to family and selected genera.

Note:
Two hours lecture and one two-hour lab a week.

Requisites:
Prerequisite: ENTOM 312 and ENTOM 313; or BIOL 201.

Typically Offered
Fall-Odd Years

ENTOM 692 - Insect Ecology

Credits: 3

Abiotic and biotic factors underlying the distribution, abundance, and dynamics of insects. How to measure these factors, how they affect insect population processes, interactions, and community structure, especially in agricultural systems. Emphasis on basic concepts and their application, experimental methods and field techniques.

Requisites:
Recommended Prerequisite: BIOL 303, BIOL 529, or ENTOM 312.

Typically Offered
Fall-Even Years

ENTOM 710 - Insect Taxonomy

Credits: 3

Laboratory study of insect Order and family-group identification. Proper preparation and maintenance of adult insect collections. Lecture stresses the principles of systematics, legal principles of nomenclature, and the phylogeny of insects and their near relatives. For beginning graduate and advanced undergraduate students.

Note:
One hour lecture and six hours lab a week.

Requisites:
Recommended Prerequisite: ENTOM 300 or ENTOM 312 and ENTOM 313.

Typically Offered
Fall-Odd Years

ENTOM 732 - Introduction to Plant Resistance to Pests

Credits: 2

Basic concepts of the biology, ecology, genetics and breeding for pest resistance in plants.

Note:
Four hours lecture and discussion a week. Meets first half of term.

Requisites:
Prerequisite: ENTOM 300 or PLPTH 500 or ENTOM 312 and ENTOM 313, and one course in plant or animal genetics.

Typically Offered
Fall-Even Years

Crosslisted:
PLPTH 732, AGRON 732

ENTOM 799 - Problems in Entomology

Credits: 1-18

For nonthesis or nondissertation studies. Work in various fields of entomology.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

ENTOM 800 - Professional Development in Entomology and Related Sciences

Credits: 2

This course will teach students to develop and effectively communicate scientific research and results, including skills in: critical reading of primary literature, developing meaningful hypotheses, outlining a thesis/dissertation literature review, constructing and writing a well-designed scientific proposal, presenting data, communicating effectively to professional and lay audiences, acquiring meaningful peer-review experience, and learning the basics for writing publishable journal articles.

Typically Offered
Fall

ENTOM 805 - Insects of Stored Products

Credits: 3

Biology, ecology, and behavior of stored-product insects and current practices involved in their control.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: ENTOM 300, or ENTOM 312 and ENTOM 313, or consent of instructor.

Typically Offered
Spring-Even Years

ENTOM 810 - Insect Pest Management

Credits: 3

The theory and practice of Integrated Pest Management (IPM) with an emphasis on pests in agricultural systems. Integrated concepts include but are not limited to economic thresholds, sampling plans, plant resistance to insects, biological control, pesticides and resistance management. Case studies from several row-crop systems are used to explore key concepts.

Requisites:
Prerequisite: ENTOM 300 or ENTOM 312 or consent of the instructor.

Typically Offered
Spring-Even Years

ENTOM 815 - Experience in Extension Entomology

Credits: 1-3

Major emphasis is to give students a realistic view of the history, structure, philosophy, and position responsibilities assumed by entomology state and area specialists within the Cooperative Extension Service through hands-on experience.

Requisites:
Recommended Prerequisite: ENTOM 612 or ENTOM 767.

Typically Offered
Spring-Even Years

ENTOM 821 - Biological Control

Credits: 3

The theory and practice of biological control with an emphasis on natural enemies of insect pests. Relationship and importance of insect ecology and integrated pest management to biological control. Experimental approaches, evaluation, recognition and life histories of beneficial species will be covered.

Note:
Two hours of lecture and two hours of lab a week.

Requisites:
Recommended Prerequisite: ENTOM 300 or ENTOM 312 or ENTOM 320 or a college-level ecology course.

Typically Offered
Spring-Odd Years

ENTOM 825 - Advanced Integrative Behavioral Ecology

Credits: 3

This course is designed to provide an advanced overview of the genetics, ecology, and evolution of insect behavior, emphasizing research done in insect systems. The topics covered in this course will include: (1) Conceptual and empirical framework for studying behavior, (2) the genetics of behavior, (3) "kinds" of behaviors, and (4) detailed examples of each "kind" of behavior.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: BIOL 450.

Typically Offered
Spring

ENTOM 830 - Molecular Entomology

Credits: 2

Introduction to use of molecular techniques to address fundamental and applies entomological problems, including systematics, marker-assisted selection of resistant genotypes of plants, mechanisms of insecticide resistance, insect transgenesis, risk assessment of genetically modified organisms, and other topics.

Note:
One 2-hour lecture/discussion per week.

Typically Offered
Fall-Even Years

ENTOM 835 - Advanced Insect Evolution

Credits: 3

This course covers the evolution and biodiversity of insects. Topics covered include insects in the fossil record, insect phylogenies, the traits responsible for insect diversity, and the evolution of traits like wings, color, mimicry, learning, behavior, farming, parasitic lifestyles and social living.

Typically Offered
Fall-Even Years

ENTOM 837 - Plant-Virus-Vector Interactions

Credits: 2

A study of modes of virus transmission, important arthropod vectors, plant responses to viruses and insects, and current literature and techniques.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: one of the following: BIOCH 521, BIOCH 522, ENTOM 830, ENTOM 875, or PLPTH 500.

Typically Offered
Fall-Even Years

ENTOM 840 - Immature Insects

Credits: 2

Identification of immature insects to the family level, with emphasis on terrestrial Holometabola and aquatic insects. Techniques for collecting and preserving immatures, with an emphasis on field collecting and identification in laboratory.

Requisites:
Prerequisite: ENTOM 710.

Typically Offered
Summer-Odd Years

ENTOM 845 - Insect Chemical Ecology

Credits: 3

The overall objective of this course is to familiarize the student with the interactions among organisms, including insects and other arthropods, which are mediated by naturally produced chemicals.

Requisites:
Recommended Prerequisite: CHEM 350 General Organic Chemistry or its equivalent, or the consent of the instructor.

ENTOM 849 - Arthropod Vectors of Human Pathogens

Credits: 3

Focus will be vectors of medical/veterinary importance and pathogen-vector-vertebrate host interactions, including those associated with cellular, molecular and innate immune response of insects to pathogens they transmit. Students will be introduced to current research programs and topics of interest in the field of medical entomology.

Note:
Two hours of lecture a week, plus 2 hours of lab.

Requisites:
Recommended Prerequisite: BIOL 198, ENTOM 312, and BIOL 450.

Typically Offered
Fall

ENTOM 850 - Scanning Electron Microscopy

Credits: 2

Use of scanning electron miscroscopy for studying organic, inorganic or synthetic materials. Includes theory of SEM operation, techniques for specimen preparation, one-on-one sessions with a technician on a Hitachi 3500N variable pressure SEM, and post-image processing.

Typically Offered
Spring-Even Years

ENTOM 855 - Advanced Plant Resistance to Insects

Credits: 3

Plant resistance in crop plants including transgenic plants. Insect behavior, physiology, and ecology as affected by resistance. Discussion of methods of assessing and quantifying plant resistance.

Requisites:

Prerequisite: ENTOM 732 and PLPTH 732.

Typically Offered
Fall-Even Years

ENTOM 857 - Toxicology of Insecticides

Credits: 3

Advanced study of synthetic and naturally occurring insecticides with emphasis on distribution and elimination, metabolism, mechanism of action, resistance mechanisms, and current advances in new insecticide discovery and new approaches to insect control. The lab focuses on providing hands-on experience with techniques frequently used by toxicologists.

Note:
Two hours of lecture and one 3 hour lab each week.

Requisites:
Recommended Prerequisite: CHM 350, or BIOCH 521, or ENTOM 620.

Typically Offered
Spring-Odd Years

ENTOM 860 - Insect Genetics

Credits: 3

The course will initially describe the variety of genetic systems found in insects. Laboratory and statistical techniques will be discussed for studying genetic variation in insect populations. The final part of the course will focus on means for genetic manipulation of populations. The laboratory session will be used to discuss and/or demonstrate techniques for studying insect genetics.

Note:
2 hours lecture and one 3-hour lab each week.

Typically Offered
Spring-Odd Years

ENTOM 875 - Insect Physiology

Credits: 4

Functions of insect systems for development, metamorphosis, and reproduction. Physiological and biochemical mechanisms underlying insect activities, behavior, and ecological adaptations.

Note:
Three hours lecture and one hour discussion a week.

Typically Offered
Spring-Even Years

ENTOM 880 - Ecological Genomics

Credits: 3

Methodology and approaches for testing population genetic and community level hypotheses using next generation sequencing data. Emphasis on evaluating current technologies and applying methods appropriate for specific hypothesis tests. Course will include hands-on data analysis through exercises and a final project.

Requisites:
Recommended Prerequisite: ENTOM 910 or BIOL 705; STAT 701 or STAT 703.

Typically Offered
Spring-Odd Years

ENTOM 885 - Conventional and Molecular Methods for Evaluation of Crop Plant Resistance to Pests

Credits: 2

A series of laboratories illustrating different modes of plant resistance to pests, quantification of resistance effects, resistance gene flow, plant DNA isolation & quantification, and molecular marker-assisted selection of resistance genes of interest. Students develop hands-on experience using both conventional and molecular techniques to identify and quantify genetic plant resistance to pests.

Note:
One hour lecture and two hours lab a week.

Requisites:
Prerequisite: ENTOM 635 or PLPTH 635 and ENTOM 745 or PLPTH 755.

Typically Offered
Spring-Odd Years

ENTOM 892 - Advanced Insect Ecology

Credits: 3

This course addresses population and community ecology, plant-insect interactions, insect biodiversity and biogeography, and applied ecology. The course will weave basic ecological theory and principles with their application to entomological problems such as conservation, biological control, agriculture, and insect-vectored diseases of plants and humans.

Note:
Three hours lecture/discussion per week.

Requisites:
Recommended Prerequisite: BIOL 529 or ENTOM 692 or a college-level ecology course.

Typically Offered
Fall-Odd Years

ENTOM 898 - Master's Report in Entomology

Credits: 1-18

Work in various fields of entomology.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

ENTOM 899 - Master's Research in Entomology

Credits: 1-18

For student majoring in entomology.

Requisites:
Prerequisite: Knowledge in special area and consent of instructor.

Typically Offered
Fall, Spring, Summer

ENTOM 930 - Topics in Entomology

Credits: 1-9

Selected topics for advanced study in entomology.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

ENTOM 932 - Teaching Experience in Entomology

Credits: 1-3

Teaching experiences for graduate students, including classroom instruction, development of curriculum materials, and other pedagogical methods.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

ENTOM 995 - Entomology Seminar

Credits: 1

Requisites:
Prerequisite: Consult seminar committee. Pass/fail grade only.

Typically Offered
Fall, Spring

ENTOM 999 - Research in Entomology

Credits: 1-18

Dissertation credit for students majoring in entomology.

Requisites:
Prerequisite: Knowledge in special area and consent of instructor.

Typically Offered
Fall, Spring, Summer

ENTRP 520 - Social Entrepreneurship

Credits: 3

Social entrepreneurship is one of the fastest growing

disciplines to emerge in management and is increasingly getting recognition as an important policy strategy at the national level. It is concerned with how to engage the talents and tools of professional entrepreneurship to address critical social needs both within and beyond the market. Social entrepreneurship is situated within a framework of social institutions, organizations, and entrepreneurial change in response to human and citizen rights and needs. The relevant social institutions include government, the market, education, philanthropy, and the family. Organizations may be for profit or non-profit, but all organizations, regardless of their legal structure, are seen to have a social purpose. Several non-market venues for sustainable social change will be examined in addition to the traditional delivery of goods and services through the market. The course provides a number of crucial tools and resources that may better orient and equip the prospective social entrepreneur to identify and act on opportunities.

Requisites:
Prerequisite: ENTRP 340.or Junior Standing

Typically Offered
Spring

ENTRP 540 - Entrepreneurial Consulting

Credits: 3

This course is designed to provide students and faculty in the Entrepreneurship program the opportunity to give business assistance to small firms in the University community.

Requisites:
Prerequisite: ENTRP 340.

Typically Offered
Fall

ENTRP 575 - Entrepreneurship and Innovation Capstone

Credits: 3

Builds on previous coursework and other learning experiences to culminate in a final project that adds value to the learning experience.

Requisites:
Prerequisite: Junior Standing, Admitted to Entrepreneurship Major or Entrepreneurship Minor, Permission from the Entrepreneurship Center Director required.

Typically Offered
Fall, Spring, Summer

ENTRP 825 - Strategic Innovation

Credits: 3

Today's top companies succeed by making innovation a fundamental part of their strategy. As the pace of change continues to increase and the threat of disruption becomes the new normal, company leaders need to have a focused and effective approach to innovation. Students will be introduced to some of the core tools and strategies companies use to harness the innovative abilities, talents, and passion of their employees.

Typically Offered
Fall

ENVD 189 - Introduction to University Honors Program

Credits: 1

Directions and goals for the honors program.

Typically Offered
Fall, Spring

ENVD 195 - CAT Community Connections

Credits: 0

Interdisciplinary course that explores the connections among two different fields, courses, or disciplines.

Typically Offered
Fall

ENVD 200 - Student Success Seminar

Credits: 1

Provides students with strategies for creating success in college and life. Topics to be covered include accepting personal responsibility, motivation, academic self-management, self-awareness, and life balance.

Typically Offered
Fall, Spring

ENVD 201 - Environmental Design Studio I

Credits: 4

Foundation studies introducing principles, processes, and vocabularies of environmental design. Instruction in two and three dimensional visualization of objects and spaces. Instruction in the use of instrument-aided drawing, freehand drawing, and model building to represent and communicate design ideas at different scales of observation.

Requisites:
Prerequisite: Admission to the College of Architecture and Design or permission of the dean.

Typically Offered
Fall

ENVD 202 - Environmental Design Studio II

Credits: 4

Foundation studies introducing principles, processes, and vocabularies of environmental design. Instruction in two and three dimensional visualization of objects and spaces. Instruction in the use of instrument-aided drawing, freehand drawing, and model building to represent and communicate design ideas at different scales of observation.

Requisites:
Prerequisite: Admission to the College of Architecture and Design or permission of the dean.

Typically Offered
Spring

ENVD 203 - Survey of the Design Professions

Credits: 1

Overview of the design professions. Comparative study of the working methods, and societal and occupational roles of the architect, interior architect, landscape architect, and planner.

Typically Offered
Fall

ENVD 204 - Studio Seminar

Credits: 1

Seminar for students enrolled in ENVD 201. Topics related to studio and student success will be covered.

Requisites:
Prerequisite: Enrollment in ENVD 201.

Typically Offered
Fall

ENVD 210 - Indian Art, Architecture and Culture

Credits: 3

This course is designed to assist students in understanding India and its cultural, artistic, and architectural heritage so that students can develop a deeper understanding and appreciation for Indian culture, people and their way of life.

Typically Offered
Fall, Spring

ENVD 240 - Design Drawing

Credits: 2

This course offers an introduction to and sustained freehand drawing practice in fundamental drawing systems, methods and media for the environmental design professions.

Typically Offered
Fall, Spring

ENVD 250 - History of the Designed Environment I

Credits: 3

The history of the designed environment from ancient times to the 12th century.

Note:
Three hours lecture per week.

Typically Offered
Fall

ENVD 251 - History of the Designed Environment II

Credits: 3

The history of the designed environment from the 12th century to the mid-18th century.

Requisites:
Prerequisite: ENVD 250 or permission of instructor.

Typically Offered
Spring

ENVD 299 - Problems in Basic Design

Credits: 1-18

A study of specified problems in elementary environmental design under the guidance of a member of the staff.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Approval of associate dean.

Typically Offered
Fall, Spring, Summer

ENVD 400 - Undergraduate Research

Credits: 0-3

Mentored undergraduate research in architecture, interior architecture and product design, landscape architecture or planning.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

ENVD 430 - K-State APDesign: APDPro

Credits: 0

This course indicates and tracks which College of Architecture, Planning & Design students complete the APDPro requirements for each year.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

ENVD 650 - Italian, Art, History and Culture

Credits: 3

The course provides a synthesis of art, history, design and culture in the context of the Italian Peninsula and the Mediterranean region over time. Integration of material covered in lectures with field trips in Italy is expected.

Typically Offered
Fall, Spring, Summer

ENVD 654 - Education Abroad Orientation

Credits: .5-1

Preparation for participation in study abroad with a focus on specific information pertaining to the design professions and the analysis of the built and natural environment.

Typically Offered
Fall

ENVD 655 - International Field Study

Credits: 3

Group observation of design precedents (ancient to present day) of a selected region, conducted in situ, to study significant aspects of environment, culture, and technology as expressed in vernacular and designed environments.

Typically Offered
Fall, Spring, Summer

ENVD 699 - Problems in Environmental Design

Credits: 0-18

A study of specific environmental design problems under the direction of a member(s) of the departmental staff.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Junior standing; approval of associate dean.

Typically Offered
Fall, Spring, Summer

ENVD 899 - Problems in Environmental Design & Planning

Credits: 1-4

This course is intended to provide students an opportunity to focus on specific problems in environmental design and planning under the guidance of a member of the college's graduate faculty.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

ENVD 900 - Conceptual Approaches to Design and Planning

Credits: 3

Overview of contributions and limitations of various theoretical perspectives that inform the field of design and planning inquiry. Knowledge and theory construction. Nature, scope, and merits of scientific approach. Criticism of the scientific approach and examination of alternative approaches utilized in design and planning research and practice. Linking philosophy, research, and action/practice/application.

Typically Offered
Fall, Spring

ENVD 901 - Research Methods in Design and Planning

Credits: 3

Survey of research methods in the fields of design and planning, including overall systems of inquiry, criteria for assessing quality, strategies and tactics. Strengths and weaknesses of various research designs. Methods covered include experimental and quasi-experimental research, correlational research, qualitative research strategies, simulation and modeling research, action research and design intervention, case study, and combined strategies.

Typically Offered
Fall, Spring

ENVD 999 - Dissertation Research

Credits: 0-18

For students who have completed all credit hour, full-time enrollment, preliminary examination, and residency requirements for the doctoral degree, and are writing and defending their dissertations.

Typically Offered
Fall, Spring

FASH 550 - Fashion Internship

Credits: 4

Pre-planned and supervised off-campus work experience in the fashion industry.

Requisites:
Prerequisites: FASH 445 with a C or better; FASH 655 wit h a C or better or FASH 575 with a C or better; junior stand ing; and instructor's permission.

Typically Offered
Summer

FASH 575 - Fashion Forecasting

Credits: 3

Introduction of the processes and methods used by the fashion industry to conduct short-term and long-term forecasts. Application of fashion theory and principles, sources of information, knowledge, techniques and skills for planning and implementing fashion projection.

Requisites:
Prerequisites: FASH 340 with a C or better and FASH 430 with a C or better; and FASH 375 with a C or better or FASH 400 with a C or better.

Typically Offered
Spring

FASH 576 - Principles of Buying

Credits: 3

Introduction to the processes and methods used by fashion industry buyers to purchase merchandise assortments. Application of fashion theory and principles, sources of information, knowledge, techniques and skills for assortment planning, buying, vendor negotiations, and profit planning. Emphasis on merchandising mathematics.

Requisites:
Prerequisite: FASH 325 with a C or better, ACCTG 231 with a C or better, and CIS 102.

Typically Offered
Fall

FASH 600 - Soft Goods Supply Chain Management

Credits: 3

Analysis of global fiber, textile, and apparel production and distribution, structure of fashion industry and distribution channels; impact of culture, economics, and government regulations on production and distribution.

Requisites:
Prerequisite: FASH 245 with a C or better; and ECON 110 or ECON 120.

Typically Offered
Spring

FASH 610 - Computer-Aided Design of Fashion

Credits: 3

Development and presentation of fashion and textile design using visual graphic software.

Note:
Six hours lab a week.

Requisites:
Prerequisite: FASH 400 with a C or better.

Typically Offered
Fall

FASH 625 - Sustainable Fashion Business

Credits: 4

Application of marketing principles to the fashion industry. Focus on development of marketing, promotional, and merchandising plans.

Requisites:
Prerequisite: FASH 576 with a C or better, and senior or graduate standing.

Typically Offered
Spring

FASH 650 - Fashion Studies Study Tour

Credits: 1-3

Supervised off-campus tour of facilities or equivalent experience where softgoods products are designed, manufactured, tested, marketed, exhibited, and/or conserved.

Repeat for Credit
Repeatable for a maximum of 6 credits.

Requisites:
Prerequisite: Instructor's Permission.

Typically Offered
Fall, Spring, Summer

FASH 655 - Flat Pattern

Credits: 3

Fashion design through flat pattern methods.

Note:
Six hours lab a week.

Requisites:
Prerequisite: FASH 400 with a C or better and FASH 410 with a C or better.

Typically Offered
Spring

FASH 670 - Pre-Production Technologies

Credits: 3

Computer applications in 2D for pattern drafting, grading, marker, and tech packs; 3D visualization and evaluation.

Note:
Six hours lab a week.

Requisites:
Prerequisite: FASH 655 with a C or better.

Typically Offered
Fall

FASH 680 - Sustainable Fashion and Color

Credits: 4

Sustainable fashion design and coloration strategies, systems, and standards; coloration of textiles with natural dye and sustainable methods.

Requisites:
Prerequisite: FASH 350 with a grade of C or better.

Typically Offered
Fall

FASH 700 - Foundations of Sustainability

Credits: 3

Introduction to principles and practices of sustainability. Examination of the challenges to environmental, social, and economic sustainability on both a global and soft goods industry scale. Exploration of innovative practices and social change strategies for furtherance of sustainability.

Typically Offered
Spring

FASH 720 - Professional Advancement in Merchandising

Credits: 3

Analysis of leadership in a merchandising firm and how it affects organizational culture and change. Various leadership styles examined, and a personal leadership philosophy developed.

Typically Offered
Summer

FASH 725 - Theory and Practice of Soft Goods Marketing and Distribution

Credits: 3

Theoretical and applied analysis of soft goods marketing and distribution strategies, with an emphasis on the effectiveness of a market-oriented approach for decision-making; assessment of environmental forces affecting strategic decisions by firms in the distribution channel; synthesis of past and present trends in order to forecast probably future patterns.

Typically Offered
Spring

FASH 735 - Promotional Strategies in Merchandising

Credits: 3

Examination of promotional strategies and techniques used by merchandising firms, emphasizing cultural and global awareness, social responsibility, and ethical decision making.

Typically Offered
Fall

FASH 740 - Merchandising Analytics

Credits: 3

Using quantitative data from the merchandising industry to support managerial decision making. Specifically, how to format and analyze Point of Sale (POS) and Enterprise Resource Planning (ERP) merchandising data with the goal of maximizing profitability. Applying analytical approaches to problem solving using Microsoft Excel. Strengthening decision making and analytical skills while providing new perspectives and approaches to apply quantitative techniques and methods to solve real-world merchandising problems.

Typically Offered
Spring

FASH 805 - Practice-Based Research

Credits: 3

Examination and application of approaches for undertaking practice-based research in fashion studies.

Typically Offered
On sufficient demand

FASH 810 - International Merchandise Management

Credits: 3

Comprehensive understanding of theory, practices, and trends in international merchandise management. Analysis of the global merchandising system and way goods are distributed to consumers in various countries.

Typically Offered
Fall

FASH 815 - Financial Merchandising Implications

Credits: 3

The advanced study of financial trends in the merchandising industries. Focus will be on the financial implications of recent advances in the field.

Typically Offered
Summer

FASH 825 - Strategic Planning for Sustainability

Credits: 3

Examination of the executive level planning process utilized to develop successful merchandising strategies; emphasis on the importance of a market orientation for building customer value and sustaining a competitive advantage.

Requisites:
Prerequisite: Instructor's Permission.

Typically Offered
Fall

FASH 830 - Fashion Behavior & Sustainability

Credits: 3

Evaluation of historical, sociological, psychological, economic, and theoretical underpinnings of fashion process, and examination of approaches fostering greater sustainable apparel consumption.

Typically Offered
On sufficient demand

FASH 840 - Product Development

Credits: 3

Advanced study of issues and management strategies necessary to design and produce a competitively priced product. Examination of the role of globalization and rapidly changing technology on the development of a successful product.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Fall

FASH 845 - Consumers in the Soft Goods Market

Credits: 3

Analysis of consumers and their decision-making processes; examination of internal and external factors influencing evaluation and purchasing behavior in order to predict future consumption and purchasing patterns.

Typically Offered
Spring

FASH 850 - Research Methods in Fashion Studies

Credits: 3

Research methods that address practical and theoretical issues involved in designing, conducting, and evaluating research.

Requisites:
Recommended Prerequisite: A graduate-level course in statistics.

Typically Offered
Spring

FASH 855 - Readings in Fashion Studies

Credits: 1-2

Directed reading and study of selected topics.

Requisites:
Prerequisite: FASH 850.

Typically Offered
Fall, Spring, Summer

FASH 860 - Contemporary Topics in Fashion Studies

Credits: 1-3

Selected contemporary topics related to fashion studies.

Requisites:
Prerequisite: 8 hours of credit basic to field.

Typically Offered
On sufficient demand

FASH 870 - Problems in Fashion Studies

Credits: 1-6

Independent study related to fashion studies.

Requisites:
Prerequisite: Six hours credit basic to the field.

Typically Offered
Fall, Spring, Summer

FASH 875 - Practicum in Fashion Studies

Credits: 1-6

Preplanned and supervised off-campus experience in business, industry, museums, government agencies, or the cooperative extension service.

Requisites:
Prerequisite: Twelve hours in the field.

Typically Offered
Fall, Spring, Summer

FASH 896 - Project Report

Credits: 1-3

Research and written documentation for the M.S. Project Report option.

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

FASH 897 - Project Exhibit

Credits: 1-6

Project development for creative-oriented M.S. Project Report option resulting in a body of original works to be exhibited on campus during the final semester of the student's program.

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

FASH 899 - Master's Thesis Research

Credits: 1-6

Research and written documentation for the M.S. Thesis option.

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

FASH 990 - Dissertation Proposal Seminar

Credits: 1

Presentation and discussion of proposals for dissertation research.

Requisites:
Prerequisite: Six hours of statistics, three hours of research design or methods, and consent of major professor.

Typically Offered
Fall, Spring

FASH 995 - Grantsmanship and Publication

Credits: 3

Grant writing, identifying external funding, managing grants, preparing manuscripts for peer-reviewed publication, and preparing papers and poster for presentation at professional meetings.

Requisites:
Prerequisite: FASH 850 or other research methods course.

Typically Offered
On sufficient demand

FASH 999 - Dissertation Research in Fashion Studies

Credits: 1-12

Research in fashion studies for the doctoral dissertation.

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

FDSCI 501 - Food Chemistry

Credits: 3

An in-depth coverage of the chemical structures of major food components and the chemical reactions occurring during storage and processing.

Note:
Two hours lecture and three hours lab a week.
**500-599 courses can not be used in a student's program of study.

Requisites:
Recommended Prerequisite: CHEM 350 and BIOCH 521.

Typically Offered
Spring

FDSCI 510 - Fruit and Vegetable Processing

Credits: 2

Fundamental fruit and vegetable processes and related unit operations including blanching, cooling, freezing, canning, irradiation, fermentation, pickling, drying, packaging in relation to quality, safety, and nutritional aspects of related products. Importance of raw material characteristics and storage conditions will be discussed in terms of post-harvest physiology of fruits and vegetables and different product types. Functionality of ingredients common in fruit and vegetable processing will also be introduced.

Note:
A companion laboratory (FDSCI 511) is also offered but is not required.

Requisites:
Prerequisite: FDSCI 305 and MATH 205 or MATH 220

Typically Offered
Fall

FDSCI 511 - Fruit and Vegetable Processing Lab

Credits: 1

The lab component of FDSCI 510 Fruit and Vegetable Processing. The labs will demonstrate both industrial and lab scale applications of technologies, unit operations, quality measurements, and related processing calculations commonly used in fruit and vegetable processing.

Requisites:
Prerequisite OR Corequisite: FDSCI 510

Typically Offered
fall

FDSCI 530 - Undergraduate Research in Food Science & Industry

Credits: 0-3

Mentored undergraduate research experience in animal or food sciences.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Fall, Spring

FDSCI 600 - Food Microbiology

Credits: 2

This course deals with the isolation, identification,

enumeration, and characterization of bacteria, yeasts, molds and other microbes associated with foods and food processing. Effects of physical and chemical agents on micro-organisms will be studied. Microbiological problems in food spoilage, food preservation, food fermentation, and food-borne diseases will be discussed.

Requisites:
Prerequisite: BIOL 455.

Typically Offered
Fall

FDSCI 601 - Food Microbiology Lab

Credits: 2

Laboratory procedures involving isolation, identification, enumeration, and characterization of bacteria, yeasts, molds and other microbes associated with foods and food processing. Two two-hour labs a week.

Requisites:
Prerequisite: FDSCI 600 or concurrent enrollment.

Typically Offered
Fall

FDSCI 603 - Food Science Internship

Credits: 1-6

Supervised professional field experience in food science.

Requisites:
Prerequisite: Consent of supervising instructor.

Typically Offered
Fall, Spring, Summer

FDSCI 630 - Food Science Problems

Credits: 0-18

Research or related work with others, or a literature search. Written reports are required. Any field of food science for which the student has adequate background.

Requisites:
Recommended Prerequisite: FDSCI 302.

Typically Offered
Fall, Spring, Summer

FDSCI 660 - International Study Experience in Food Science

Credits: 0-6

Seminar and travel course designed to prepare students before the experience and for students to analyze, critique, and report their experiences of an international experience associated with study tours or short courses. Course will focus on appropriate oral and written documentation of the student learning objectives for course experience. The academic topics will vary with each international activity.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Fall, Spring, Summer

FDSCI 690 - Principles of HACCP and HARPC

Credits: 3

A comprehensive study of the Hazard Analysis and Critical Control Point (HACCP) System and the Hazard Analysis Risk Based Preventive Controls (HARPC) and thier application in the meat and food industries. Students will meet the training requirements under USDA HACCP and the FDA Food Safety Modernization Act (FSMA) for food safety.

Note:
Three hours lecture and group activities per week.
*Great Plains IDEA course

Requisites:
Prerequisite: Junior Standing.
Recommended Prerequisite: BIOL 198 and CHM 110.

Typically Offered
Spring-Even Years

FDSCI 694 - Food Plant Management

Credits: 3

The integration of food science knowledge in managing a food processing operation to produce high quality food products.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Recommended Prerequisite: Senior standing.

Typically Offered
Fall

FDSCI 695 - Quality Assurance of Food Products

Credits: 3

A comprehensive course covering all aspects of quality assurance practices in the food industry. Emphasis is placed on interrelations of food chemistry, microbiology, sanitation, processing, and laws and regulations.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: One course in microbiology.

Typically Offered
Fall

FDSCI 710 - Kosher and Halal Food Regulations

Credits: 2

This course is an introduction to the origin and application of Jewish and Muslim dietary laws and their application in commercial food production and processing with some coverage of home practices. Hebrew, Yiddish, and Arabic words and phrases will be presented and explained as they relate to kosher and halal food production, processing, and consumption. Religious festivals and customs, and the associated food products, will also be presented. Current food-related topics and issues in both the Jewish and Islam communities will be discussed. Food scientists should be aware of what constitutes a kosher or halal product and the importance of regulations dealing with the production and processing of these products. This is a web-based lecture course intended for off-campus distance education students. Lecture material is supplemented with web-based demonstrations.

Requisites:
Prerequisite: Junior Standing.

FDSCI 711 - Flavor Chemistry

Credits: 3

Covers the use and evaluation of flavor reactions and flavor chemicals used in food systems. The impact of fat, carbohydrates, proteins, and texture on foods, as well as other key topics such as ingredient sources for flavorings, regulating agencies, analytical tools and instruments used by flavor chemists are presented.

Requisites:
Prerequisite: CHM 350 or CHM 530 or a course in Organic Chemistry.

Recommended prerequisite: FDSCI 501 or a course in Food Chemistry.

Typically Offered
Fall, Spring

FDSCI 712 - Food Packaging

Credits: 2

Covers the functionality of different food packaging types, as well as the materials and technology used in new package development. Packaging concept types as well as the functionality of different materials are presented.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Summer

FDSCI 713 - Rapid Methods and Automation in Microbiology

Credits: 2

Rapid methods and automation is a dynamic area in applied microbiology dealing with the study of improved methods in the isolation, detection, characterization, and enumeration of microorganisms and their products in clinical, food, industrial, and environmental samples. The knowledge and techniques of this course are useful for students interested in medical, food, industrial, and environmental microbiology for early detection of beneficial as well as harmful microorganisms in their work.

Note:
*Great Plains IDEA course

Typically Offered
Intersession

FDSCI 720 - Reaction Kinetics in Foods

Credits: 2

A comprehensive course covering the principles of reaction kinetics in food systems to make quantitative predictions about food quality and food safety, and optimize food processing conditions.

Requisites:
Pre-Requisite: MATH 205 or MATH 220

Recommended prerequisite, or concurrent enrollment, in FDSCI 600 or FDSCI 501

Typically Offered
Spring

FDSCI 721 - Reaction Kinetics in Foods Recitation

Credits: 1

Recitation course covering the theories, case-studies, and exercise problems for the lecture course FDSCI 720, which needs to be taken concurrently.

Requisites:
Co-Requisite: FDSCI 720

Typically Offered
Spring

FDSCI 725 - Food Analysis

Credits: 3

Principles, methods, and techniques necessary for quantitative, instrumental, physical, and chemical analyses of food and food products for off-campus students using an audio/video taped format. The analytical principles will be related to standards and regulations for food processing.

Requisites:
Recommended Prerequisite: FDSCI 501

Typically Offered
Fall, Spring

FDSCI 727 - Chemical Methods of Food Analysis

Credits: 2

Methods for quantitative, physical, and chemical analyses of foods and food products. Analytical techniques covered will include spectroscopy, chromatography, mass spectrometry, immunochemistry and atomic absorption. The analyses will be related to standards and regulations for food processing. Meets during first half of semester.

Note:
Three hours lecture and three hours lab a week.

Requisites:
Recommended Prerequisite: FDSCI 501.

Typically Offered
Fall

FDSCI 728 - Physical Methods of Food Analysis

Credits: 2

Principles of physical and chemical methods and instrumentation for measuring protein, fat, moisture, and ash content. Determination of fat and oil quality characteristics. Physical measurements of food properties: color, water activity, water holding capacity, textural characteristic. Determination of properties and stability of emulsions, foams, and gels.

Note:
One hour recitation, and three hours lab a week. This course may be selected for the major. See your advisor for details.

Requisites:
Recommended Prerequisite: FDSCI 501.

Typically Offered
Fall

FDSCI 730 - A Multidisciplinary Overview of Food Safety and Security

Credits: 2

Multidisciplinary food safety and security perspectives provided by numerous subject matter experts. Topics include food safety policy, ag bioterrorism, border security,

animal ID, food defense and site security, risk analysis, crisis communication, epidemiology, HACCP, and more.

Note:
*Great Plains IDEA course

Requisites:
Prerequisite: A course in biology or chemistry.

Typically Offered
Fall, Spring, Summer

FDSCI 731 - Food Protection and Defense--Essential Concepts

Credits: 2

This course presents foundational concepts relevant to protecting the food supply from intentional contamination, including the nature of the food and agriculture system as a critical infrastructure, threats to food and agricultural systems, as well as concepts and strategies related to response and mitigation of food protection incidents.

Typically Offered
Fall, Spring, Summer

FDSCI 740 - Research and Development of Food Products

Credits: 4

All aspects of new food product development from concept to store shelves will be covered, including market screening; focus groups; idea generation; prototype development; ingredient functionality and interactions; statistical designs for product development; processing; packaging; scale-up of operations; regulatory issues; labeling; physical, chemical, microbiological and sensory evaluations; quality control procedures; and HACCP plans.

Note:
Two hours lecture and six hours lab a week.

Requisites:
Recommended Prerequisite: FDSCI 501.

Typically Offered
Fall

FDSCI 750 - Food Toxicants

Credits: 2

Quantitation metabolism and mechanisms of action of major foodborne toxicants. Toxicant defense and control systems, risk analysis and assessment and application of food laws.

Note:
*Great Plains IDEA course

Requisites:
Prerequisite: a course in biochemistry

Typically Offered
Fall

FDSCI 751 - Food Laws and the Regulatory Process

Credits: 2

History of the development of the current federal and state food regulations. Guidelines that govern the practice of regulating the wholesomeness of red meats, poultry, and eggs. Presentations by state and federal food regulators.

Note:
*Great Plains IDEA course

Requisites:
Prerequisite: Three credits in food science coursework at 200 level or above

Typically Offered
Fall, Summer

FDSCI 753 - Risk Assessment for Food, Ag, & Vet Med

Credits: 3

Risk assessment principles as applied to biological systems. Exposure and effects characterization in human and animal health and ecological risk assessment. Risk analysis frameworks and regulatory decision-making. Introduction to quantitative methods for risk assessment using epidemiological and distributional analyses. Uncertainty analysis.

Note:
*Great Plains IDEA course

Requisites:

Prerequisite: A course in statistics or instructor consent

Typically Offered
Fall

FDSCI 791 - Advanced Application of HACCP Principles

Credits: 3

Evaluation of control parameters and methodology at critical control points, validating and auditing the effectiveness of critical control points, critical limits, monitoring tools, corrective action procedures, recordkeeping and verification procedures in addressing biological, chemical, and physical hazards that may be present in food products.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: FDSCI 690. Recommended Prerequisite: BIOL 455.

Typically Offered
Spring-Odd Years

FDSCI 810 - Fermented Foods

Credits: 2

Application of the principles of microbiology to the understanding of the fermentation of various categories of foods. Chemical, biochemical and microbiological changes under controlled and uncontrolled conditions.

Note:
*Great Plains IDEA course

Typically Offered
Spring-Even Years

FDSCI 811 - Food Fermentation

Credits: 4

Application of the principles of microbiology to the understanding of the fermentation of various categories of foods. Chemical, biochemical and microbiological changes under controlled and uncontrolled conditions.

Note:
Two hours lecture and six hours lab a week.

Requisites:
Prerequisite: BIOL 455.

Typically Offered
Spring

FDSCI 815 - Advanced Food Chemistry

Credits: 3

Relationship of chemical composition to properties and to physical and chemical stability of foods. Chemical reactions will be covered extensively. Special attention will be given to dairy and poultry products, red meats, vegetables, and cereal grains.

Requisites:
Prerequisite: BIOCH 521, BIOCH 522.

Typically Offered
Fall

FDSCI 820 - Advanced Food Microbiology & Biotechnology

Credits: 2

Principles of food biotechnology, including introduction of molecular biology and enzyme immobilization. Theory and concepts of current biotechnology trends as it relates to food safety and security issues.

Note:
*Great Plains IDEA course

Requisites:
Prerequisite: A course in food microbiology or general microbiology, and a course in biochemistry

Typically Offered
Fall-Odd Years

FDSCI 840 - Public Health Practice

Credits: 3-6

Supervised field experience in an international, state, local, or district health agency or other appropriate health agency.

Repeat for Credit
Repeatable. Only 6 hours may be applied toward the MPH

degree/program of study.

Requisites:
Prerequisite: Consent of instructor. DMP 840, FNDH 840, and KIN 840.

Typically Offered
Fall, Spring, Summer

Crosslisted:
MPH 840

FDSCI 850 - Food Science Graduate Seminar

Credits: 1

This course is designed to provide students with experience in developing and delivering a scholarly presentation on a specific topic. The course will include instruction on how to properly design technical presentations for effective communication. Students will learn how to use visual aids such as transparencies, slides and multimedia projectors. At least one technical presentation will be required. One credit required for an M.S. degree and 2 credits for a Ph.D. Degree.

Typically Offered
Spring

FDSCI 898 - Master's Report in Food Science

Credits: 1-2

A written report of either research or problem work on a topic in the major field.

Typically Offered
Fall, Spring, Summer

FDSCI 899 - Master's Research in Food Science

Credits: 1-18

Research leading to the completion of a master's thesis.

Typically Offered
Fall, Spring, Summer

FDSCI 907 - Food Dispersions

Credits: 2

Laws and theorems applied to the formation, mechanization and stabilization of food dispersions: properties of food dispersions; food solids, gels, batters, emulsions and foams.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: ASI 815.

Typically Offered
Spring-Odd Years

FDSCI 915 - Food Toxicology

Credits: 2

This course deals with the study of occurrence, detection, and control of microbial toxins and chemical toxins in fresh and processed foods. The genetics, physiology, and mechanisms of toxin production by microbial cells and the chemistry, formation, and interactions of chemical toxins with food systems during food processing will be addressed.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: ASI 607 and ASI 715.

Typically Offered
Spring-Odd Years

FDSCI 961 - Graduate Problem in Food Science

Credits: 1-18

In-depth study of a topic supervised by a member of the graduate faculty.

Typically Offered
Fall, Spring, Summer

FDSCI 999 - Doctoral Research in Food Science

Credits: 1-18

Research leading to the completion of a Ph.D. Degree.

Typically Offered
Fall, Spring, Summer

FINAN 500 - Investment Management Concepts

Credits: 3

An introduction and study of the issues and skills involved in successful investment management. This course will survey the role of capital markets, the basics of fundamental and technical analysis, behavioral finance, the basic of financial statements, client development, and management skills necessary for investment management success.

Requisites:
Prerequisite: FINAN 450.

Typically Offered
Spring

FINAN 510 - Financial Institutions and Markets

Credits: 3

An analysis of financial institutions and markets from a risk management point of view. The role of financial institutions in the marketplace, the determinants of interest rates, and the impact of inflation on asset returns will be examined. Risks in financial institutions will be analyzed and management of these risks will be emphasized.

Requisites:
Prerequisite: FINAN 450. May be taken concurrently with FINAN 520.

Typically Offered
Fall, Spring

FINAN 520 - Investments

Credits: 3

An analysis of investment securities from the investor's point of view. Topics covered include the mechanics of investing in securities and market basics, the risk-return trade-off, asset pricing models, market efficiency, the valuation of securities, portfolio performance measurement, and an introduction to derivatives.

Requisites:
Prerequisite: FINAN 450. May be taken concurrently with FINAN 510.

Typically Offered
Fall, Spring

FINAN 531 - Commercial Banking

Credits: 3

An application of financial management concepts to the liquidity management, investment portfolio analysis, capital budgeting, and capital structure decision-making process required by a commercial bank to perform effectively its financial intermediation role within the financial system's institutional, regulatory, and competitive environment.

Requisites:
Prerequisite: FINAN 510 and FINAN 520.

Typically Offered
Spring

FINAN 552 - Real Estate

Credits: 3

Principles and practices including legal, economic, and social implications from the viewpoint of the real estate practitioner, investor, and society.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Spring

FINAN 561 - Finance for Entrepreneurs

Credits: 3

A comprehensive set of knowledge and tools to start, run, and exit and entrepreneurial or small business. These tools include financial forecasting and business planning, financing operations and capital investments, evaluation of asset acquisitions, tax planning, short-term capital management, mergers/acquisitions, and evaluation of exit strategies.

Requisites:
Prerequisite: FINAN 450.

Typically Offered
Fall

FINAN 575 - Intermediate Finance

Credits: 3

An in-depth study of a firm's investment and financing decisions, firm performance measurement and financial planning for a business enterprise. Topics include financial statement analysis and forecasting, capital budgeting, risk considerations in capital budgeting, cost of capital, capital structure theory and practice, distribution policy, leasing and mergers and acquisitions.

Requisites:
Prerequisite: FINAN 510 and FINAN 520.

Typically Offered
Fall, Spring

FINAN 623 - Financial Modeling

Credits: 3

This course is designed to provide an in-depth knowledge of the use of Excel for use in the corporate finance and equity valuation environment. Topics include: • Use of Excel •Developing Models in Excel • Developing functional understanding of how to use Excel.

Requisites:
Prerequisite: FINAN 510 and FINAN 520 or FINAN 830.

Typically Offered
Fall, Spring

FINAN 643 - International Financial Management

Credits: 3

The international (cross-currency) aspects of financial management. Topics include currency markets and exchange rate determination, parity conditions, foreign exchange exposure and management, and valuation of international projects.

Requisites:
Prerequisite: Either FINAN 510 and FINAN 520 or FINAN 815.

Typically Offered
Fall

FINAN 653 - Security and Portfolio Analysis

Credits: 3

The analysis and valuation of securities and the management of investment portfolios. Students analyze the composition of, make buy/sell recommendations for, and evaluate the performance of an actual portfolio.

Requisites:
Prerequisite: FINAN 510 and FINAN 520 or FINAN 815.

Typically Offered
Fall, Spring

FINAN 654 - Derivative Securities and Markets

Credits: 3

Structure and operation of markets for futures, swaps, options, synthetic options, and futures on options. Valuation of futures contracts and options. Applications of derivatives to hedging and speculating strategies.

Requisites:
Prerequisite: FINAN 510 and FINAN 520 or FINAN 815.

Typically Offered
Spring

FINAN 655 - Advanced Portfolio Management

Credits: 3

Provides students the background knowledge in portfolio management. This will include learning about: investment mix and policy, investment objectives, differing asset allocations for individuals and institutions, and balancing risk and performance.

Requisites:
FINAN510, FINAN520, and acceptance to the Financial Analyst Track

Typically Offered
Fall

FINAN 661 - Professional Financial Planning

Credits: 3

A study of the principles and practices of professional financial planning using an integrated planning model. Topics include the planning environment, concepts, tax management, asset acquisition and management, credit management, risk management, investments, retirement planning, and estate planning. Contemporary applications, professional opportunities, and legal/ethical standards are emphasized.

Requisites:
Prerequisite: FINAN 510 and FINAN 520.

Typically Offered
Fall, Spring

FINAN 663 - Mergers and Acquisition

Credits: 3

Presents the theories and empirical evidence on mergers, acquisitions, and restructuring, and analyzes the effects of various policy options on stock values of acquirer and target companies.

Requisites:
FINAN 575, FINAN623, and acceptance to Financial Analyst Track

Typically Offered
Spring

FINAN 675 - Cases in Finance

Credits: 3

Capstone course in finance utilizing real world cases to integrate and apply financial concepts and theories, with emphasis on analytical and written and oral communication skills.

Requisites:
Prerequisite: FINAN 575, and senior level students admitted in a College of Business Administration degree track or graduate standing.

Typically Offered
Fall, Spring

FINAN 798 - Special Topics in Finance

Credits: 1-9

Selected projects appropriate to the student's program of study.

Typically Offered
Fall or Spring

FINAN 815 - Foundations of Finance

Credits: 3

Advanced financial concepts and tools with emphasis on corporate valuation. Topics include risk and return, valuation techniques, capital budgeting, capital structure, options and futures, real options, and financial risk management.

Requisites:
Prerequisite: ACCTG 810.

Typically Offered
Spring

FINAN 820 - Advanced International Financial Management

Credits: 3

A study of the international dimensions of corporate financial management with an applied orientation.

Requisites:
Prerequisite: FINAN 815.

Typically Offered
Spring

FINAN 830 - Financial Market Theory

Credits: 3

Development and analysis of conceptual framework for understanding (1) the functions performed by financial markets and their associated institutional arrangements, and (2) the contractual claims in transferring savings among business, household, and government participants in the economic system.

Requisites:
Prerequisite: FINAN 815 or FINAN 450 and ACCTG 433.

Typically Offered
Fall

FINAN 840 - Entrepreneurial Finance

Credits: 3

This course will provide potential entrepreneurs a sufficient knowledge of applied finance needed to start and run an entrepreneurial business. Concepts covered will include the basic paradigms of finance such as risk and portfolio diversification. Discussions of the accounting environment of a small business and how the financial conditions can be analyzed will also be included. Finally, the course will focus on the financial skills a beginning entrepreneur will need to know to operate a small business, such as valuation, short-term capital management, financing decisions, and the exit strategies available to such enterprises.

Requisites:
Prerequisite: FINAN 815.

Typically Offered
On sufficient demand

FINAN 890 - Seminar in Finance

Credits: 3

In-depth study of selected contemporary issues in finance.

Requisites:
Prerequisite: FINAN 815.

Typically Offered
On sufficient demand

FINAN 898 - Advanced Problems in Finance

Credits: 0-18

Independent study of selected advanced topic(s) in finance.

Requisites:
Prerequisite: Consent of department head.

Typically Offered
Fall, Spring, Summer

FNDH 510 - Life Span Nutrition

Credits: 2

Physiological and environmental influences on nutritional requirements; nutritional problems and eating patterns of age groups throughout the life cycle.

Requisites:
Prerequisite: FNDH 400 and FNDH 450.

Typically Offered
Fall, Spring

FNDH 515 - Counseling Strategies in Dietetic Practice

Credits: 3

Application of interviewing, counseling, and educational techniques in dietetics, including individual and group methods.

Note:
Includes three hours of lecture per week.

Requisites:
Prerequisite: PSYCH 110 or SOCIO 211; HN 450
Co-Rec.: HN 450

Typically Offered
Fall, Spring, Summer

FNDH 516 - Communication Competencies in Dietetics Practice

Credits: 1

Assessment of audiences and development of effective food/nutrition messages in community settings.

Requisites:
Prerequisite: HM 515 or conc. enrollment

Typically Offered
Spring, Summer

FNDH 517 - Communication Competencies in Dietetics Practicum

Credits: 1

Application of principles learned in HMD 516 Communication Competencies in Dietetics Practice to the

development, implementation, and evaluation of a community project under the guidance of a community mentor.

Requisites:
Prerequisite: Admission into the Coordinated Program in Dietetics; concurrent enrollment in HM 516 and HM 521.

Typically Offered
Fall, Spring, Summer

FNDH 519 - Introduction to Clinical Dietetics

Credits: 1

Preparation for entrance into the clinical supervised practice experience. Review of medical record content; current practice protocols in clinical dietetics; practice case studies.

Note:
Four day workshop.

Requisites:
Prerequisite: Admission into the Coordinated Program in Dietetics; concurrent enrollment in HM 521.

Typically Offered
Fall

FNDH 520 - Applied Clinical Dietetics

Credits: 3

Application of clinical nutrition principles through case studies, independent research, discussion, groups, and oral presentations. Case studies will focus on medical nutrition therapy and education of persons throughout the life cycle and nutrition intervention for individuals with multiple disease states in various healthcare settings.

Requisites:
Prerequisite: Admission to the coordinated program in dietetics.

Typically Offered
Fall, Spring

FNDH 521 - Clinical Dietetic Practicum

Credits: 8

Supervised clinical/community experience in the nutritional care of patients/clients. Practicum experiences are arranged with participating healthcare facilities.

Requisites:
Prerequisite: Must be taken concurrently with HM 520.

Typically Offered
Fall, Spring

FNDH 530 - Nutrition Education in Extension

Credits: 1

The process of and strategies for providing nutrition education outreach to diverse community audiences, including those with limited resources.

Requisites:
Prerequisite: Any college-level nutrition course and junior or senior standing.

Typically Offered
Spring

FNDH 535 - Energy Balance

Credits: 2

This course will cover metabolic principles as they relate to energy intake (diet) and expenditure (exercise). Specific topics will include: obesity, anorexia/bulimia, bioenergetics, substrate selection/regulation (especially exercise and diabetes), body composition; methodology to assess each; and metabolism related disease.

Requisites:
Prerequisite: HN 400 or KIN 335 or concurrent enrollment in either.

Typically Offered
Fall

FNDH 551 - Evaluation of Athletic Injuries of the Extremities

Credits: 3

This course is designed to familiarize the athletic training student with the principles of orthopedic assessment and to apply these principles to specific regions of the body. Knowledge gained in this course may be applicable to other individuals interested in health related professions which require systematic examination of the body.

Requisites:
Prerequisite: FNDH 320 with a B or better and a C or better in either KIN 360, BIOL 441, or 5 hours of anatomy and physiology credit.

Typically Offered
Fall

FNDH 552 - Emergency Procedures and Evaluation of Core Athletic Injuries

Credits: 3

Familiarize the athletic training student with the procedures of emergency management of athletic injuries and to apply these procedures both on the field and off the field. Familiarized with the principles of orthopedic and emergency medical assessment and to apply these principles to the core of the body. Knowledge gained may be applicable to other individuals interested in health related professions which require systematic examination of the body in emergency settings.

Requisites:
Prerequisite: HN 320 with a B or better and a C or better in KIN 360, BIOL 441 and BIOL 442, or 8 hours of Anatomy and Physiology transfer credit.

Typically Offered
Spring

FNDH 553 - Pharmacology in Athletic Training

Credits: 2

Study of medications commonly encountered in the practice of athletic training. Includes categories of drugs, generic and trade names of common drugs, the use, effects and precautions for common drugs and drug-interactions. Focuses on how various drugs affect the patient response to activity, exercise and other therapeutic interventions.

Requisites:
Prerequisite: C or better in KIN 360, BIOL 441 and BIOL 442 or 8 hours of Anatomy and Physiology transfer credit.

Typically Offered
Fall

FNDH 554 - General Medical Conditions in the Athlete

Credits: 2

Recognition, evaluation, management, and prevention of the most common medical conditions that affect athletic participation. Emphasis placed on the appropriate history, physical exam, indications for referral, and treatment for each condition.

Requisites:
Prerequisite: C or better in KIN 360, BIOL 441 and BIOL 442, or 8 hours of Anatomy and Physiology transfer credit; HN 551 and HN 552.

Typically Offered
Fall, Spring

FNDH 555 - Therapeutic Modalities in Athletic Training

Credits: 3

The theory and application of the various energy systems used in the treatment of athletic injuries. Practical experiences will be emphasized.

Requisites:
Prerequisite: HN 551, HN 320 with a B or better.
Co-Requisite: HN 552

Typically Offered
Spring

FNDH 556 - Rehabilitation and Conditioning for Athletic Injuries

Credits: 3

A study of applied rehabilitation and conditioning techniques used by athletic trainers.

Requisites:
Prerequisite: HN 551, HN 552 and HN 555 (or conc. enrollment).

Typically Offered
Spring

FNDH 557 - Administration of Athletic Training Programs

Credits: 3

A study of issues affecting athletic trainers in their roles as administrators in the areas of role delineation, budget designs, legal aspects of sport, facility design, and drug testing and drug education.

Requisites:
Prerequisite: HN 556 and senior standing.

Typically Offered
Fall, Spring

FNDH 558 - Advanced Athletic Training Techniques

Credits: 3

This course will provide a deeper application of athletic training techniques in specific orthopedic related areas. Students will have a hands-on and lab component as it relates to casting, bracing, Kinesiotaping, and manual therapy techniques. Upon completion of this course, students will be eligible to complete the certification examinations to obtain credentialing as an ASOP Orthopedic Physician Extender.

Note:
The course will be conducted as a hands on lab and lecture. The primary focus is skill acquisition and application.

Requisites:
Prerequisite: HN 551
Co.: HN 552

Typically Offered
Spring

FNDH 560 - Management in Dietetics

Credits: 3

Management and leadership in dietetic practice. Discussion of current issues affecting practice including human resources, outcomes management, accreditation/quality assurance, financial resources, marketing, technology and recent trends in various fields of management practice.

Requisites:
Corequisite: FNDH 426
Prerequisite: Admission to DPD or CP.

Typically Offered
Fall (on campus), Spring (online), Summer (online)

FNDH 561 - Management in Dietetics Practicum

Credits: 8

Supervised practice experience in the application of management principles in foodservice operations or other dietetics practice settings.

Requisites:
Prerequisite: Admission to CP; HM 560 or concurrent enrollment.

Typically Offered
Fall

FNDH 562 - Management in Dietetics Practicum Recitation

Credits: 1

Focused discussion of significant occurrences during the supervised practice experience and the application of management principles in foodservice operations or other dietetic practice settings. Behavior-based assessment and progression is utilized to encourage self-development and entry-level competence in dietetics practice.

Requisites:
Prerequisite: Admission to the Coordinated Program in Dietetics; concurrent enrollment in HRIMD 561.

Typically Offered
Fall

FNDH 570 - Introduction to Research in Dietetics Practice

Credits: 1

Introduction to basic research design in dietetics with application of the research to evidenced-based practice using the Evidence Analysis Library of the Academy of Nutrition and Dietetics.

Requisites:
Prerequisite: Junior Standing or Instructor permission

Typically Offered
Spring, Summer

FNDH 575 - Research Methods and Scientific Communication in Health Sciences

Credits: 3

Students in this undergraduate course will examine the role and importance of the scientific method in health professions, with focus on nutrition and sports medicine. The course will outline the research methods used to acquire knowledge in health-related professions. The rationale and role of evidence-based practice and research will be explored, and students will be introduced to research language and core concepts. Skills will be developed for asking clinical or professional questions, and how to translate these questions into search strategies for finding evidence. The purpose of this course is to provide initial instruction on how to locate, understand, and evaluate the research literature in the student's area of interest. As a broad survey course, the expectation is not mastery of research methodology, but rather improvement in competencies related to the critical consumption of research literature. Students will be introduced to quantitative and qualitative research methods, types of data, how data are described and how biostatistics are used to provide meaning to research data. A range of health research methods will be covered, and studies about treatment effectiveness (clinical trials and systematic reviews), as well as qualitative approaches will be explored. Students will be introduced to research tools and search engines that support conducting a literature review.

Requisites:
Prerequisite: Junior Standing

Typically Offered
Fall, Spring

FNDH 583 - Practicum I in Athletic Training

Credits: 1-4

A supervised, clinical experience at approved clinical settings. The athletic training student will apply principles taught in HN 120 and HN 121.

Note:
Taken 2nd year, 1st semester.

Requisites:
Prerequisite: Instructor approval.

Typically Offered
Fall

FNDH 584 - Practicum II in Athletic Training

Credits: 1-4

A supervised, clinical experience at approved clinical settings. The athletic training student will apply principles taught in the classroom and practiced in the lab throughout the curriculum program.

Note:
Taken 2nd year, 2nd semester.

Requisites:
Prerequisite: Instructor approval.

Typically Offered
Spring

FNDH 585 - Practicum III in Athletic Training

Credits: 1-4

A supervised clinical experience at approved clinical settings. The athletic training student will apply principles taught in the classroom and practiced in the lab throughout the curriculum program.

Note:
Taken 3rd year, 1st semester.

Requisites:
Prerequisite: Instructor approval.

Typically Offered
Fall

FNDH 586 - Practicum IV in Athletic Training

Credits: 1-4

A supervised, clinical experience at approved clinical settings. The athletic training student will apply principles taught in the classroom and practiced in the lab throughout the curriculum program.

Note:
Taken 3rd year, 2nd semester.

Requisites:
Prerequisite: Instructor approval.

Typically Offered
Spring

FNDH 587 - Practicum V in Athletic Training

Credits: 1-4

A supervised, clinical experience at approved clinical settings. The athletic training student will apply principles taught in the classroom and practiced in the lab throughout the curriculum program.

Note:
Taken 4th year, 1st semester.

Requisites:
Prerequisite: Completion of HN 586 Practicum IV with a grade of "C" or higher.

Typically Offered
Fall

FNDH 588 - Practicum VI in Athletic Training

Credits: 1-4

A supervised, clinical experience at approved clinical settings. The athletic training student will apply principles taught in the classroom and practiced in the lab throughout the curriculum program.

Note:
Taken 4th year, 2nd semester.

Requisites:
Prerequisite: Instructor approval.

Typically Offered
Spring

FNDH 589 - Professional Preparation for Athletic Training

Credits: 0-1

This course will provide a comprehensive review of athletic training knowledge in specific domain areas. Students will have a seminar component to review and apply knowledge across the five domain areas of athletic training. The domain areas include: injury/illness prevention and wellness protection; clinical evaluation and diagnosis; immediate and emergency care; treatment and rehabilitation; organizational and professional health and well-being. Upon completion of this course, students will be eligible to complete the Board of Certification examination to obtain the license of Certified Athletic Trainer.

Requisites:
Prerequisite: Senior standing

Typically Offered
Fall, Spring

FNDH 599 - Topics in Human Nutrition

Credits: 1-3

Repeat for Credit
Repeatable for a maximum of six hours.

Requisites:
Prerequisite: Junior standing and consent of instructor.

Typically Offered
On sufficient demand

FNDH 600 - Public Health Nutrition

Credits: 3

Public health nutrition issues for various segments of the population; nutritional components of community assessment; program planning and evaluation; and policy issues pertaining to the nutritional status of the population.

Requisites:
Prerequisite: FNDH 450 or FNDH and junior standing

Typically Offered
Fall, Spring, Summer

FNDH 610 - Clinical Applications of Human Anatomy

Credits: 3

To bring together the body of knowledge from human anatomy and biomechanics to the clinical application, palpations, and testing of human anatomy. Provides the opportunity to apply knowledge of anatomy to a structural level allowing for palpating, locating, and incorporating the findings into their diagnosis.

Requisites:
Prerequisite: Admission to the MS in Athletic Training; 8 hours of Anatomy and Physiology, KIN 360 or BIOL 441

and BIOL 442, or the KSU transfer equivalent.

Typically Offered
Summer

FNDH 620 - Nutrient Metabolism

Credits: 3

Basic concepts of the mechanisms of actions, interactions, and the processes of cellular assimilation and utilization of nutrients in humans. Emphasis on the coordinated control of nutrient utilization among the major organs.

Requisites:
Prerequisite: FNDH 400; BIOL 441 & BIOL 442 or KIN 360; and BIOCH 265 or BIOCH 521, or CHEM 550 with concurrent enrollment in BIOCH 521

Typically Offered
Fall

FNDH 631 - Clinical Nutrition I

Credits: 3

First course of a two semester study of the application of nutrition principles in disease; includes physiological basis of nutritional care, effects of disease on nutrient metabolism, medical nutrition therapy, in-class team diagnoses presentations, and nutrition counseling.

Requisites:
Prerequisite: FNDH 450 and FNDH 400

Typically Offered
Fall, Spring

FNDH 632 - Clinical Nutrition II

Credits: 3

Continuation of the application of nutrition principles in disease; includes physiological and biochemical basis of nutritional care, effects of disease on nutrient metabolism, medical nutrition therapy for critical care needs, standardized language in advanced professional nutrition diagnoses and care of selected diseases.

Requisites:
Prerequisite: FNDH 631 taken within the previous five years and FNDH 620.

Typically Offered
Spring

FNDH 635 - Sports Nutrition

Credits: 3

The interrelationships among diet, nutrition, and performance. Topics covered include nutrient metabolism during exercise training and performance, nutrition and training periodization, demands of sport training, supplements and ergogenic aids, and nutrients of concern for athletes. There is a focus on athletes/sport, but topics also include normal exercising individuals who have goals related to weight loss, weight gain, or performance and competition.

Repeat for Credit
No. Retake rules apply when student re-enrolls.

Requisites:
Prerequisite: FNDH 132 or FNDH 400 and a grade of C or higher in KIN 335.

Typically Offered
Fall

FNDH 643 - Food Writing

Credits: 3

Understanding and appreciating how to communicate effectively in writing about food and food-related topics. Hands-on experience in research and writing for various audiences and types of publications.

Requisites:
Prerequisite: ENGL 200

Typically Offered
Fall

FNDH 650 - Practicum in Food, Nutrition, Dietetics and Health

Credits: 1-6

Supervised professional field experience.

Repeat for Credit
Repeatable for a maximum of six credit hours.

Requisites:

Prerequisite: Consent of instructor

Typically Offered
Fall, Spring, Summer

FNDH 652 - Emergency Management in Athletic Training

Credits: 3

This course is designed to be a fast paced review of introduction to athletic training and care and prevention of athletic training injuries. This course will also bring together the body of knowledge regarding emergency management while applying it to the profession of athletic training.

Note:
100% Lecture

Requisites:
Prerequisite: Admission into the AthTr Program or Instructors Approval

Typically Offered
Summer

FNDH 653 - Pharmacology

Credits: 3

This course is designed to bring together the body of knowledge regarding the study of medications commonly encountered in the profession of athletic training. Includes categories of drugs, generic and trade names of common drugs, the use, effects and precautions for common drugs and drug-interactions. Focuses on how various drugs affect the patient response to activity, exercise and other therapeutic interventions.

Note:
100& Lecture

Requisites:
Prerequisite: Admission into the AthTr Program or Instructors Approval

Typically Offered
Fall

FNDH 654 - Pathophysiology and Clinical Evaluation

Credits: 3

Designed to bring together the body of knowledge regarding the manifestation, diagnosis, and treatment of human illness, disease, and injury and the resulting physiological responses that occur during the lifespan. Content will build on anatomy, physiology and chemistry content from previous courses.

Requisites:
Prerequisite: Anatomy & Physiology (5 credit hours completed) or equivalent; CHM 110/11 or CHM 210: Jr standing or Instructor Approval.

Typically Offered
Fall, Spring, Summer

FNDH 655 - Clinical Applications of Neurological Function

Credits: 3

Scientific approach to advance knowledge related to the assessment of structured movement of the human body in relationship to neurological function and pathologies. Cognitive (knowledge), psychomotor (hands-on) learning, affective, and clinical/quantitative skills with a heavy emphasis on neuroanatomy to stress clinical application.

Requisites:
Prerequisite:

KIN 360, or equivalent or permission of the instructor.

Typically Offered
Summer

FNDH 660 - Nutrition and Food Behavior

Credits: 3

Focus on the physiological, environmental, cultural, and economic factors that influence the use of food. Identification of appropriate methodology to study these factors as well as programs to modify food behavior.

Requisites:
Prerequisite: PSYCH 110 or SOCIO 211 or ANTH 200; and FNDH 400.

Typically Offered
Fall-Even Years

FNDH 700 - Global Health and Nutrition

Credits: 3

This course is designed to examine major global nutrition and health challenges, programs and policies. Students will become acquainted with the epidemiology of nutritional disease in developed and developing countries. Programs and resources available to combat malnutrition will be evaluated. It will help students analyze current and emerging global health priorities, including emerging infectious diseases, newer nutritional problems, health inequity, health systems reforms, and major global initiatives for disease prevention and health promotion. Designed for advanced undergraduate and graduate students in health related field, including biological or social sciences.

Requisites:
Prerequisite: Graduate level classification, or undergraduate student with instructor permission.

Typically Offered
Spring

FNDH 701 - Sensory Analysis

Credits: 3

Sensory analysis of appearance, texture, aroma, flavor; physiology of sensory receptors; laboratory and consumer panels; and interpretation of data.

Note:
Two hour recitation and three to six hours lab a week.

Requisites:
Needs one course in statistics

Typically Offered
Fall-Odd Years

FNDH 702 - Nutrition in Developing Countries

Credits: 3

Nutritional problems in developing countries, including an analysis of factors which contribute to malnutrition, effects of undernutrition, methods for assessing nutritional status, and interventions to combat nutrition problems.

Requisites:
Prerequisite: FNDH 510

Typically Offered
Fall

FNDH 703 - Food Across Cultures and Countries

Credits: 3

Exploration of food across cultures in the US and the world with emphasis on the affects of geographic, social, economic, religious, and other issues. Lecture.

Typically Offered
Spring

FNDH 706 - Nutritional Immunology

Credits: 3

Principles and issues related to nutrition and immunology. Impact of nutrients and nutritional status on immune responses. Impact of disease states on nutritional status.

Typically Offered
Fall-Even Years

FNDH 710 - Foundations of Patient Management

Credits: 2

Introduction to the role of the athletic trainer in the healthcare system and contemporary healthcare competencies that support expected standards of care.

Typically Offered
Summer

FNDH 711 - Pet Food Sensory Analysis

Credits: 2

Sensory analysis of food and other products for non-food animals (e.g. dogs and cats with mention of other species) with an emphasis on methods (descriptive, discrimination, consumer, sensory-related instrumental) used in the laboratory and in the field.

Note:
Two hours of lecture a week.

Requisites:
Prerequisite: STAT 325 or Stat 702 or STAT 703 or equivalent.

Typically Offered
Spring-Odd Years

FNDH 718 - Physical Health and Aging

Credits: 3

Focus is on the physiological theories of aging, the relationship between normal aging processes, and the major chronic and acute diseases of the elderly, and community health promotion/maintenance programs for older adults.

Requisites:
Prerequisite: BIOL 198 and senior standing.

Typically Offered
Other

FNDH 720 - Administration of Health Care Organizations

Credits: 3

Comprehensive review of current health care institutions and their response to the economic, social/ethical, political/legal, technological, and ecological environments.

Note:
Three hours lecture.

Typically Offered
Spring

Crosslisted:
MPH 720

FNDH 726 - Nutrition and Wellness

Credits: 3

Epidemiology and pathophysiology of chronic disease related to nutrition (e.g., obesity, cardiovascular disease, osteoporosis, hypertension, diabetes, cancer). Nutritional risk and protective factors will be examined as they relate to public health and individual nutrition.

Note:
Only available to distance students seeking a Masters in Dietetics through the Great Plains Program.

Requisites:
Prerequisite: Course in basic nutrition and statistics at the undergraduate level.

Typically Offered
Spring

FNDH 729 - Nutritional Oncology

Credits: 3

Students will gain understanding of basic cancer biology and methodology used to study nutrition and cancer relationships. Using current research as a basis, the role of nutrition in specific cancers will be explored. Students will learn about sources of information for cancer prevention programs, and how to apply this information to clinical patient management.

Requisites:
Prerequisite: Admission to the Masters in Dietetics program through the Great Plains Interactive Distance Education Alliance (GPIDEA).

Typically Offered
Other

FNDH 731 - Advanced Diabetes Management

Credits: 3

The course is designed for students to gain a comprehensive understanding of the classification, presentation, and diagnosis of diabetes and pre-diabetes. The course will explore etiology, pathophysiology, diagnostic tests, clinical management, chronic complications and co-morbidities, and emerging technologies.

Requisites:
Prerequisite: FNDH 631 or RDN credential or approval of instructor

Typically Offered
Summer

FNDH 735 - Advanced Energy Balance

Credits: 3

Lifestyle, metabolic, and endocrine factors affecting energy balance and the development of obesity. Research methods

to assess and apply energy balance data will also be discussed.

Requisites:
Prerequisite: FNDH 620 or FNDH 635.

Typically Offered
Spring-Even Years

FNDH 775 - Research in Health Sciences

Credits: 3

Students in this graduate course will review the role and importance of the scientific method in health professions, especially those with clinical application. The rationale and role of evidence-based practice and research will be reviewed, and research language and core concepts will be discussed. Students will demonstrate their ability to ask research questions and translate questions into search strategies for finding evidence. The purpose of this course is to provide students the opportunity to demonstrate their capacity to locate, understand, and evaluate the research literature in the student's area of interest. The expectation is to demonstrate understanding of research methodology the ability to critically evaluate research literature. Students will demonstrate knowledge of quantitative and qualitative research methods, types of data, how data are described and how biostatistics are used to provide meaning to research data. A range of health research methods will be covered, and studies about treatment effectiveness (clinical trials and systematic reviews), as well as qualitative approaches will be discussed.

Typically Offered
Spring

FNDH 780 - Problems in Food, Nutrition, Dietetics and Health

Credits: 1-6

Supervised individual project to study current issues.

Note:
his is a repeatable course (Student may re-enroll to accumulate

additional credit). May be taken more than once for a maximum of

six credit hours.

Repeat for Credit
Repeatable for a maximum of six credit hours.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

FNDH 782 - Topics in Food Nutrition, Dietetics and Health

Credits: 1-6

Supervised individual project to study current issues.

Repeat for Credit
Repeatable. Student may re-enroll to accumulate additional credit. May be taken more than once for a maximum of six credit hours.

Requisites:
Prerequisite: consent of instructor.

Typically Offered
On sufficient demand

FNDH 799 - Foundations of Therapeutic Interventions

Credits: 3

Provide students with the foundational knowledge of how to integrate the basic sciences, exercise physiology, biomechanical, and injury prevention strategies into a well-planned and evidence based patient care plan. Focused theory and application of therapeutic modalities, applied rehabilitation, and conditioning techniques used in the profession of athletic training.

Typically Offered
Summer

FNDH 800 - Nutrition Education and Communication

Credits: 3

Apply principles of communication and learning technologies to nutrition education research and practice.

Requisites:

Prerequisite: HN 510, HRIMD 515, and a statistics course with a grade of C or better; or consent of instructor.

Typically Offered
Spring

FNDH 802 - Clinical Therapeutic Interventions I- Functional Therapeutic Interventions

Credits: 3

Application of treatment strategies for return to activity, strength and conditioning techniques and prescription, movement strategy and preventative care and ergonomic assessment. Use of biometrics, and physiological data for intervention prescription. This course is a study of applied rehabilitation and conditioning techniques used in the profession of athletic training.

Note:
50% Lec, 50% Lab

Requisites:
Prerequisite: Admission into the AthTr Program or Instructors Approval

Typically Offered
Fall

FNDH 803 - Clinical Therapeutic Interventions II- Extremity Interventions

Credits: 3

Theory and application of the various treatment strategies used in the treatment of the upper extremity and lower extremity.

Note:
50% Lec, 50% Lab

Requisites:
Prerequisite: Admission into the AthTr Program or Instructors Approval

Typically Offered
Spring

FNDH 804 - Clinical Therapeutic Interventions III- Pharmacology, Nutrition, and Behavior Modification

Credits: 2

Inform students of the basic principles pertaining to and the reasoning behind the inclusion of pharmacological agents and nutrition as part of a patient's holistic plan of care. Emphasis placed on the athletic trainer's role as educator and part of an interdisciplinary team to ensure behavior modification and compliance.

Typically Offered
Spring

FNDH 810 - Advanced Macronutrient Metabolism

Credits: 5

Dietary, metabolic, and endocrine factors regulating food intake and selection, and the absorption, function, metabolism, and interrelationships of macronutrients under varying nutritional conditions, with emphasis on recent advances in macronutrient nutrition.

Requisites:
Prerequisite: BIOCH 521 and FNDH 620.

Typically Offered
Fall-Even Years

FNDH 812 - Advanced Micronutrient Metabolism

Credits: 3

Nutritional roles and metabolism of vitamins and minerals. Functions, biological availability, hormonal regulation, requirements, deficiency and toxicity signs, and interrelations with other nutrients.

Requisites:
Prerequisite: FNDH 810.

Typically Offered
Spring-Odd Years

FNDH 815 - Molecular Basis of Nutrient Function

Credits: 3

The course is designed to explore the role that certain nutrients have at the gene and molecular levels in terms of

their mechanism of action. The physiological consequences of nutrient gene-interaction from a tissue, organ and organism level, as well as the subcellular levels, are to be considered.

Requisites:
Prerequisite: FNDH 620 and BIOL 450.

Typically Offered
Spring

FNDH 820 - Functional Foods for Chronic Disease Prevention

Credits: 3

Integrate and evaluate the regulatory principles, food science, nutrient science and nutritional metabolism for the development of functional foods, nutraceuticals, and dietary supplements for chronic disease prevention.

Requisites:
Prerequisite: FNDH 400, FNDH 413, BIOCH 521.

Typically Offered
Spring-Even Years

FNDH 821 - Clinical Evaluation I-Core Evaluation

Credits: 3

Application of clinical and functional injury evaluation procedures and techniques for the trunk, torso, abdomen, spine, and kinetic chain.

Note:
50% Lec, 50% Lab

Requisites:
Prerequisite: Admission into the AthTr Program or Instructors Approval

Typically Offered
Fall

FNDH 822 - Clinical Evaluation II-Extremities

Credits: 3

Application of contemporary principles and practices of patient examination for formulation of a diagnosis and plan of care for patients with health conditions of the extremities that are commonly seen in athletic training practice.

Note:
50% Lec, 50% Lab

Requisites:
Prerequisite: Admission into the AthTr Program or Instructors Approval

Typically Offered
Spring

FNDH 823 - Clinical Evaluation III- General Medical Conditions

Credits: 3

Meet outcomes and guidelines related to prevention, evaluation and management of medical conditions/disabilities. Obtain knowledge, skill and clinical decision-making to accurately assess and recognize general medical conditions, make appropriate referrals, and work as part of a health care team to implement plans for safe participation in physical activity and sport.

Typically Offered
Summer

FNDH 833 - Descriptive Sensory Analysis: Methods

Credits: 1

Specification and application of descriptive sensory analysis methods for use in product development, research, and quality control. Practical experiences in conducting these tests.

Requisites:
Prerequisite: FNDH 701

Typically Offered
Spring

FNDH 834 - Descriptive Sensory Analysis: Food and Fragrance

Credits: 1

Identification and use of descriptive sensory attributes as they relate to food and fragrance for product development,

research, and quality control. Practical experiences in identifying, describing, and application of food and fragrance attributes.

Requisites:
Prerequisite: FNDH 833 or co-requisite.

Typically Offered
Spring

FNDH 835 - Descriptive Sensory Analysis: Non-Food

Credits: 1

Identification and use of descriptive sensory methods and attributes as they relate to non-food product development, research, and quality control. Practical experiences and case studies in identifying, describing, and application methods and attributes for research using products such as textiles, cosmetics, and personal goods.

Requisites:
Prerequisite: FNDH 833 or co-requisite.

Typically Offered
Spring

FNDH 836 - Descriptive Sensory Analysis: Panel Training

Credits: 1

Techniques for training and evaluating sensory descriptive panels for use in product development, research, and quality control.

Requisites:
Co-requisite: FNDH 833.

Typically Offered
Spring

FNDH 837 - Descriptive Sensory Analysis: Rapid Methods

Credits: 1

Use and understanding of rapid sensory techniques to descriptively evaluate products.

Note:
The students should have knowledge of basic sensory analysis as covered in FNDH 701-Sensory Analysis or FNDH 833-Descriptive Sensory Analysis

Requisites:
Prerequisite: FNDH 701-Sensory Analysis or FNDH 833-Descriptive Sensory Analysis

Typically Offered
Summer-Odd Years

FNDH 838 - Advanced Clinical Dietetics

Credits: 3

An in-depth study of the pathophysiology of nutritional disease. Those functional disorders which result in nutritional disease or those nutritional diseases which affect physiological function will be explored. The emphasis will be in the following areas: nutritional assessment, endocrinology, metabolism, gastroenterology, and organ failure.

Note:
Only available to distance students seeking a Masters in Dietetics through the Great Plains Program.

Requisites:
Prerequisite: FNDH 630 or equivalent.

Typically Offered
Spring

FNDH 839 - Clinical Nutrition Support

Credits: 3

Specialized nutrition assessment and support. Review of energy expenditure and substrate utilization in specific disease states. Current methods for the initiation and management of enteral and parenteral nutrition therapy including access, metabolic and mechanical complications. Evaluation of nutrition support methodology in selected disease states.

Requisites:
Prerequisite: Admission to the Masters in Dietetics program through the Great Plains Interactive Distance Education Alliance (GPIDEA).

Typically Offered
Spring

FNDH 840 - Public Health Practice

Credits: 3-6

Supervised field experience in an international, state, local, or district health agency or other appropriate health agency.

Repeat for Credit
Repeatable. Only six hours may be applied toward the MPH degree.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

Crosslisted:
MPH 840

FNDH 841 - Consumer Research - Fundamentals

Credits: 1

Fundamentals of consumer research in terms of organizing and executing studies. Planning studies, selecting products, recruiting target consumers, and organizing study execution are included.

Requisites:
Prerequisite: Needs one course in Statistics

Typically Offered
Fall

FNDH 842 - Advanced Nutrition: Nutrigenomics, Nutrigenetics, and Advanced Lipid Metabolism

Credits: 3

Fundamentals as how the macronutrients; fat, carbohydrates and protein act to regulate gene expression(nutrigenetics) and how an individuals genotype may alter an individuals macronutrient requirements (nutrigenetics) and influence phenotype with respect to chronic disease and human health.

Note:
Only available to distance students seeking a Masters in Dietetics through the Great Plains Program.

Requisites:
Prerequisite: FNDH 620 or consent of instructor.

Typically Offered
Fall, Spring

FNDH 843 - Consumer Research - Qualitative

Credits: 1

This course provides a deep dive into qualitative research, including the design, application, execution, and reporting. This course will educate the student on the appropriate tools for qualitative data collection based on the objective, with a particular emphasis on interviews and focus groups.

Requisites:
Prerequisites-FNDH 701-Sensory Analysis or FNDH 841-Consumer Research Fundamentals

Typically Offered
Fall

FNDH 844 - Nutritional Epidemiology

Credits: 3

Methods and issues involved in understanding and conducting studies on the relationship between human diet and disease.

Requisites:
Prerequisite: FNDH 400 and STAT 702 or STAT 703.

Typically Offered
Spring-Even Years

FNDH 845 - Consumer Research – Observational and Behavioral

Credits: 1

Study of observational and behavioral research methods as they are applied to consumer product research, including ethics and techniques for such research. Methods and analysis for both qualitative and quantitative methods for such data collection will be covered.

Requisites:
Prerequisite: FNDH 701-Sensory Analysis or FNDH 841-Consumer Research-Fundamentals

Typically Offered
Spring

FNDH 846 - Consumer Research – International and Special Populations

Credits: 1

Study of consumer product research with international and special populations including children and other special populations.

Requisites:
Prerequisite: FNDH 701-Sensory Analysis or FNDH 841-Consumer Research Fundamentals

Typically Offered
Spring

FNDH 847 - Consumer Research – Attitudinal

Credits: 1

Study of attitudinal research methods, including questionnaires and facial recognition, for product understanding. Techniques including emotion, mood, and psychographic research methods will be covered. Methods for consumer segmentation beyond traditional demographical segmentation will be discussed.

Requisites:
Prerequisite: FNDH 701-Sensory Analysis or FNDH 841-Consumer Research Fundamentals

Typically Offered
Spring

FNDH 848 - Consumer Research – Quantitative

Credits: 1

Methods and issues associated with measuring consumer responses to products including preference testing, preference ranking, acceptance testing, hedonic scales, and consumption testing.

Requisites:
Prerequisite: FNDH 701 or FNDH 841.

Typically Offered
Fall

FNDH 851 - Sensory Analysis Applications of Statistics

Credits: 2

Application of statistics to sensory data. Emphasis on appropriate analyses, software use, interpretation of data, and reporting.

Requisites:
Prerequisite: FNDH 701 and one of the following STAT courses: STAT 730 (preferably), STAT 720 or STAT 722

Typically Offered
Fall-Even Years

FNDH 852 - Practicum in Sensory Analysis

Credits: 3

Application of statistics to sensory data. Emphasis on appropriate analyses, software use, interpretation of data, and reporting.

Repeat for Credit
Repeatable. Repeatable up to total of 6 hours.

Requisites:
Prerequisite: FNDH 841 or FNDH 833, and consent of instructor

Typically Offered
Fall, Spring, Summer

FNDH 853 - International Research Experience

Credits: 2

International experience in conducting research. Development of strong collaboration and pre-planning, actual conduct, and reporting of results. International travel is required for this course. One hour of lecture per week and 1-2 week in-country practicum.

Requisites:
Prerequisite: FNDH 701; FNDH 833 or FNDH 841; and instructor permission

Typically Offered
On sufficient demand

FNDH 856 - Sensory and Instrumental Volatile Analysis and their Relationship

Credits: 2

Use and relationship of methods for measuring and relating volatiles including sensory and instrumental methods such as gas chromatography mass-spectrometry (GC-MS) and gas chromatography olfactometry (GC-O).

Requisites:
Prerequisite: FNDH 701.

Typically Offered
On sufficient demand

FNDH 857 - Administration in Athletic Training

Credits: 3

This course is designed to bring together the body of knowledge regarding organization and administration while applying it to the profession of athletic training.

Note:
100% Lecture

Requisites:
Prerequisite: Admission into the AthTr Program or Instructors Approval

Typically Offered
Summer

FNDH 858 - Durable Medical Equipment and Casting

Credits: 2

Application of contemporary principles and practices of how to select, fabricate, and/or customize prophylactic, assistive, and restrictive devices, materials, and techniques for incorporation into the plan of care, including the Durable medical equipment, Orthotic devices, Taping, splinting, protective padding, and casting.

Note:
50% Lec, 50% Lab

Requisites:
Prerequisite: Admission into the AthTr Program or Instructor Approval

Typically Offered
Fall

FNDH 859 - Nutrition: A Focus on Life Stages

Credits: 3

Nutritional needs throughout the life span including pregnancy, lactation, growth and aging. Approaches to nutrition education for different ages.

Note:
Only available to distance students seeking a Masters in Dietetics through the Great Plains Program.

Requisites:
Prerequisite: 3 hours undergraduate nutrition and 6 hours undergraduate natural sciences.

Typically Offered
Summer

FNDH 862 - Maternal and Child Nutrition

Credits: 3

A critical examination of behavioral, physiological, and public health issues impacting dietary and nutritional factors that support normal growth and development. The course content focuses on the early stages of the life cycle: gestation, lactation, infancy, preschool, school age and adolescence. Topics include the fetal programming hypothesis, growth and nutritional requirements, breast and formula feeding of infants, infant weaning, and eating behaviors that lead to normal growth, growth faltering, and pediatric obesity.

Note:
Only available to distance students seeking a Masters in Dietetics through the Great Plains Program.

Requisites:
Prerequisite: FNDH 510 or equivalent.

Typically Offered
Summer

FNDH 875 - Pediatric Clinical Nutrition

Credits: 3

The physiological, biochemical and nutritional aspects of

disease processes relevant to infants and children up to 18 years of age. Medical nutrition therapy for a variety of medical conditions found in this Population will be discussed including inborn errors of metabolism, food hypersensitivity, obesity, and diseases of the major organ systems.

Note:
Only available to distance students seeking a Masters in Dietetics through the Great Plains Program.

Requisites:
Prerequisite: FNDH 631 Clinical Nutrition I and FNDH 632 Clinical Nutrition II or equivalent.

Typically Offered
Fall

FNDH 880 - Professional Communication in FNDH

Credits: 1

Develop and deliver oral presentations, write for the profession, and communicate in a professional manner.

Typically Offered
Fall, Spring

FNDH 881 - Seminar in Sensory Analysis and Consumer Behavior

Credits: 1

Student experiences for professional development including developing and delivering a presentation and navigating the workplace.

Requisites:
Prerequisite: FNDH 701-Sensory Analysis

Typically Offered
Spring

FNDH 883 - Athletic Training Practicum I

Credits: 1

Application of classroom principles in a supervised, clinical experience within an approved clinical setting.

Note:
100% Practicum.

Requisites:
Prerequisite: Admission into the Athletic Training Program or Instructors Approval

Typically Offered
Fall

FNDH 884 - Athletic Training Practicum II

Credits: 1

Application of classroom principles in a supervised, clinical experience within an approved clinical setting.

Note:
100% Practicum

Requisites:
Prerequisite: Admission into the Athletic Training Program or Instructor Approval

Typically Offered
Spring

FNDH 885 - Athletic Training Practicum III

Credits: 1

Application of classroom principles in a supervised, clinical experience within an approved clinical setting.

Note:
100% Practicum

Requisites:
Prerequisite: Admission into the Athletic Training Program or Instructor Approval

Typically Offered
Summer

FNDH 886 - Athletic Training Practicum IV

Credits: 1

Application of classroom principles in a supervised, clinical experience within an approved clinical setting.

Note:
100% Practicum

Requisites:
Prerequisite: Admission into the Athletic Training Program or Instructor Approval

Typically Offered
Summer

FNDH 887 - Athletic Training Practicum V

Credits: 4

Application of classroom principles in a supervised, clinical experience within an approved clinical setting.

Note:
100% Practicum

Requisites:
Prerequisite: Admission into the Athletic Training Program or Instructor Approval

Typically Offered
Fall

FNDH 888 - Athletic Training Practicum VI

Credits: 4

Application of classroom principles in a supervised, clinical experience within an approved clinical setting.

Note:
100% Practicum

Requisites:
Prerequisite: Admission into the Athletic Training Program or Instructor Approval

Typically Offered
Spring

FNDH 889 - Research Experience in Athletic Training

Credits: 1

Evidence based research application for Athletic Training. To inform contemporary principles and clinical athletic training practices in a manner that uses evidence to inform clinical decisions.

Repeat for Credit
Repeatable

Typically Offered
Fall

FNDH 891 - Environmental Scanning and Analysis of Current Issues in Dietetics

Credits: 3

Discussion of changes in the economic, social, ethical, political, legal, technological, and ecological environments in which dietitians practice. Implications of these changes for education, practice and research within the field with particular emphasis on the healthcare industry.

Typically Offered
Fall

FNDH 892 - Population Health in Sports Medicine

Credits: 3

An introduction for athletic trainers and other healthcare providers, to the benefits of using a population-based approach to injury and illness prevention as it relates to a physically active/athletic population and to explore opportunities for partnering with public health professionals on these initiatives.

Note:
100% Lec

Requisites:
Prerequisite: Admission into the Athletic Training Program or Instructor Approval

Typically Offered
Fall

FNDH 896 - Financial Management and Cost Control in Dietetics

Credits: 3

This course provides an overview of the fundamental knowledge of financial management, managerial, accounting, and operational cost controls for dietetics professionals who work predominately in not-for-profit organizations. Topics include a review of managerial accounting concepts for not-for-profit organizations, value and risk analyses, budgeting, asset management franchising

and management contractgs, cost-volume-profit analyses, and operational applications for financial performance.

Requisites:
Prerequisite: A basic financial or managerial accounting course

Typically Offered
Summer

FNDH 897 - Applications in Food, Nutrition, Dietetics and Health

Credits: 1-3

Independent study under supervision of graduate faculty member. Contact hours will meet Board of Regents guidelines for credit elected (1-3)

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

FNDH 898 - Master's Report

Credits: 0-18

Survey in depth of the literature.

Typically Offered
Fall, Spring, Summer

FNDH 899 - Master's Thesis

Credits: 1-8

Research in area of specialization.

Typically Offered
Fall, Spring, Summer

FNDH 911 - Advanced Nutrition Topics: Contemporary Issues

Credits: 1-3

Contemporary concerns in health and disease from an advanced nutrition perspective.

Repeat for Credit
Repeatable. Topics vary.

Requisites:
Prerequisite: FNDH 810 or instructor consent

Typically Offered
On sufficient demand

FNDH 913 - Eating Behavior

Credits: 2

Study of the theoretical and practical aspects of food choice. Impacts of social, economic, and political policies on food choice and impacts to global issues by individual food choices.

Requisites:
Prerequisite: One graduate course in nutrition, food science or psychology

Typically Offered
Spring

FNDH 958 - Critical Experiences in Industry Research

Credits: 3-6

Practicum in professional communication in the disciplines including proposal writing, networking and collaborating with professional colleagues, and developing and/or presenting project results.

Note:
Student may re-enroll to accumulate additional credit.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Fall, Spring, Summer

FNDH 995 - Grantsmanship and Publication

Credits: 3

Grant writing, identifying external funding, managing

grants, preparing manuscripts for peer-reviewed publication, and preparing papers and poster for presentation at professional meetings.

Requisites:
Prerequisite: STAT 720 or a graduate level research methods course.

Typically Offered
Fall-Even Years

FNDH 999 - Doctoral Research

Credits: 1-18

Typically Offered
Fall, Spring, Summer

FOR 741 - Forestry Problems

Credits: 1-3

Work is offered in various fields of forestry.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

FREN 501 - Readings in French

Credits: 3

Practice in reading a variety of literary, journalistic, and specialized texts.

Requisites:
Prerequisite: FREN 213 or equivalent.

FREN 502 - French Literature in Translation

Credits: 3

Selected readings in English of works representing important literary trends.

Note:
May be taken by majors and minors if all assignments are completed in French.

FREN 503 - French Composition and Grammar

Credits: 3

Review in depth of the structure of the language. Intensive practice in written and conversational French.

Requisites:
Prerequisite: FREN 213 or equivalent.

FREN 509 - French Phonetics

Credits: 1

The fundamentals of French phonetics. Intensive practice in diction.

Requisites:
Prerequisite: FREN 213 or equivalent.

Typically Offered
Fall, Spring

FREN 510 - Modern French Culture

Credits: 2

French culture since World War II with special emphasis on social, economic, historical, and artistic developments of that period. Taught in English.

Note:
Not accepted for major credit in French.

FREN 512 - French/Francophone Cinema

Credits: 3

The course consists of readings, written assignments, viewing, and discussion of French or Francophone films.

Note:
Must be taken in French for French credit.

Repeat for Credit
Repeatable with a focus on a different topic.

Requisites:
Prerequisite: FREN 301 or equivalent.

Typically Offered
Fall, Spring, Summer

FREN 514 - Contemporary France

Credits: 3

Introduction to French culture with special emphasis on social and historical developments since World War II.

Requisites:
Prerequisite: FREN 213 or equivalent.

FREN 515 - History of French Culture

Credits: 3

A Survey of French from the Middle Ages to the present, including but not limited to, developments in art and architecture, music, and literature.

Requisites:
Prerequisite: FREN 213 or equivalent.

FREN 517 - Business French

Credits: 3

Advanced grammar necessary for adequate oral and written expression in international business and diplomatic situations, including specialized terminology, conversation and discussion, and translation.

Requisites:
Prerequisite: FREN 213 or equivalent.

FREN 518 - French Conversation

Credits: 3

Practice in spoken French, with emphasis on idiomatic expression. Course not open to students whose primary language is French and whose competence has been demonstrated in the language at this level.

Repeat for Credit
Repeatable. May be repeated once for credit.

Requisites:
Prerequisite: FREN 213 or equivalent.

FREN 519 - Special Studies in French

Credits: 1-18

Requisites:
Prerequisite: FREN 213 or equivalent and consent of department head and instructor.

FREN 520 - Introduction to French Literature (19th Century to the Present)

Credits: 3

The reading and discussion of major works of French literature from the early nineteenth century to the present.

Requisites:
Prerequisite: FREN 516 or equivalent.

FREN 521 - Introduction to French Literature (Medieval to 18th Century)

Credits: 3

The reading and discussion of major works of French literature from the Middle Ages to the end of the eighteenth century.

Requisites:
Prerequisite: FREN 516 or equivalent.

FREN 530 - Topics in French/Francophone Literature and Culture

Credits: 3

Provides the students the opportunity to investigate in detail a particular theme or genre in French literature or culture.

Repeat for Credit
Repeatable once with a change in focus and texts.

Requisites:
Prerequisite: At least one course taught in French at the 500 level.

FREN 709 - Medieval French Literature

Credits: 3

An introduction to literary forms, style, and the thought from the eleventh century to the fifteenth century in France. Readings in modern French in *Chanson de Roland, Chretien de Troyes, Roman de la Rose*, etc.

Requisites:
Prerequisite: FREN 520 or FREN 521 and one other 500 level course, or consent of instructor.

FREN 710 - Sixteenth-Century French Literature

Credits: 3

Reading and discussion of selected prose and poetry of the French Renaissance.

Requisites:
Prerequisite: FREN 520 or FREN 521 and one other 500 level course, or consent of instructor.

Typically Offered
Fall

FREN 711 - Seventeenth-Century French Literature

Credits: 3

Various literary forms of the French Baroque and Classical period. Reading of representative texts by Corneille, Pascal, Moliere, Racine, La Fontaine, and others.

Requisites:
Prerequisite: two 500 level courses, including FREN 520 or FREN 521 or with the consent of the instructor.

Typically Offered
Fall

FREN 713 - Eighteenth-Century French Literature

Credits: 3

Critical study of the literature of the Enlightenment.

Requisites:
Prerequisite: FREN 520 or FREN 521 and one other 500 level course, or consent of instructor.

FREN 714 - Romantic French Literature

Credits: 3

A study of preromanticism and romanticism.

Requisites:
Prerequisite: FREN 520 or FREN 521 and one other 500 level course, or consent of instructor.

FREN 715 - Realist French Literature

Credits: 3

A study of realism, naturalism, and symbolism.

Requisites:
Prerequisite: FREN 520 or FREN 521 and one other 500 level course, or consent of instructor.

FREN 716 - Contemporary French Literature

Credits: 3

The study of major themes and trends in the novel, drama, and poetry since 1900 as reflected by major authors as Proust, Camus, Sarraute, and others.

Requisites:
Prerequisite: two 500-level courses, including FREN 520 or FREN 521 or with consent of the instructor.

Typically Offered
Other

FREN 719 - Advanced Spoken and Written French

Credits: 3

An advanced, intensive study of French prose style. Introduction to the techniques of translation from English to French. Intensive practice in oral style and diction.

Requisites:
Prerequisite: FREN 520 or FREN 521 one other 500 level course, or consent of instructor.

Typically Offered
Fall

FREN 720 - Seminar in French Literature and Culture

Credits: 3

A seminar with various topics centered on literature and

culture.

Requisites:
Prerequisite: two 500 level courses, including FREN 520 or FREN 521 or with the consent of the instructor.

Typically Offered
Other

FREN 721 - Francophone Literature and Culture

Credits: 3

The development of French colonial and postcolonial literature and culture with an emphasis on the twentieth and twenty-first centuries. Regional focus may vary from Quebecois. Caribbean, Sub-Saharan or North African literature and culture.

Note:
Taught as a seminar.

Requisites:
Prerequisite: FREN 520 or FREN 521 or one other course at a 500 level.

FREN 742 - Literature for Second Language Acquisition

Credits: 3

Analysis and interpretation of cultural and literary texts from French-speaking countries, with emphasis on the development of interpretive skills and materials, and their application to the French curriculum at all levels.

Repeat for Credit
Repeatable. May be repeated once with a change in focus and texts.

Requisites:
Prerequisite: FREN 520 or FREN 521 and one other 500 level course, or consent of instructor.

Typically Offered
Fall, Spring, Summer

FREN 743 - Culture for Second Language Acquisition

Credits: 3

Analysis and interpretation of cultural resources from French-speaking countries, with emphasis on the development of interpretive skills and materials, and their application to the French curriculum at all levels.

Requisites:
Prerequisite: FREN 520 or FREN 521 and one other course at a 500 level, or instructor consent.

Typically Offered
Fall, Spring, Summer

FREN 799 - Problems in Modern Languages

Credits: 1-18

Requisites:
Prerequisite: FREN 520 or FREN 521 and one other 500 level course, or consent of instructor.

FREN 898 - Master's Report

Credits: 1-2

A written report of either research or problem work on a topic in the major field.

Requisites:
Prerequisite: Consult of major professor.

Typically Offered
Fall, Spring, Summer

FREN 899 - Research in Modern Languages

Credits: 1-18

FSHS 500 - International Experience in Family Studies and Human Services

Credits: 0-6

Travel seminar course designed to prepare students before their international study abroad experience and analyze, critique, and report about their faculty led study tours or short courses. The academic topics will vary with each international activity.

Repeat for Credit
Repeatable for a maximum of 18 credits.

Typically Offered
Fall, Spring, Summer

FSHS 704 - Seminar in Family Studies and Human Services

Credits: 1-18

Interpretation and evaluation of information on varied topics relating to family members.

Repeat for Credit
Repeatable for a maximum of 9 hours.

Requisites:
Prerequisite: Nine hours of FSHS or other social science.

Typically Offered
Fall

FSHS 727 - Clinical Approaches to Family Health and Illness

Credits: 3

Clinical approaches to health behaviors and chronic illness management are generally focused on the individual. This course will address contextual and relational factors that impact health and illness within family contexts. The course will explore ways to develop an integrated clinical approach to assess individuals and families attempting to manage a variety of medical conditions across the life span.

Typically Offered
Fall, Spring, Summer

FSHS 800 - Introduction to Family Studies and Human Services Graduate Program

Credits: 0

Orientation for graduate students in FSHS. Assists with acclimating students to FSHS graduate study, emphasizing the importance of setting professional goals, identifying and utilizing resources for successful completion of graduate degree.

Typically Offered
Fall

FSHS 806 - Statistical Methods in Family Studies and Human Services I

Credits: 3

Introductory course in the use of statistics in family and human services research. Examines the use of statistical methods from basic descriptive and univariate measures to multivariate measures including ANOVA and Multiple Regression Analyses as they are used in family and human services research. Emphasis is placed on the analytical and applied aspects of the statistical procedures.

Typically Offered
Fall

FSHS 809 - Qualitative Research Methods in Family Science

Credits: 3

Expands students' skills in theories and methods associated with qualitative research. Emphasis on understanding foundations of qualitative methods, comparing and using various qualitative traditions and applying this knowledge to a research project.

Typically Offered
Fall

FSHS 823 - Personal Integration

Credits: 1

Analysis of classic marriage and family therapy theories as they inform the professional identity and practice of the therapist. Students write capstone paper on selective use of research and theory.

Requisites:
Prerequisite: FSHS 852, MFT 853, CFT 870, six hours of MFT 885.

Typically Offered
Spring

FSHS 824 - Parent-Child Interaction: Theory and Research

Credits: 3

Developmental theories and empirical research concerning

the reciprocal interactions between parents and their children focusing on the socialization of the child within the family.

Requisites:
Prerequisite: LSHD 810.

Typically Offered
Spring

FSHS 855 - Family Crisis

Credits: 3

The nature of stress in the family from a theoretical and research base, focusing on the genesis of family crisis and the family's response to stress and crisis.

Requisites:
Prerequisite: FSHS 550.

Typically Offered
Fall

FSHS 863 - Single-Parent and Reconstituted Families

Credits: 3

Survey of research literature regarding single-parent and reconstituted families. Demography, complexity, problems, strengths, and processes of adjustment of family units and their members. Implications for professionals working with these families.

Requisites:
Prerequisite: FSHS 550.

Typically Offered
Fall, Spring

FSHS 865 - Human Sexuality

Credits: 3

Focus on implications of personal and familial aspects of human sexuality throughout the life cycle.

Requisites:
Prerequisite: FSHS 350 and six hours social science.

Typically Offered
Summer

FSHS 880 - Practicum in Counseling

Credits: 1-18

Supervised experience in providing help and/or instruction in the several areas of human development and family studies presented in terms of the special interests of the students. Consent of practicum supervisor is required for each.

Requisites:
Prerequisite: CFT 870 and EDAF 823.

Typically Offered
Fall, Spring, Summer

Crosslisted:
PSYCH 860 and EDAF 863

FSHS 888 - Research Methods in FSHS I

Credits: 3

Study and application of family and human developmental methodology for research in graduate programs and professional careers.

Requisites:
Prerequisite: STAT 325 or STAT 702.

Typically Offered
Fall, Spring

FSHS 890 - Application of Research and Statistics in Family Science

Credits: 3

Emphasis is on family research, conducting statistical analyses, and reporting results. Topics include research methodology, selection of statistical approach, techniques for conducting analyses, interpretation of output, and writing the results section of a manuscript based on that output.

Requisites:
Prerequisite: FSHS 888 and any upper division or graduate level statistics courses.

Typically Offered
Spring

FSHS 891 - Family Survey Research

Credits: 3

Principles and techniques for collection, coding, analysis, and interpretation of survey data from several family members. Computer-oriented.

Requisites:
Prerequisite: STAT 325, FSHS 550 and FSHS 890.

Typically Offered
Spring

FSHS 895 - Principles and Techniques of Family Measurement

Credits: 3

The comparative reliability and validity of current measures of family interaction and analysis of their suitability for use in program evaluation of family life education and family therapy.

Requisites:
Prerequisite: FSHS 850 and a graduate-level research methods course.

Typically Offered
Spring

FSHS 906 - Statistical Methods in Family Studies and Human Services II

Credits: 3

Advanced applied statistics course designed for graduate students with a foundation and understanding of basic and multivariable statistics. Examines multiple variable analyses including log-linear, discriminate analyses, OLS and logistic regression and the issues involved using these techniques; principal component and factor analyses; path analyses; structural equation modeling; hierarchical linear and nonlinear modeling; and growth curve modeling.

Requisites:
Prerequisite: FSHS 806 or equivalent.

Typically Offered
Spring

FSHS 907 - Advanced Family Research Methods

Credits: 3

A critical review and analysis of contemporary analysis techniques in family research, dealing with multiple members of family-like groups, including a variety of mixed model methodologies.

Requisites:
Prerequisite: FSHS 806, FSHS 888, FSHS 890, FSHS 906 or equivalent graduate level research or statistics courses.

Typically Offered
Fall

FSHS 909 - Advanced Qualitative Methods in Family Science

Credits: 3

Emphasizes the diversity and variety within qualitative methodology. Focuses on hands-on experiences of completing a qualitative research project after the basic research design has been determined.

Requisites:
Prerequisite: FSHS 809 or EDLEA 838

Typically Offered
Spring

FSHS 930 - Human Development Seminar

Credits: 3

Analysis of the continuous and systematic changes in the development of individuals as they interact with their physical and social environments.

Repeat for Credit
Repeatable. May be taken for a maximum of 12 hours.

Requisites:
Prerequisite: LSHD 810, LSHD 820, and LSHD 845.

FSHS 950 - Theory Construction in Family Science

Credits: 3

Focuses on the philosophical underpinnings, history, and practice of theory construction in the fields of Family Science. Includes examination of strategies and approaches to developing theories about individuals and families and the relationships of theory development to research methodology and practice.

Requisites:
Prerequisite: FSHS 852

Typically Offered
Other

FSHS 988 - Conjoint and Group Techniques in Family Counseling

Credits: 3

Advanced theory in marriage and family counseling with emphasis on group techniques.

Requisites:
Prerequisite: MFT 885 and consent of instructor.

Typically Offered
Spring, Summer

FSHS 990 - Dissertation Proposal Seminar

Credits: 1

Presentation and discussion of proposals for dissertation research.

Requisites:
Prerequisite: Six hours of statistics, 3 hours of research design or methods, and consent of major professor.

Typically Offered
Fall, Spring

FSHS 999 - PhD Research in Family Studies and Human Services

Credits: 1-18

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

GENAG 505 - Comparative Agriculture

Credits: 1-4

A travel-study program which is intended to acquaint students with agriculture of other countries and other parts of the U.S. and how it differs from Midwest-Great Plains agriculture relative to climate, crops, soils, livestock practices, marketing, and cultural attitudes toward agriculture.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

GENAG 515 - Honors/Scholars Project

Credits: 0-1

Completion of an independent undergraduate research project or scholarly activity required for the University Honors Program or the College of Agriculture Scholars Program. Oral presentation and written report required. Taken during the semester when the project will be completed.

Requisites:
Prerequisite: Approved project proposal.

Typically Offered
Fall, Spring, Summer

GENAG 582 - Natural Resources/Environmental Science Project (NRES)

Credits: 3

A comprehensive project in NRES. Requires integration of information and understanding acquired in NRES secondary major courses. Students must prepare and present written and oral reports.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: All writing and oral communications courses required for major. Prerequisite or concurrent enrollment: 15 hours of approved courses in NRES secondary major.

Typically Offered
Fall, Spring

Crosslisted:
DAS 582 and DEN 582

GENAG 670 - Introduction to Agricultural Resources and Environmental Management

Credits: 2

Interdisciplinary, international study of agricultural and natural resource management sustainability. Discussion of agro-ecologic, economic, and social science perspectives; sustainability criteria; issues of scale and culture; disciplinary methods; and systems-level approaches. Applications to important natural resources and environmental management issues in Kansas, U.S., and in other countries.

Typically Offered
Spring

GENAG 690 - Seminar in International Agriculture

Credits: 1

An in-depth study of international agriculture topics.

Note:
One hour lecture per week.

Requisites:
Prerequisite: Junior or senior standing.

Typically Offered
Spring

GENAG 711 - Occupational and Agricultural Health

Credits: 3

Addresses the identification, evaluation, and control of health hazards in occupational and agricultural settings. Topics include occupational toxicology, air contaminants, noise, radiation, thermal stress, ergonomics, biological hazards, emerging health risks, and health risks of special populations. This is a distance course.

Typically Offered
Fall

GENAG 712 - Occupational and Agricultural Injury Prevention

Credits: 3

Explores traumatic injuries and their prevention in occupational and agricultural settings. Topics include falls, workplace violence, animal handling, mobile equipment, fixed machines, work tools, electrical hazards, fires, and explosions.

Note:
This is a distance course.

Typically Offered
Spring

GENAG 721 - Occupational and Agricultural Safety and Health Interventions

Credits: 3

Examines the design and evaluation of behavioral interventions to prevent occupational and agricultural injuries and illnesses. Topics include theories of safety and health behavior; effective communication and persuasion strategies; planning, conducting and evaluating interventions; interventions for diverse populations; and intervention strategies in evolving occupational and societal contexts.

Note:
This is a distance course.

Typically Offered
Spring

GENAG 780 - Current Topics in Agriculture

Credits: 1-3

Selected topics studied to provide an in-depth understanding of current agricultural issues.

Repeat for Credit
Repeatable. May be repeated with change in topics.

Typically Offered
On sufficient demand

GENAG 812 - Managing Occupational and Agricultural Safety and Health

Credits: 3

Examines program management and leadership issues in occupational and agricultural safety and health. Topics include business aspects of safety and health, management functions, workforce involvement, program development, motivation and leadership, program evaluation, ethics of safety and health, responding to the needs of a diverse workforce, and innovative program management for changing economic and societal contexts.

Note:
This is a distance course.

Typically Offered
Fall

GENAG 870 - Capstone for Agricultural Resources and Environmental Management

Credits: 1

Interdisciplinary, international application of agro-ecologic, economic, social science, and sustainability concepts and methods to important agricultural, natural resources and environmental management issues in Kansas, U.S., and other countries.

Typically Offered
Fall

GENBA 675 - International Business Experience

Credits: 0

An international business experience that requires travel to a foreign country. The length of the tour varies from one week to 16 weeks. This course enables students to complete an international experience that would include study, research or work in a foreign country. The course provides enriched experience in the financial and business practices in a foreign country and enhances students' global and cultural awareness.

Typically Offered
Fall, Spring, Summer

GENBA 800 - MBA Professional Development

Credits: 1-3

This course will require the student to work with the director of the MBA program to outline a professional development program of 45 hours per hour of credit to enhance their MBA studies and to enhance their professional career.

Requisites:
Prerequisite: Admission to the MBA program.

Typically Offered
Fall, Spring, Summer

GENBA 861 - International Field Study

Credits: 1-3

Graduate level course designed to provide students with an opportunity to observe international business by participating in a field trip outside the United States. This experiential course may involve a combination of business visits, interactions with business executives, cultural experiences, internship activities, or other learning activities while abroad.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Graduate standing and instructor approval.

Typically Offered
Fall, Spring, Summer

GENBA 875 - MBA International Business Experience

Credits: 1-3

This course will consist of a faculty-led international experience designed to expose students to international business practices and culture.

Requisites:
Prerequisite: Admission to the MBA program.

Typically Offered
Fall, Spring, Summer

GENBA 890 - Business Capstone

Credits: 3

The analysis of business problems, using knowledge and tools from previous courses. Students, under the supervision of a team of faculty, will analyze actual business case problems.

Requisites:
Prerequisite: ACCTG 860, FINAN 815, GENBA 880 and MKTG 810.

Typically Offered
Spring

GENBA 894 - Data Analytics Capstone

Credits: 3

This course is a hands-on, project based course completed in cross-disciplinary groups. The capstone course will require students to work together on projects that will demonstrate their ability to collaboratively analyze large datasets, provide insight for practical problems and effectively communicate the resulting insights.

Note:
Students are expected to take this capstone course at the end of the program.

Requisites:
Prerequisite: Student admitted in the Graduate Certificate in Data Analytics.

Typically Offered
Summer

GENBA 898 - Topics in Business

Credits: 1-3

Discussion and analysis of current issues in business such as accounting, management, finance, marketing, etc.

Typically Offered
Fall, Spring, Summer

GEOG 500 - Geography of the United States

Credits: 3

A regional analysis of the United States with special attention to the historical, political, economic, and social factors which contribute to areal differentiation within the area.

Typically Offered
Fall-Odd Years

GEOG 505 - South Asian Civilizations

Credits: 3

Interdisciplinary survey on the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, Nepal, Bhutan, and Afghanistan, including geography, philosophy, social, economic, political institutions, and historical movements.

Requisites:
Prerequisite: 3 hours of Social Science or junior standing.

Typically Offered
Fall-Even Years

Crosslisted:
ECON 505, HIST 505, POLSC 505, SOCIO 505, ANTH 505

GEOG 506 - Geography of South Asia

Credits: 3

This course will provide a survey of the physical and human geography of South Asia. More specifically, it will cover the major environmental, economic, demographic, and cultural geography patterns, processes, and issues of the region. Problems related to religious, ethnic, and linguistic diversity, along with environmental problems associated with global climate change and others will be examined in the context of modernization and economic development.

Note:
This will be a lecture type course and each relevant topic will be covered in some detail.

Requisites:
Prerequisite: Three hours of Social Science or junior standing.

Typically Offered
Fall

GEOG 508 - Geographic Information Systems I

Credits: 4

Examination of the major theories, concepts, and operations in geographic information systems (GIS). Topics include: the structure of geographic data models, geographic data acquisition, spatial database management, data processing methods. Vector and raster GIS operations, and general approaches to GIS-based spatial modeling.

Note:
The course will consist of two hours of lecture and two hours of lab a week.

Requisites:
Prerequisite: GEOG 302.

Typically Offered
Spring

GEOG 510 - Geography of the American West

Credits: 3

A broad survey of the geography of the American West with a focus on the distinctive human and environmental characteristics of the region. Historical, cultural, ethnic, resource, land use, and physical landscape patterns are examined through lectures, readings, videos, and discussions.

Requisites:
Prerequisite: A previous course in geography and sophomore standing.

Typically Offered
Spring-Even Years

GEOG 535 - Global Climatology and Climate Change

Credits: 4

An examination of the physical processes that control the dynamics and spatial distribution of climates at the global scale, and how these processes can result in variation and change in the climate system. Topics include radiation and energy balance, global circulation, and the hydrologic cycle as well as the biosphere and humans as climate regulators and causes of change.

Requisites:
Prerequisite: GEOG 221 recommended.

Typically Offered
Spring

GEOG 600 - Mountain Geography

Credits: 3

A broad survey of the human and physical geography of mountains. The course utilizes lectures, discussion, videos, and photographs to examine the human-environment interactions, cultural symbolism and sacredness, recreation and tourism, and sustainable development of mountain landscapes. The regional focus is primarily on the American West, but other mountains throughout the world will also be studied.

Typically Offered
Fall-Even Years

GEOG 602 - Computer Mapping and Geographic Visualization

Credits: 3

Basic cartographic principles, advanced methods for representing spatial data, approaches for exploratory spatial data analysis, and practical applications of thematic maps, animated and Internet-based maps, and geographic visualization techniques. Students will prepare a series of maps and visualization products using modern geographic information system and illustration software.

Note:
The course will consist of two hours of lecture and two hours of lab a week.

Requisites:
Prerequisite: GEOG 508.

Typically Offered
Spring

GEOG 605 - Remote Sensing of the Environment

Credits: 3

Remote sensing and its application to earth study, especially environmental problems and land use. Course employs both readings and the use of imagery.

Note:
Two hours lecture, two hours lab.

Requisites:
Prerequisite: One course in physical science and one in biological science.

Typically Offered
Fall, Spring

Crosslisted:
AGRON 706

GEOG 608 - Geographic Information Systems II

Credits: 3

Advanced principles of and applications for geographic information systems (GIS). Examines the nature and accuracy of geo-referenced data and methods of data capture, storage, retrieval, modeling, and digital map display. Students will use modern GIS software packages and digital geographical data from physical and/or cultural sources to explore software procedures and techniques of spatial analysis, decision support, and geographic visualization.

Note:
The course will consist of two hours of lecture and two hours of lab a week.

Requisites:
Prerequisite: GEOG 302 and GEOG 508 or consent of instructor.

Typically Offered
Fall

GEOG 610 - Geography Internship

Credits: 1-6

Faculty-supervised field experience, emphasizing the application of geographical topics and/or techniques. Student projects must be approved by both the on-site director and the faculty supervisor, and a report must be submitted at the end of the semester.

Requisites:
Prerequisite: Permission of the instructor and junior standing in geography is required.

Typically Offered
Fall, Spring, Summer

GEOG 620 - Mexico, Central America, and Caribbean

Credits: 3

A broad survey of the physical and human geographic patterns of Middle America (Mexico, Central America, and the Caribbean), past and present, with emphasis on the changing landscape features in the successive patterns of human occupancy and globalization.

GEOG 622 - Geography of South America

Credits: 3

A survey of the physical and human patterns of South America, past and present, with emphasis on the changing landscape features in the successive patterns of human occupancy and globalization.

GEOG 640 - Geography of Europe

Credits: 3

People and their environment, their cultures, problems, and prospects in Europe west of the Soviet Union; trends of development as affected by changing political and economic factors.

Typically Offered
Spring

GEOG 660 - Geography of East Asia/China

Credits: 3

An introduction to the human and physical geography of East Asia, with emphasis on China. Examines this region's physical, cultural, and socioeconomic patterns and changes, as well as interactions with other parts of the world.

Typically Offered
Fall-Even Years

GEOG 680 - Seminar in Regional Geography

Credits: 1-3

Requisites:
Prerequisite: Consent of instructor.

GEOG 690 - Historical Geography of the United States

Credits: 3

Interpretation and analysis of the American landscape and its regions from c. 1500 to c. 1950, with particular emphasis on landscape as both place and history. Also introduces and examines such current research topics as identity, contested places, landscape-as-text, and cultural politics.

Requisites:
Prerequisite: GEOG 100 and one course in American history.

Typically Offered
Summer

GEOG 700 - Quantitative Analysis in Geography

Credits: 3

Quantitative methods employed in modern geographical research. Applications of both statistical and mathematical approaches will be treated. Emphasis will be placed on interpretation and evaluation of techniques employed in spatial analysis.

Requisites:
Prerequisite: One course in statistics.

Typically Offered
Spring

GEOG 705 - Thematic Remote Sensing.

Credits: 3

Introduction to digital image analysis in remote sensing, with an emphasis on extraction of thematic information from imagery. Emphasizes mastery of both practical classification techniques and the theory behind those techniques. Topics covered include preparing imagery for classification; per-pixel and object-based classification techniques; use of parametric, nonparametric, and machine learning\AI-based decision rules; and techniques for validating classification accuracy. Classification techniques for hyperspectral imagery will also be covered.

Requisites:
Prerequisite: GEOG 605 or equivalent.

Typically Offered
Fall, Spring

GEOG 706 - Biophysical Remote Sensing

Credits: 3

An advanced seminar covering methods and models for retrieving quantitative information about the Earth's surface from remotely sensed data. Topics covered will include inversion techniques for determining surface radiance and reflectance, correction of atmospheric effects, theory of vegetation indices and their use in empirical determination of canopy properties, canopy models and their inversion, and the use of hyperspectral data for retrieval of surface biophysical information.

Requisites:
Prerequisite: GEOG 605.
Other requirements: A course in a physical or biological science, MATH 210 or MATH 220, or equivalent.

Typically Offered
Fall, Spring

GEOG 707 - Remote Sensing of Water

Credits: 3

Reviews and expands the fundamentals of remote sensing theory, basic surface hydrology and hydraulics, remote sensing methods and instruments, measurements of various hydrologic parameters, and integrated approaches in water resource studies

Requisites:
Prerequisite: GEOG 508 and GEOG 605 or instructor permission.

Typically Offered
Fall

GEOG 709 - Geography Field Research Techniques

Credits: 2-3

Explores methods and techniques employed in modern

field research. Stresses research design, field data acquisition techniques, and data analysis.

Requisites:
Prerequisite: junior standing and at least 6 hours in geography.

Typically Offered
Summer

GEOG 711 - Topics in Remote Sensing

Credits: 3

Examination of a selected remote sensing topic in an area of faculty specialization.

Repeat for Credit
Repeatable. Repeatable once with change in topic.

Requisites:
Prerequisite: GEOG 705.

Typically Offered
Spring

GEOG 712 - Internet GIS and Distributed Geographic Information Services

Credits: 3

Introduces the development and deployment of Internet maps and GIS-related web services. Students will use virtual globes and Internet map servers to learn the techniques of Internet mapping and development/delivery of geodata and geoprocessing services via the Web. Studio-style classes will focus on building the necessary skills for creating, as well as the practical applications of, customized GIS map applications and "mashups", web-based GIS services, and mobile GIS applications.

Requisites:
Prerequisite: GEOG 608

Typically Offered
Spring

GEOG 715 - World Population Patterns

Credits: 3

Geographical processes that govern population distributions, growth rates, and migrations. Emphasis on international comparisons and implications for world society of continued differential growth rates

Requisites:
Prerequisite: Six hours of social science.

Typically Offered
Fall-Even Years

GEOG 718 - Geography of Public Lands

Credits: 3

Overview of public lands systems, including distribution and uses of public lands, with an emphasis on US federal lands. Historic and recent controversies regarding the public lands will be addressed. Seminar course with discussion and independent research components.

Requisites:
Prerequisite: Six hours of social science.

Typically Offered
Spring

GEOG 720 - Geography of Land Use

Credits: 3

Critical factors affecting land use, scarcity, and management examined in a regional, national, and global context; land use classification system and variation of land use patterns.

Requisites:
Prerequisite: Six hours of social science.

Typically Offered
Fall-Odd Years

GEOG 722 - Geographies of International Conservation

Credits: 3

Examines geographic perspectives of global biodiversity loss and conservation landscapes with an emphasis on the political, economic, and cultural dimensions of conservation around the world.

Requisites:
Prerequisite: 6 hours of social sciences.

Typically Offered
Fall

GEOG 725 - Geography of Water Resources

Credits: 3

Interpretation and analysis of the physical geography of water and water as a resource. Evaluation of water, emphasizing quality, hazards, institutions, and selected domestic and global issues.

Requisites:
Prerequisite: Six hours of social science.

Typically Offered
Spring-Even Years

GEOG 728 - Programming for Geographic Analysis

Credits: 3

Introduces programming languages, scripting methods, and/or free and open-source software (FOSS) and their use with geospatial technologies and spatial data. Explanations of programming concepts, demonstrations of techniques, and practical exercises that will enable students to develop their own programs and workflows for geoprocessing, spatial analysis, and map production.

Requisites:
Prerequisite: GEOG 608 is recommended.

Typically Offered
Fall, Spring

GEOG 735 - Topics in Climatology

Credits: 3

Introduces geology and geochemistry of fossil fuels. Provides basic background information on carbon chemistry and its relationship to fossil fuels such as oil, natural gas and coal, as well as geochemical and petrologic (microscopic) characteristics of sedimentary organic matter and the distribution of fossil fuels through geologic time. Case studies of particular fossil fuel reserves are included.

Repeat for Credit
Repeatable. Repeatable once with change in topic.

Requisites:
Prerequisite: CHM 230

Typically Offered
Fall

GEOG 740 - Fluvial Geomorphology

Credits: 3

Exploration of the forms and processes of streams and rivers with a focus on fluid flow mechanics, sediment transport in moving water, and predicting how rivers can change through time. Utilizes a combination of lectures, data analysis, and field work.

Note:
The course meets for three hours of lecture per week with one required weekend field trip.

Requisites:
Prerequisite: GEOG 440 (or equivalent hydrology course) or graduate standing or instructor permission

Typically Offered
Fall

GEOG 742 - Digital Geomorphology

Credits: 3

An exploration of geomorphic concepts and 'laws' describing how landscapes and rivers can be used to understand historic and contemporary issues through raster-GIS and the ArcGIS toolbox.

Requisites:
Instructor permission. Introductory-level knowledge of Geomorphology, GIS and/or statistics is recommended.

Typically Offered
Spring

GEOG 745 - Topics in Biogeography

Credits: 3

Examination of selected biogeography topics.

Repeat for Credit
Repeatable with a change in topic.

Requisites:
Prerequisite: GEOG 445 or instructor permission.

Typically Offered
Fall

GEOG 747 - Soil Mapping

Credits: 3

Presents various approaches to soil mapping including the traditional soil-landscape paradigm, digital soil mapping, and a novel computer modeling. Local field sites will serve to reinforce techniques discussed.

Requisites:
Prerequisite: GEOG 221.

Typically Offered
Fall

GEOG 750 - Urban Geography

Credits: 3

A study of geographic principles relating to the distribution, function, and structure of cities: a geographic analysis and classification of urban settlements.

Requisites:
Prerequisite: Six hours of social science or planning.

Typically Offered
Fall

GEOG 761 - Human Impact on the Environment

Credits: 3

Assessment of human impacts on the natural environment. Surveys changing human impacts on and attitudes towards the environment, and details alteration of water systems, the atmosphere, landforms, plants, and animals.

Requisites:
Prerequisite: Six hours of social science.

Typically Offered
Spring

GEOG 765 - Geography of Natural Hazards

Credits: 3

Examines important emergency management issues related to hazard mitigation, preparedness, disaster response, and recovery, including sociocultural and physical components of disaster process. Assesses human vulnerability and risk to environmental calamities, such as droughts, floods, tornadoes, hurricanes, and earthquakes.

Requisites:
Prerequisite: Nine hours of Social Science.

Typically Offered
Fall

GEOG 770 - Perception of the Environment

Credits: 3

An examination of the way people perceive their geographic environment and the role of perception in spatial behavior. Perceptions of neighborhoods, cities, states, nations, frontier regions, and environmental processes are explored.

Requisites:
Prerequisite: Six hours of social science with one course above the introductory level, and 6 hours of natural science with one course above the introductory level.

Typically Offered
Spring-Odd Years

GEOG 780 - Cultural Geography

Credits: 3

A study of the forms of human occupancy of landscapes, with consideration of innovations in the use of landscape, the origins and the dispersals of these innovations, and human attitudes toward the natural environment.

Requisites:
Prerequisite: Six hours of social science.

Typically Offered
Spring-Even Years

GEOG 790 - Seminar in Geography

Credits: 1-3

Requisites:
Prerequisite: Consent of instructor.

GEOG 795 - Topics in Geographic Information Science

Credits: 1-3

Selected geographic information science topic in science topic in an area of faculty specialization.

Repeat for Credit
Repeatable. Repeatable once with change in topic.

Requisites:
Prerequisite: GEOG 302 or consent of instructor.

Typically Offered
Fall, Spring

GEOG 800 - Graduate Seminar in Geography

Credits: 0

Attendance of presentations and discussion of research procedures, results and philosophies.

Note:
Required of all geography graduate students in resident.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring

GEOG 801 - Seminar in Qualitative and Mixed Methods Research

Credits: 3

Qualitative research techniques and integration of qualitative with basic statistical research techniques (mixed methods). Consideration of ethics, data collection, and data analysis.

Typically Offered
Spring

GEOG 808 - Geocomputation

Credits: 3

Explores the application of computationally-intensive approaches to the study of complex spatio-temporal problems. Students will learn to simulate, model, analyze, and visualize geographic phenomena that do not lend themselves to other mathematical and statistical methods.

Note:
Enrolling students are strongly encouraged to have a strong background in GIS (e.g. GEOG 508 and GEOG 708) and familiarity with traditional statistical methods.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring

GEOG 815 - Rural Population Geography

Credits: 3

An examination of the population dynamics responsible for regional change in rural areas of the United States. Emphasis is placed on migration systems and changing population composition in Appalachia, Great Plains, rural South, and the Midwest.

Requisites:
Prerequisite: STAT 702 or GEOG 700 or equivalent, and GEOG 715 or SOCIO 830.

Typically Offered
Fall-Even Years

GEOG 820 - Geographic Thought

Credits: 3

History of geographic thought from ancient to modern times, emphasizing major themes and significant individual contributions.

Note:
Required for all Master's students in geography.

Typically Offered
Fall

GEOG 821 - Research and Professional Development in Geography

Credits: 3

Geographic research approaches, design, implementation and reporting, with applications to research proposals and thesis conceptualization and structuring. Programmatic expectations of graduate students and professional development.

Note:
Required for all Master's students in geography.

Typically Offered
Fall

GEOG 822 - Advanced Geographies of International Conservation

Credits: 3

Examines geographic perspectives of global biodiversity loss and conservation landscapes with an emphasis on the political, economic, and cultural dimensions of conservation around the world.

Requisites:
Prerequisite: 6 hours of social science.

Typically Offered
Fall

GEOG 830 - Seminar in Rural Geography

Credits: 3

Exploration of rural geography concepts and research. Examines social, economic, cultural and environmental issues for rural areas and small towns, including natural resources and stresses and concerns related to sustainability of rural livelihoods and communities.

GEOG 833 - Seminar in Sustainability Science, Thought, and Approaches

Credits: 3

Exploration of scientific, social, and philosophical aspects of sustainability, including concepts, approaches, and decision-making. Environmental, economic, and social considerations will be included.

Typically Offered
Fall

GEOG 835 - Rural Economic Development

Credits: 3

Applications of regional and community development models in rural areas of North America. Emphasis is placed on case studies of locational relationships between regional economic profiles, including changes in structure, and indices of betterment.

Requisites:
Prerequisite: GEOG 700 or 700-level statistics course.

Typically Offered
Fall

GEOG 837 - Political Ecology of Land Cover Change

Credits: 3

An introduction to political ecology, concentrating on land use and land cover change.

Requisites:
Prerequisite: at least 6 hours in social science.

Typically Offered
Spring

GEOG 840 - Advanced Environmental Geography

Credits: 3

An examination of post-European settlement land use and climate changes and their impact on rural landform stability. Emphasis is on the response of uplands and river systems to land use and climate change and the techniques for documenting historical landform change.

Requisites:
Prerequisite: GEOG 221; GEOL 520.

Typically Offered
Fall-Odd Years

GEOG 842 - Advanced Digital Geomorphology

Credits: 3

A thorough exploration of geomorphic concepts and 'laws', by leveraging the power of raster-GIS and ArcGIS models in combination with modern digital elevation datasets.

Requisites:
Instructor permission. Introductory-level knowledge of Geomorphology, GIS and/or statistics is recommended.

Typically Offered
Spring

GEOG 850 - Topics in Environmental Geography

Credits: 1-3

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

GEOG 855 - Seminar in Cultural Geography

Credits: 3

An examination of the development and distribution of the rural cultural landscapes, focusing particularly on elements of the material landscape. Emphasis placed upon research conducted in the Great Plains.

Requisites:
Prerequisite: GEOG 500.

Typically Offered
Spring-Even Years

GEOG 860 - Topics in Economic Geography

Credits: 1-3

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

GEOG 861 - Human Impact on the Environment

Credits: 3

Assessment of human impacts on and attitudes towards the environment, and details alteration of water systems, the atmosphere, landforms,plants, and animals.

Requisites:
Prerequisite: Six hours of social science.

Typically Offered
Spring

GEOG 865 - Seminar in Medical Geography

Credits: 3

Emphasizing the pattern of social and environmental conditions on health and disease, this course examines medical care systems and health issues in rural areas of both developed and developing countries.

Requisites:
Prerequisite: STAT 702 or GEOG 700.

Typically Offered
Spring-Odd Years

GEOG 870 - Topics in Human Geography

Credits: 1-3

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

GEOG 880 - Spatial Data Analysis and Modeling

Credits: 3

An examination of statistical techniques and models for analyzing spatial data, including global and local measures of spatial association, spatial cluster analysis, spatial autoregressive and geostatistical models, and geographically weighted regression (GWR).

Requisites:
Prerequisite: GEOG 508 and GEOG 700 or equivalents.

Typically Offered
Spring

GEOG 890 - Advanced Spatial Analysis Techniques

Credits: 3

Integration of spatial analysis techniques and models with tools such as Geographical Information Systems and Remote Sensing as applied to rural resource systems. Explores strategies for adaptation of various types of spatial models into the GIS framework. Sources of data for analysis will be considered with special emphasis placed on use of remotely sensed data.

Requisites:
Prerequisite: GEOG 705 and GEOG 708; GEOG 700 or STAT 702.

Typically Offered
Spring

GEOG 895 - Topics in Spatial Analysis

Credits: 1-3

Independent advanced study of a selected topic. An example is the use of remote sensing and GIS in environmental modeling.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

GEOG 898 - Master's Report

Credits: 2

For students enrolled in geography option B.

Requisites:
Prerequisite: Registration in Graduate School, with sufficient training to carry on the line of research undertaken. Consent of instructor.

Typically Offered
Fall, Spring, Summer

GEOG 899 - Master's Thesis

Credits: 6

For student enrolled in geography option A.

Requisites:
Prerequisite: Registration in the Graduate School, with sufficient training to carry on the line of research undertaken. Consent of instructor.

Typically Offered
Fall, Spring, Summer

GEOG 900 - Methods, Theory, and Models in Geography

Credits: 3

Comparative analysis of contemporary methodology of geographic explanation showing their development, current status and future trends. Examination of problems and techniques of design, data collection, analysis, and interpretation which accompany particular research themes.

Requisites:
Prerequisite: M.A. and consent of instructor.

Typically Offered
Fall

GEOG 990 - Research Problems in Rural Geography

Credits: 1-18

Individual study and research for students admitted to doctoral standing in the graduate school.

Requisites:
Prerequisite: M.A. and consent of instructor.

Typically Offered
Fall, Spring

GEOG 999 - PhD Dissertation Research

Credits: 1-18

GEOL 501 - Independent Study in Geology

Credits: 1-3

Independent reading; field or laboratory investigations, or both, of geologic problems.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

GEOL 502 - Mineralogy

Credits: 3

Crystallography; physical and chemical properties of minerals; emphasis on mineral identification through laboratory analysis.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: GEOL 100 and GEOL 103; CHM 110 and CHM 11 or CHM 210.

Typically Offered
Fall

GEOL 503 - Petrology

Credits: 3

Investigation of physical and chemical processes forming ingeneous, metamorphic and sedimentary rocks. Mircroscopic examination of rock mineralogy and textures.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: GEOL 502 and CHM 230.

Typically Offered
Spring

GEOL 506 - Environmental Studies

Credits: 3

Physical and chemical qualities of natural environments and health from a geologic perspective-detection and prediction of environmental changes, identification of sources of pollutants and their movements in soils, rocks, and waters.

Requisites:
Prerequisite: GEOL 100.

Typically Offered
On sufficient demand

GEOL 510 - Geology of Planets

Credits: 3

Origin, evolution, and surficial geology of the extraterrestrial planets and satellites.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: GEOL 100.

Typically Offered
Summer

GEOL 512 - Earth Science

Credits: 3

A critical study of the atmosphere, weather, climate, composition, and processes of the earth; also, the interaction of these in producing the pattern of landforms and human activity.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: GEOL 100 or GEOG 220 or junior standing.

Typically Offered
On sufficient demand

GEOL 515 - Geology of the National Parks

Credits: 3

Stratigraphy, structure, and geological history that produced the scenery of the national parks. Selected national monuments also will be studied.

Requisites:
Prerequisite: GEOL 100 or GEOL 105.

Typically Offered
On sufficient demand

GEOL 520 - Geomorphology

Credits: 3

Classroom, laboratory, and field studies of landforms and surficial deposits, with an emphasis on earth-surface processes. Classroom lectures and discussions; laboratory exercises; and field investigations.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: GEOL 100 or GEOG 221.

Typically Offered
Fall

GEOL 530 - Structural Geology

Credits: 3

Mechanics of the earth's crust; origin and interrelation of structures of the earth.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: GEOL 503.

Typically Offered
Fall

GEOL 540 - Geologic Record of Climate Change

Credits: 3

Introduction to the major forcing and feedback mechanisms responsible for climate change. Reconstructing past climates using various geologic indicators including climate-sensitive sedimentary facies, paleosols, fossil species distributions, the microfossil record and stable isotopes.

Requisites:
Prerequisite: GEOL 100 or GEOG 221.

Typically Offered
Spring

GEOL 560 - Field Methods

Credits: 3

Introduction to methods used to collect geologic data in the field. Emphasis is placed on map-reading, rock description, use of aerial photographs, and construction of geologic maps and cross sections.

Note:
One hour recitation, and four hours lab a week.

Requisites:
Prerequisite: GEOL 503.

Typically Offered
Fall

GEOL 581 - Principles of Paleontology

Credits: 3

An overview of paleontological principles relating to the application of the fossil record to questions of evolution, paleoecology, paleoenvironment, depositional dynamics, facies analysis, and stratigraphy.

Note:
Two 1.5 hour lectures, and one 3-hour lab per week.

Requisites:
Prerequisite: GEOL 102

Typically Offered
Fall

GEOL 599 - Senior Thesis

Credits: 1-3

Directed research and preparation of a senior thesis.

Repeat for Credit
Repeatable. May be repeated once to a maximum of three hours credit. Open only to seniors in geology or geophysics.

Typically Offered
Fall, Spring

GEOL 602 - Mineral Exploration

Credits: 3

Geological, geochemical, and geophysical prospecting techniques and their application in the exploration for metallic mineral deposits.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: GEOL 503.

Typically Offered
On sufficient demand

GEOL 605 - Introduction to Geochemistry

Credits: 3

Introduction to the use of inorganic geochemistry in the investigation of geologic processes in the crust, mantle, and surface environment.

Note:
Three hours lecture a week.

Requisites:
Prerequisites: CHM 110, CHM 111.
Recommended Prerequisite: GEOL 502.

Typically Offered
Spring

GEOL 611 - Hydrogeology

Credits: 3

Physical and chemical principles of the water cycle (evaporation, condensation, precipitation, runoff, stream flow, percolation, and groundwater flow), as well as environmentally relevant applications based on case studies. Extensive coverage of groundwater hydrology, surface water hydrology, soil moisture, contemporary global issues related to water resources, including pollution control, and also hydrogeochemistry will be discussed.

Note:
Note: Familiarity with web browsers, MS Excel or other spreadsheet software, word processor. Calc I and Calc II and Chm I and Chm II are recommended. Consult the instructor if you have not taken these courses.

Requisites:
Prerequisite: GEOL 100 or GEOL 115

Typically Offered
Spring

GEOL 620 - Volcanology

Credits: 2

Examines processes associated with active volcanoes as revealed by volcanic deposits. Emphasis on influence of volcanoes on human civilizations including economic deposits, climate change, or volcano monitoring.

Requisites:
Prerequisite: GEOL 502.

Typically Offered
On sufficient demand

GEOL 625 - Introduction to Engineering Geology and Petrophysics

Credits: 3

Students learn basic fundamentals to solve real-world problems in the area of geology and petrophysics. A field trip to an onshore oil rig in Kansas helps consolidating course materials with demands.

Requisites:
Prerequisite: MATH 220

Typically Offered
Spring

Crosslisted:
GEOG 825

GEOL 630 - Sedimentology and Stratigraphy

Credits: 3

Description, classification, correlation, chronology, and paleogeography of sedimentary rock systems and the depositional environments in which they formed.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: GEOL 100 and GEOL 103.

Typically Offered
Spring

GEOL 640 - Introduction to Geophysics

Credits: 3

Introduction to geophysics, its uses in studies of the earth's interior, its utility of illuminating subsurface geological features, and its applications in fields such as groundwater studies and the development of energy resources.

Requisites:
Prerequisite: MATH 220, PHYS 113 or PHYS 213, or instructor consent..

Typically Offered
Fall

GEOL 642 - Field Geophysics

Credits: 3

Acquisition and computer processing of geophysical data such as those from seismic reflection, seismic refraction, gravity, magnetic and electrical methods.

Note:
One hour recitation and four hours lab per week.

Requisites:
Prerequisite: GEOL 640.

Typically Offered
Spring

GEOL 650 - Geomicrobiology

Credits: 3

Study of microorganisms in geological environments. Topics include: geochemical controls on microbial activity and impacts of microbial activity on geological environments.

Note:
Lecture and lab components.

Requisites:
Prerequisites: CHM 110, CHM 111.

Typically Offered
Spring

GEOL 680 - Field Geology

Credits: 3

Field projects in the Rocky Mountains designed to give students practical experience in apply geologic knowledge and skills.

Note:
Three six day weeks in the field.

Requisites:
Prerequisite: GEOL 503, GEOL 530, and GEOL 560.

Typically Offered
Summer

GEOL 702 - Economic Geology

Credits: 3

Geology and origin of metallic mineral deposits and of some nonmetallic deposits.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: GEOL 503.

Typically Offered
Spring

GEOL 703 - Economic Geology Laboratory

Credits: 1

Laboratory activities related to metallic and nonmetallic mineral deposits, including detailed studies of selected deposits.

Requisites:
Prerequisite: GEOL 702 or concurrent enrollment.

Typically Offered
Fall

GEOL 704 - Carbonate Paleoenvironments

Credits: 3

Examination of the biological, physical, and chemical

factors in reefs and shallow carbonate platform environments through Earth history, including their modern analogs. Attention to the geometry of carbonate facies, their geographic and temporal distribution, and their sedimentary fabric and porosity.

Requisites:
Prerequisite: GEOL 581 and GEOL 630.

Typically Offered
Spring

GEOL 705 - Biomineralization

Credits: 3

Discussion and critique of current and classic research in biomineralization.

Requisites:
Prerequisite: GEOL 581 and GEOL 605.

Typically Offered
On sufficient demand

GEOL 708 - Sedimentary Geochemistry

Credits: 3

Geochemical principles and processes in deposition and diagenesis of sediments; different chemical pathways in the exogenic cycle.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: GEOL 503 and MATH 220.

Typically Offered
On sufficient demand

GEOL 711 - Water Resources Geochemistry

Credits: 3

Geochemistry of ground and surface waters; emphasis on mineralogical, biochemical, and hydrologic controls on inorganic and organic interactions in natural waters.

Requisites:
Prerequisite: GEOL 611, GEOL 605 or AGRON 605.

Typically Offered
Fall

GEOL 712 - Advanced Geochemistry

Credits: 3

Application of chemical principles to igneous, metamorphic systems; emphasis on equilibria, oxidation-reduction, crystal chemistry, and thermodynamics.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: GEOL 503 and CHM 500 or CHM 585.

Typically Offered
On sufficient demand

GEOL 714 - Rock Microstructures and Geologic Processes

Credits: 3

Examination of mineral shapes, orientations and assemblages (rock fabric) as a record of geologic processes.

Note:
Two hours lecture and two hour lab.

Requisites:
Prerequisite: GEOL 503 and CHM 230.

Typically Offered
On sufficient demand

GEOL 715 - Dating Earth Materials

Credits: 3

Discusses how ages are measured for rocks, minerals, waters, and sediments by analysis of isotopes produced by radioactive decay or cosmic rays.

Requisites:
Prerequisite: CHM 230, GEOL 503.

Typically Offered
On sufficient demand

GEOL 720 - Quaternary Geology

Credits: 3

Quaternary stratigraphy as the framework for studying the geomorphic, climactic, archaeological, and biological changes of the last two million years, with emphasis on the North American record.

Note:
Three hours recitation a week and one field trip a semester.

Requisites:
Prerequisite: GEOL 630.

Typically Offered
On sufficient demand

GEOL 730 - Petroleum Geology

Credits: 3

Origin, migration, and accumulation of petroleum; stratigraphy and structure of important fields.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: GEOL 530 and GEOL 630.

Typically Offered
Fall

GEOL 735 - Fossil Fuel Sedimentology

Credits: 3

Introduces geology and geochemistry of fossil fuels. Provides basic background information on carbon chemistry and its relationship to fossil fuels such as oil, natural gas and coal, as well as geochemical and petrologic (microscopic) characteristics of sedimentary organic matter and the distribution of fossil fuels through geologic time. Case studies of particular fossil fuel reserves are included.

Requisites:
Prerequisite: CHM 230

Typically Offered
Spring

GEOL 738 - Formation Evaluation

Credits: 3

Investigates projects on well log interpretation, petro-physical calculations, log corrections, and post-drilling decision workflows through lectures, discussions, laboratory exercises, or field trips.

Requisites:
Prerequisite: GEOL 730.

Typically Offered
Fall

GEOL 740 - Regional Geology

Credits: 3

Interpretations of structural, stratigraphic, igneous, and tectonic history of selected sites in North America.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: GEOL 530 and GEOL 630.

Typically Offered
On sufficient demand

GEOL 741 - Seismic Data Processing

Credits: 3

Principles of 3D seismic data processing techniques and the application of industrial software package(s) to process raw field seismic reflection data to render it in a form suitable for the seismic interpretation stage. This form of seismic data is used in subsurface reservoir characterization.

Requisites:
Prerequisite: GEOL 640.

Typically Offered
Spring

GEOL 742 - Seismic Data Interpretation

Credits: 3

Fundamental interpretation of 3D seismic reflection data as applied to hydrocarbon exploration and development problems. Students will conduct a project interpreting surface 3D seismic reflection data using industrial software

package(s) for subsurface reservoir characterization.

Requisites:
Prerequisite: GEOL 640.

Typically Offered
Fall

GEOL 745 - Exploration Geophysics

Credits: 3

Principles and applications of seismic, gravity, magnetic, and other geophysical methods used in energy, mining, and other industries to locate subsurface targets of interest.

Requisites:
Prerequisite: GEOL 743.

Typically Offered
On sufficient demand

GEOL 747 - Introduction to Matlab

Credits: 3

Practical introduction to Matlab designed for students who may have limited experience with data processing. Includes handling data (import/export from other softwares/format), data structure, data processing, data visualization (2D, 3D graphs), designing functions, selection statements, loops, programming, descriptive statistics, plots for exploratory data analysis, fit probability distributions to data, regression analysis.

Typically Offered
Spring

GEOL 750 - Geologic Evolution of Planet Earth

Credits: 3

Integration of the various geologic disciplines into a broad-based understanding of the history and dynamics of the earth. Specific regions, such as the western U.S., will be selected each year for detailed study. Guest lectures will make up a significant part of the course.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: completion of, or concurrent enrollment in, all other courses required for the B.S.
or B.A. degree in geology (except summer field courses).

Typically Offered
Spring

GEOL 760 - Geochemical and Biogeochemical Modeling

Credits: 3

Use of geochemical modeling to examine geochemical and biogeochemical processes in aqueous environments.

Requisites:
Prerequisite: CHM 110 and CHM 111.
Recommended Prerequisite: GEOL 605.

Typically Offered
Fall

GEOL 770 - Subsurface Methods

Credits: 3

Principles and applications of subsurface geology.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: GEOL 530 or concurrent enrollment.

Typically Offered
Spring

GEOL 790 - Problems in Geology

Credits: 1-18

Work is offered in mineralogy, paleobiology, paleoecology, stratigraphy, structural geology, igneous, metamorphic, and sedimentary petrology, geomorphology, planetary geology, hydrogeology, geochemistry, and isotope geology.

Requisites:
Prerequisite: Background of courses needed for problem undertaken.

Typically Offered
Fall, Spring, Summer

GEOL 800 - Graduate Seminar in Geology

Credits: 1-18

Topics in geology, geochemistry, and geophysics.

Typically Offered
Fall, Spring

GEOL 801 - Advanced Paleobiology

Credits: 2

Detailed study of the functional morphology, ecology, biogeography, evolution, and classification of selected groups.

Requisites:
Prerequisite: GEOL 704 or GEOL 705.

Typically Offered
On sufficient demand

GEOL 804 - Igneous and Metamorphic Petrology

Credits: 4

Selected problems in the petrogenesis of igneous and metamorphic rocks.

Note:
Three hours lecture and three hours lab a week.

Requisites:
Prerequisite: GEOL 608.

Typically Offered
On sufficient demand

GEOL 805 - Advanced Igneous and Metamorphic Petrology

Credits: 3

Explores the geochemical, petrographic, and petrologic characteristics of the common igneous and metamorphic rocks, building on concepts learned in introductory-level petrology courses.

Requisites:
Prerequisite: GEOL 503 or equivalent.

Typically Offered
Fall

GEOL 806 - Sedimentary Petrology

Credits: 4

Petrography, classification, and origin of terrigenous and chemical sedimentary rocks.

Note:
Three hours lecture and three hours lab a week.

Requisites:
Prerequisite: GEOL 608.

Typically Offered
Spring

GEOL 807 - Advanced Sedimentary Petrology

Credits: 2

Field and laboratory study of selected problems in the origin of sedimentary rocks.

Requisites:
Prerequisite: GEOL 806.

Typically Offered
On sufficient demand

GEOL 810 - Isotope Geology

Credits: 3

Principles, techniques, and applications of natural radioactive isotopes to geochronology; application of isotopes to problems of petrogenesis.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: GEOL 608 or consent of instructor.

Typically Offered
Fall

GEOL 825 - Advanced Engineering Geology and Petrophysics

Credits: 3

Students learn advanced concepts with broad applications in the oil/gas industry, analyze actual experimental data, and use state-of-the-art software in the areas of unconventional reservoirs.

Requisites:
Prerequisite: MATH 220

Typically Offered
Spring

Crosslisted:
GEOL 625

GEOL 830 - Geotectonics

Credits: 3

Origin and history of major tectonic elements of the earth, especially their interaction through time.

Requisites:
Prerequisite: GEOL 530.

Typically Offered
On sufficient demand

GEOL 835 - Advanced Petroleum Exploration, Imperial Barrel Award Competition

Credits: 3

Evaluation of exploration prospects in frontier and underdeveloped petroleum provinces using borehole-derived and geophysical data. Team taught courses that uses industry provided datasets and current data management and interpretation software to reach drill or no-drill decisions based on science, risk analysis, and economics.

Typically Offered
Spring

GEOL 840 - Planetology

Credits: 3

Geologic principles applied to a study of the solar system.

Requisites:
Prerequisite: GEOL 530, GEOL 712, or consent of instructor.

Typically Offered
On sufficient demand

GEOL 870 - Groundwater Contaminant Remediation

Credits: 3

Identification and mensuration of groundwater contaminants and consideration of means for their remediation strategies.

Requisites:
Prerequisite: GEOL 711, GEOL 611, MATH 633 and MATH 634.

Typically Offered
On sufficient demand

GEOL 872 - Biogeochemistry of Soils and Sediments

Credits: 3

Review and discussion of current understanding of the chemical, biological, and mineralogical interactions of groundwater, soils, shallow and deep sediments. This course will deal with biotic controls on chemistry of the environment [and] with the geochemical control of the structure and function of ecosystems.

Requisites:
Prerequisite: GEOL 711, GEOL 605.

Typically Offered
On sufficient demand

GEOL 880 - Clay Mineralogy

Credits: 3

Geologic occurrences, physical properties, atomic structures, and the identification of clay minerals, including thermal analytical methods and the study of X-ray

diffraction patterns.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: GEOL 503 or GEOL 711 or AGRON 515.

Typically Offered
Spring

GEOL 890 - Advanced Seismology

Credits: 3

Mechanics of faulting and earthquakes; seismotectonics; advanced data analysis; seismic wave propagation in three-dimensionally inhomogeneous media; earthquake prediction and hazard analysis.

Note:
One hour recitation and four hours lab per week.

Requisites:
Prerequisite: PHYS 214; GEOL 640; GEOL 644.

Typically Offered
On sufficient demand

GEOL 898 - Master's Report Research

Credits: 1-2

Research or practice of geology summarized in a scholarly report.

Requisites:
Prerequisite: Enrollment in geology option B and permission of instructor.

Typically Offered
Fall, Spring, Summer

GEOL 899 - Master's Thesis Research

Credits: 1-6

Research in geology culminating in a master's thesis.

Requisites:
Prerequisite: Enrollment in geology option A and permission of instructor.

Typically Offered
Fall, Spring, Summer

GEOL 999 - Research in Geology, PhD

Credits: 1-18

Typically Offered
Fall, Spring, Summer

GERON 501 - Culture Change in Long-Term Care

Credits: 1

This course will cover the basic characteristics of traditional and culture change nursing home models. Students will learn about the various processes of organizational change, the steps toward change, and potential regulatory, environmental and social barriers to major change. The course will include discussions about the necessity to change the way care is provided in such areas as dining, bathing, family/relationships, and environment. This overview is recommended as the first course for students unfamiliar with culture change and is delivered on-line.

Typically Offered
Fall

GERON 502 - Measuring Change in Long-Term Care

Credits: 1

Topics covered will include process and outcome measures in nursing home change as well as the importance of and the utility of measurement for the advancement of quality of life issues in long-term care. Students will gain an understanding of how regulatory support will be more likely to occur if culture change features can show a cost savings as well as improvements in the quality of life of residents.

Requisites:
This on-line course should be taken after or concurrently with GERON 501.

Typically Offered
Fall

GERON 503 - Creating Home in Long-Term Care

Credits: 1

Students will gain a better understanding of the interdependent networks within nursing homes, environmental factors in the development of community and culture in a nursing home, learn how fostering resident, family and staff interactions can improve quality of life for all those groups,
understand the role of structural redesign and innovation, and consider how environmental change can improve relationships within the larger community.

Requisites:
This on-line course should be taken after or concurrently with GERON 501.

Typically Offered
Spring

GERON 504 - Strengthening Staff in Long-Term Care

Credits: 1

Topics covered will include the development of deeper relational bonds within the nursing home environment, benefits of permanent staffing as a key component of building a relationship centered culture, how these types of changes can benefit and empower staff, and models for bridging cultural divides between long-term care administrators and staff to benefit the residents. A review of the impact
of traditional models of managed care that focus on providing food, shelter, and medical attention and factors that hinder purposeful, proactive interactions between residents, families and staff.

Requisites:
This on-line course should be taken after or concurrently with GERON 501.

Typically Offered
Fall

GERON 505 - Dining in Long-Term Care

Credits: 1

Students will develop an appreciation of the impact dining has on the quality of social, physical and emotional health and quality of life of nursing home residents, become aware of the meanings/customs that residents may associate with the dining experience, recognize the importance of the dining experience in the overall culture of the home and develop an understanding of various institutional
dining styles.

Requisites:
This on-line course should be taken after or concurrently with GERON 501.

Typically Offered
Spring

GERON 506 - Activities in Long-Term Care

Credits: 1

A review of common activities in long term care, their importance in resident care, the importance of meaningful activity and relationships, how the long-term care culture impacts resident individuality/choice, and individualized care plans.

Requisites:
This on-line course is recommended to be taken after or concurrently with GERON 501.

Typically Offered
Spring

GERON 510 - Aging in America: Policy and Advocacy

Credits: 3

Covers the history of and current aging policy in the U.S. with topics including: formal and informal caregiving, healthcare, retirement, elder abuse, minority rights, and current movements in aging policy. Focuses on advocacy and policy analysis. Students will formulate, apply, and express their point of view through discussions and integrative projects.

Typically Offered
Fall, Spring

GERON 600 - Seminar in Gerontology

Credits: 3

Examines critical issues of aging, incorporating multiple disciplines and a life course perspective. Students apply growing knowledge of aging and ageism while addressing current problems facing an aging world.

Requisites:
Prerequisite: Completion of 15 hours of course work in gerontology.

Typically Offered
Fall, Spring

GERON 605 - Practicum in Gerontology

Credits: 1-3

Supervised field experience in an aging-related setting as a practical application of gerontological knowledge and skills.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

GERON 610 - Seminar in Long-Term Care Administration

Credits: 3

Encourages the development of leadership skills within long-term care organizations by covering administrative principles involved in planning, organizing, and directing and includes in-depth exposure to the standards and regulations governing long-term care, social and medical models of care, and the process of change within these organizations.

Typically Offered
Intersession

GERON 615 - Long-Term Care Administration Internship

Credits: 9

Includes: (a) field experience in the general administration of long-term care programs and/or facilities; planning, budgeting, program management, and service delivery; (b) exposure to federal and state standards and regulations governing long-term care; and (c); professional leadership development.

Requisites:
Prerequisite: Junior standing, GERON 315, MANGT 420, ACCTG 231, GERON 610, six hours of electives from approved list, GPA of 2.5 or above (3.0 or above in long-term care administration coursework)

Typically Offered
Fall, Spring, Summer

GERON 620 - Problems in Gerontology: Bridging the Gap - Intergenerational Relationships

Credits: 3

Interdisciplinary examination of unique issues involved in intergenerational relationships, both inside and outside the family context and across cultures, time, and the lifespan. Intergenerational relationships will be discussed as they pertain to theory, research, practice, and policy. Students will work directly with older adults to complete the requirements of this course.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

GERON 625 - Health and Aging

Credits: 3

From theories of aging through the effects of age on systems of the body, including chronic and acute disease, the course will focus on health promotion and will prepare students to better understand their aging clients/patients' problems.

Typically Offered
Spring

Crosslisted:
GERON 400

GERON 630 - Mental Health & Aging

Credits: 3

Introduction to the issues involved in aging and mental health using a systems framework covering the major emotional and psychiatric problems encountered in old age. Includes discussion of personality disorders, dementia, cognitive problems, substance abuse, suicide and barriers to treatment.

Requisites:
Prerequisite: Junior/Senior.

Typically Offered
Spring

GERON 700 - Gerontechnology

Credits: 3

An interdisciplinary approach to the understanding of the biological, environmental, and social spheres where technology and gerontology meet. Topics include the interrelationship between population dynamics and technological change, technological research and devices that may improve elders' lives, particular issues for rural communities, and the social and cultural meanings, challenges, and benefits of gerontechnologies. Particular emphasis will be given to placing both population aging and technological change in a broader social perspective.

Typically Offered
Spring

GERON 705 - Sexuality and Aging

Credits: 3

Sexuality is one important component of well-being throughout the life span and growing older doesn't eliminate the need for sexual intimacy. This course will address the infrequently discussed topic of sexuality as it applies to older adulthood. Students will learn about the physiological changes that accompany aging and affect sexuality, as well as the psychological and social impact of barriers to sexual expression, including factors such as Alzheimer's disease, accessibility, and medications. Sexual diversity, as well as the role of family, government, and technology will also be addressed.

Requisites:
Prerequisite: Introductory gerontology course

Typically Offered
Summer

GERON 710 - Creativity and Aging

Credits: 3

What happens to creativity as a person ages? This unique class will help students to understand developmental and pathological changes in the brain that can lead to changes in creative output over time. Through hands-on experiences and direct association with older adults, students will grow an appreciation for creativity produced and inspired by older people. This course is intended to provide experiences that will help the student to create art programs for older adults.

Typically Offered
Spring, Summer

GERON 715 - Aging Veterans

Credits: 3

Introduction to the unique issues involved with aging military veterans. Topics include basic military structure, media portrayal of war, personnel issues resulting from American conflicts since WWII, veteran benefits, cultural issues, veteran health issues and navigating a career within the U.S. federal system.

Typically Offered
Fall

GERON 720 - Design for Aging in the Modern World

Credits: 3

This course will explore the dynamic process of aging and the role of the built environment in the; multidimensional as well as multi-spheral spaces of life-course occurring in the family, work, education, leisure as well as other domains and its relationship to the environment from a life-course perspective. The emphasis on aging and the environment will focus on how individuals and groups manage interactions associated with the social and physical settings. The course will develop students' foundational knowledge in the theories of aging, environment and behavior, and the ecology of the aging process. These theories will be used as the basis to discuss and debate contemporary issues that confront an aging society. Three levels of the environment will be explored: the

microenvironment including those products that people of all ages interact with on a daily basis; the meso (or middle) environment that includes residential and work settings that shape our relationships with family, friends, and associates, and lastly at the macro environment of our communities where people are connected to the larger social settings, services and supports that make up our cities and rural settings, both from a national and international perspective. Each of the sections covered will acknowledge how behavior is influenced by the environment and spans the life-cycle.

Typically Offered
Fall

GERON 725 - Topics of Gerontology

Credits: 2-3

Review of recent research and theory related to specialized issues in gerontology or long-term care.

Repeat for Credit
Repeatable across different semesters.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

GERON 772 - Adult Development and Aging

Credits: 3

This course explores the biological, psychological, and social factors that are associated with aging. Although the focus is on the later years, information is presented from a life-span developmental framework. Empirical studies are reviewed and their strengths, limitations and implications for normative and optimal functioning are discussed.

Requisites:
Other Requirements: Students properly enrolled in the Great Plains IDEA online Masters in Gerontology or online Graduate Certificate in Gerontology.

Typically Offered
Spring

GERON 773 - Physical Health and Nutrition in Aging

Credits: 3

This course identifies the basic physiologic changes during aging and their impacts in health and disease. The focus will be on successful aging with special emphasis on physical activity and nutrition. Practical application to community settings is addressed.

Requisites:
Other Requirements: Students properly enrolled in the Great Plains IDEA online Masters in Gerontology or online Graduate Certificate in Gerontology.

Typically Offered
Fall

GERON 774 - Environments and Aging

Credits: 3

Using interdisciplinary perspectives the course will explore the preferences and needs of older adults and the attributes of various physical environments that hinder and facilitate successful adaptation by the aging individual. Students apply this knowledge to the design and management of Housing, institutional facilities, neighborhoods, and communities.

Requisites:
Prerequisites: Graduate level classification, or undergraduate student with instructor permission.

Typically Offered
Spring

GERON 775 - Perspectives in Gerontology

Credits: 3

Exploration of basic concepts in gerontology through current and classic research. Themes and issues include stereotypes and myths of aging, theories of aging, research approaches in aging, and related social issues facing the elderly.

Typically Offered
Fall, Summer

GERON 776 - Program Evaluation and Research Methods in Gerontology

Credits: 3

Overview of program evaluation, research methods, and grant writing in gerontology. Includes application of quantitative and qualitative methods in professional settings.

Typically Offered
Spring

GERON 777 - Public Policy: Economic and Social Impacts on Older Adults

Credits: 3

Study of policy development and public policy programs associated with aging. Attention is given to the impact of policies on older adults and economic impacts of and for an aging population.

Typically Offered
Fall

GERON 778 - Aging and the Family

Credits: 3

Investigates the issues that relate to family life in the later years from the perspective of older adults, the family and society.

Typically Offered
Spring

GERON 779 - Professional Seminar in Gerontology

Credits: 3

Students apply and integrate knowledge gained in earlier courses and strengthen skills in ethical decisions-making through applications in gerontology-related areas such as advocacy, professionalism, family and workplace issues. Students from a variety of professions bring their unique perspective to bear on topics of common interest.

Typically Offered
Summer

GNHE 780 - Problems in General Human Ecology

Credits: 1-18

Individual investigation into work in general human ecology.

Requisites:
Prerequisite: Consent of the instructor.

Typically Offered
Fall, Spring, Summer

GRAD 740 - Water and Society: Interdisciplinary Foundation

Credits: 3

Interdisciplinary course focused on the natural and human elements of water resource systems; Introduction to traditional disciplinary procedures, theory and models; Cross-disciplinary approaches to understand and quantify dynamic system relationships; Case study for integrated problem solving, management and policy.

Note:
Three hours recitation.

Requisites:
Prerequisite: Senior or graduate standing.

Typically Offered
Spring

GRAD 820 - Leadership Practicum

Credits: 3

Develops the connections between leadership theory and practice. By conducting a practicum project, students demonstrate the ability to apply concepts and ideas from the study of leadership to a practical leadership problem within an organization.

Requisites:
Prerequisite: LEAD 801.

Typically Offered
Fall, Spring

GRAD 850 - Foundations of Homeland Security

Credits: 3

This introductory course provides the foundational

framework for the Homeland Security program and surveys the major policies, practices, concepts, and challenges confronting practitioners in Homeland Security. Topics include an overview of threats to homeland security and an introduction to the roles, functions, and policies of organizations and government structures at the federal, tribal, state, and local levels. The National Response Framework (NRF) and National Incident Management System (NIMS) are studied.

Typically Offered
Fall

GRAD 851 - Homeland Security Threats

Credits: 3

Students will understand the various types of disasters, methodologies of disaster recovery, and roles and responsibilities of Federal, State, and local government. It will address the impact of disasters, including acts of terrorism, to include economic, physical, emotional, and psychological effects. Students will understand how disasters affect society, risk mitigation strategies, and how the levels of government coordinate to address disaster impacts.

Typically Offered
Fall

GRAD 852 - Organizations Amid Crisis

Credits: 3

The fundamental concepts and subject areas necessary for an organization to address in preparing for catastrophic emergency events and other events encountered by organizations as a result of homeland security are examined. It outlines the organization and practical steps required to develop an effective crisis response plan. The relationships between private and public service organizations, including governmental, nonprofit, and hybrid types are studied.

Typically Offered
Fall

GRAD 853 - Homeland Security Process and Management

Credits: 3

Students will understand strategic, political, legal, and organizational challenges associated with the defense of the U.S. homeland, efforts that are under way to meet these challenges, and possible policy options. Intergovernmental responsibilities and relationships of local, state, and federal agencies in an "all-hazards" approach to disasters are emphasized. Major policy and regulatory issues of emergency management, including the role of the military in response to disaster operations, are examined.

Typically Offered
Fall

GRMN 500 - K-State in Berlin

Credits: 3

Ten-day, faculty-led study abroad program in Berlin and Potsdam. Focuses on German cultural memory through Berlin's architectural topography. Visits to, and discussions of, historical sites and buildings. Prior to departure, students attend meetings on the K-State campus and complete assignments to prepare for travel.

Typically Offered
Summer

GRMN 503 - German Literature in Translation

Credits: 3

Selected readings in English from such major German authors as Mann, Brecht, Hesse, Grass, and Kafka.

GRMN 510 - German Film

Credits: 3

In English. Addresses various topics within a German historical-cultural context. Students will consider what makes cinema a distinct form of artistic expression.

Note:
May be taken for major credit if assignments and discussion are completed in German.

Requisites:
Normally taken concurrently with German IV.

GRMN 515 - Topics in German Cultural Studies

Credits: 3

In English. Specific course content will vary by semester and instructor.

Note:
May be taken for German major credit.

GRMN 520 - Readings in German

Credits: 3

Practice in reading a variety of literary, journalistic, and specialized texts.

Requisites:
Prerequisite: GRMN 223 or equivalent.

GRMN 521 - Introductory Topics in German Literature and Culture of the 18th and 19th century

Credits: 3

Topics courses constitute a sequence of introductory period studies covering the chronological range of German literature from about 1750 to the present. Within these historical periods, the specific course contents will vary by semester and instructor.

GRMN 522 - Introductory Topics in German Literature and Culture of the 20th and 21st century

Credits: 3

Topics courses constitute a sequence of introductory period studies covering the chronological range of German literature from about 1750 to the present. Within these historical periods, the specific course contents will vary by semester and instructor.

GRMN 523 - German Composition

Credits: 3

Course emphasizes writing and includes select grammar review. Course not open to students whose competence has been demonstrated in the language at this level.

Requisites:
Prerequisite: GRMN 223 or equivalent.

GRMN 524 - German for Reading Knowledge I

Credits: 3

The grammar and syntax of German and the reading of basic material selected from modern German texts. (This course is designed for students who need to be able to read German.).

GRMN 525 - German for Reading Knowledge II

Credits: 3

Continued reading of material from modern German texts. (This course is designed for students who need to be able to read German.).

GRMN 526 - Business German

Credits: 3

Advanced grammar necessary for adequate oral and written expression in international business and diplomatic situations, including specialized terminology, conversation and discussion and translation. Cultural aspects of business are also considered.

Requisites:
Prerequisite: GRMN 223 or equivalent.

GRMN 527 - Advanced German Conversation

Credits: 3

Course emphasizes proficiency in oral expression and includes select grammar review. Course not open to students whose competency has been demonstrated in the language at this level.

Requisites:
Prerequisite: GRMN 223 or equivalent.

GRMN 528 - Introductory Topics in German Language and Linguistics

Credits: 3

Introduction to topics in German Linguistics, with special emphasis on the connection between language structure and use or language structures and learning.

Repeat for Credit
Repeatable. May be repeated with a change of subject matter.

Requisites:
Prerequisite: GRMN 301.
Corequisite: GRMN 523 or GRMN 527 or GRMN 526 should be taken before GRMN 528 or concurrently with GRMN 528.

Typically Offered
Spring

GRMN 529 - Special Studies in German

Credits: 1-18

Requisites:
Prerequisite: Consent of department head and instructor involved.

GRMN 530 - German Cultural Studies and History

Credits: 3

This course addresses cultural and historical topics not confined to a single period. Specific course content will vary by semester and instructor. It may emphasize cross-national subjects, the development of a theme or discourse over time, new perspectives from social, intellectual, or cultural studies, or non-traditional texts and topics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period.

Requisites:
Prerequisite: One prior or concurrent 500-level German language class or equivalent.

GRMN 700 - Topics in Medieval German Literature and Culture

Credits: 3

Topics courses are designed for undergraduates and graduate students. These courses constitute a sequence of period studies covering the chronological ranges of German speaking literature and culture. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the period Each semester's offerings will be specifically described before each enrollment period in university and department publications.

Requisites:
Prerequisite: One prior 500-level German literature course.

Typically Offered
Fall, Spring, Summer

GRMN 701 - Topics in Eighteenth Century German Literature and Culture

Credits: 3

Topics courses are designed for undergraduates and graduate students. These courses constitute a sequence of period studies covering the chronological ranges of German speaking literature and culture. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the period Each semester's offerings will be specifically described before each enrollment period in university and department publications.

Requisites:
Prerequisite: One prior 500-level German literature course.

Typically Offered
Fall, Spring, Summer

GRMN 702 - Topics in Nineteenth Century German Literature and Culture

Credits: 3

Topics courses are designed for undergraduates and graduate students. These courses constitute a sequence of period studies covering the chronological ranges of German speaking literature and culture. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the period Each semester's offerings will be specifically described before each enrollment period in university and department publications.

Requisites:

Prerequisite: One prior 500-level German literature course.

Typically Offered
Fall, Spring, Summer

GRMN 703 - Topics in Early Twentieth Century German Literature and Culture

Credits: 3

Topics courses are designed for undergraduates and graduate students. These courses constitute a sequence of period studies covering the chronological ranges of German speaking literature and culture. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the period Each semester's offerings will be specifically described before each enrollment period in university and department publications.

Requisites:
Prerequisite: One prior 500-level German literature course.

Typically Offered
Fall, Spring, Summer

GRMN 704 - Topics in German Literature and Culture since 1945

Credits: 3

Topics courses are designed for undergraduates and graduate students. These courses constitute a sequence of period studies covering the chronological ranges of German speaking literature and culture. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the period Each semester's offerings will be specifically described before each enrollment period in university and department publications.

Requisites:
Prerequisite: One prior 500-level German literature course.

Typically Offered
Fall, Spring, Summer

GRMN 705 - Topics in Twentieth and Twenty-First Century German Literature and Culture

Credits: 3

Topics courses are designed for undergraduates and graduate students. These courses constitute a sequence of period studies covering the chronological ranges of German speaking literature and culture. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the period Each semester's offerings will be specifically described before each enrollment period in university and department publications.

Note:
Each semester's offerings will be specifically described before each enrollment period in university and department publications.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: One prior 500-level German literature course.

Typically Offered
Fall, Spring, Summer

GRMN 720 - Open Topics Seminar in German Language and Linguistics

Credits: 3

Addresses topics in German Linguistics. It may emphasize a specific area of linguistics, a specific research approach, or the connection between language and society. Courses are repeatable with change of subject matter.

Requisites:
Prerequisite: At least one GRMN 500-level course preferably GRMN 528.

Typically Offered
Fall, Spring

GRMN 728 - History of the German Language

Credits: 3

A study of the development of the sounds, forms and syntax of standard German.

GRMN 729 - Open Topics Seminar in German Literature and Culture

Credits: 3

Open Topics courses are designed for undergraduates and graduate students. Course addresses topics not confined to a single period in a national literature. Specific course content will vary by semester and instructor. It my emphasize cross-national subjects, literary or cultural criticism or theory, works of one or a pair of related authors, the development of a theme or genre over time, new perspectives from social, intellectual, or cultural studies, or non-traditional texts and topics. Each semester's offerings will be described more specifically in university and department publications before each enrollment period.

Note:
The courses are repeatable with change of subject matter.

Requisites:
Prerequisite: One prior 500-level German literature course.

GRMN 731 - Advanced German: Speaking and Writing

Credits: 3

Course combines practice in speaking, writing, and reading, and select advanced grammar review. Course not open to students whose competence has been demonstrated in the language at this level.

Requisites:
Prerequisite: GRMN 523 and GRMN 527 or equivalent.

GRMN 740 - German Culture and Literature in Second-Language Learning

Credits: 3

Analysis and interpretation of cultural and literary text from German-speaking countries, with emphasis on the development of interpretive skills and materials, and their application to the German curriculum at all levels.

Note:
Normally taken concurrently with German IV.

Requisites:
Prerequisite: one prior 500-level German course.

GRMN 799 - Problems in Modern Languages

Credits: 1-18

GRMN 898 - Master's Report

Credits: 1-2

A written report of either research or problem work on a topic in the major field.

Requisites:
Prerequisite: Consult of major professor.

Typically Offered
Fall, Spring, Summer

GRMN 899 - Research in Modern Languages

Credits: 1-18

GRSC 500 - Milling Science I

Credits: 2

Principles and practices of wheat flour milling with full-scale equipment including grain storage, blending, cleaning, conditioning plant, and a modern pneumatic flour mill, with instrumentation and automation, etc.

Note:
Two hours lecture.

Requisites:
Prerequisite: GRSC 150 and GRSC 210, or consent of instructor.
Recommended prerequisites: CHM 230, PHYS 113, MATH 205, and BIOL 455

Typically Offered
Spring

GRSC 501 - Milling Science I Laboratory

Credits: 2

A laboratory course to accompany Milling Science I (GRSC 500). Laboratory exercises in wheat flour milling with full-scale equipment including grain storage, blending, cleaning, conditioning plant, and a modern pneumatic flour mill, with instrumentation and automation.

Note:
Six hours lab a week.

Requisites:
Prerequisite: GRSC 500 or concurrent enrollment. MSM majors have to take GRSC 500 and GRSC 501 concurrently.

Typically Offered
Spring

GRSC 502 - Milling Science II

Credits: 2

Advanced study of the entire gradual reduction system of wheat flour milling and the many unit process systems that constitute the milling system. The theory and practice of mill control are studied in detail. Processing of other cereal grains and oil seeds are covered as well as general mill management.

Note:
Two one hour lecture a week.

Requisites:
Prerequisite: GRSC 210 and GRSC 500 and GRSC 501, or consent of instructor.
Recommended Prerequisite: STAT 325 and PHYS 113 and MATH 205.

Typically Offered
Fall

GRSC 503 - Milling Science II Laboratory

Credits: 2

The processes for milling other grains such as corn, oats, sorghum, different classes of wheat, and rye are studied in the laboratory and by practice on small scale milling units. Concepts of material handling properties of grain products and material handling equipment in dry milling operations will be presented. Concepts of statistical process control and spread sheet modeling in the decision making process will be introduced.

Note:
Six hours lab a week.

Requisites:
Prerequisite: GRSC 502 or concurrent enrollment or consent of instructor.

Typically Offered
Fall

GRSC 510 - Feed Technology I

Credits: 3

Introduction to formula feed manufacturing, including principles of conveying, grinding, mixing, pelleting, and other processing techniques, the formulation of concentrates, premixes, and rations.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: ASI 318 and GRSC 210.

Typically Offered
spring

GRSC 530 - Management Applications in the Grain Processing Industries

Credits: 3

This course deals with management principles, leadership concepts and their application to the grain, fed and food industries. This capstone experience uses business scenarios, team projects and knowledge management to expand student's ability to solve problems, impact key business challenges and manage complex issues. Special emphasis is placed on organization dynamics, people management, key business metrics, common operational problems and ethics in business.

Note:
Three hours lecture a week

Requisites:
Prerequisite: Senior Standing. GRSC 502 or GRSC 612 or GRSC 637

Typically Offered
Spring

GRSC 540 - Process Calculations in Food Systems

Credits: 3

Application of grain/food industry analytical processing concepts including mass and energy balances, fluid flow, heat transfer, dehydration, evaporation.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: MATH 205 or MATH 220, Recommended Prerequisite: PHYS 113 or PHYS 115, CHM 210.

Typically Offered
Spring

GRSC 541 - Process Calculations in Food Systems Laboratory

Credits: 1

Virtual laboratory experiments supplementing GRSC 540 Process Calculations in Food Systems. Simulations will be used to conduct wide range of virtual experiments representing major food processes.

Note:
One-three hour lab per week.

Requisites:
Prerequisite: GRSC 540 or concurrent enrollment.

Typically Offered
Spring

GRSC 545 - Grain Drying, Storage, Aeration and Pest Management

Credits: 3

Introduction to the scientific principles and engineering practices required for the successful management of post-harvest quality grains. This course is only available to distance education students; it is not available to on-campus students.

Note:
This course is offered as a distance education course only; it is only available to distance education students.

Requisites:
Recommended Prerequisite: GRSC 310.

Typically Offered
Fall, Spring, Summer

GRSC 555 - Cereal Food Plant Design

Credits: 3

This course deals with principles of modern flour mill design, feasability and equipment selection for plant improvements and new plant construction. It covers the steps of developing adequate process flow diagrams based on the specific production needs, constraints and preferences. Emphasis is placed on the effects of design on plant operating efficiency, finished product quality, and construction costs.

Note:
Three one hour lecture per week.

Requisites:
Prerequisite: Junior Standing and GRSC 500

Typically Offered
Spring

GRSC 556 - Pneumatic Conveying of Dry Solids

Credits: 2

The course is designed to introduce students to a comprehensive knowledge of the design, operation and capabilities of pneumatic conveying systems for transportation of dry, powdered and granular materials. The student will study the components of pneumatic conveying systems, the requirements for designing efficient and reliable pneumatic conveying systems, and troubleshooting existing systems.

Note:
Two two-hour studio sessions incorporating lecture and lab elements.

Requisites:
Prerequisites: Junior standing, GRSC 310, GRSC 500 and 501, PHYS 113 or PHYS 213, MATH 205, or consent of instructor.

Typically Offered
Fall

GRSC 560 - Electricity and Industrial Power Distribution

Credits: 3

Major emphasis will be given to application of electricity to machinery for grain processing and electrical code.

Note:
Two hours lecture and two hours lab per week.

Requisites:
Prerequisite: GRSC 500 or GRSC 510 or GRSC 635, or consent of instructor.

Typically Offered
Spring

GRSC 561 - Qualities of Feed Ingredients and Laboratory

Credits: 4

The course provides an integrated overview of the physical, biological, and chemical characteristics of common feed ingredients. Quality control and evaluation of ingredients and complete feed is emphasized to ensure the productions of safe feed/safe food.

Note:
Three hours lecture and three hours lab per week.

Requisites:
Prerequisite: CHM 230, ASI 318, and concurrent enrollment in GRSC 510

Typically Offered
Spring

GRSC 580 - Milling of Specialty Grains

Credits: 2

This is a problem-based learning course which aims to increase students' knowledge of flour milling and specialty grain milling. During the semester students develop critical thinking and problem-solving skills needed to troubleshoot real-life issues related to processing, quality assurance, HSE (Health, Safety, and Environment), and finished product quality. Students are expected to analyze their problems and develop the skills needed to effectively communicate their findings during group presentations.

Note:
Six hours lab a week.

Requisites:
Prerequisite: GRSC 502 or consent of instructor.

Typically Offered
Spring

GRSC 590 - Grain Science Problems

Credits: 1-3

Study in an area pertinent to grain processing and utilization.

Note:
For undergraduate students.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Fall, Spring, Summer

GRSC 591 - Internship in Grain Science

Credits: 1

A practical application of feed and food manufacturing technology during an eight-week summer internship with an active commercial feed and food manufacturing company. The course will stress applied aspects of commercial feed and food manufacturing, which can include, but not be limited to, plant operations, maintenance, personnel and labor relations, business management, warehousing, ingredient procurement, quality assurance, and fleet management.

Requisites:
Recommended Prerequisite: GRSC 500, GRSC 510 or GRSC 635.

Typically Offered
Fall

GRSC 600 - Practicum in Bakery Technology I

Credits: 1

Lectures and hands-on laboratory experience with commercial production scale baking equipment for breads and rolls, cookies and crackers, and cakes and sweet doughs.

Requisites:
Prerequisite: Upper-class bakery science and management

majors or permission of the instructor. Recommended prerequisite: GRSC 635 and GRSC 636.

Typically Offered
Intersession

GRSC 601 - Practicum in Bakery Technology II

Credits: 1

Lectures and hands-on laboratory experience with commercial production scale baking equipment for breads and rolls, cookies and crackers, and cakes and sweet doughs.

Requisites:
Prerequisite: Upperclass bakery science and management majors or permission of the instructor.
Recommended Prerequisite: GRSC 635 and GRSC 636.

Typically Offered
Intersession

GRSC 602 - Cereal Science

Credits: 3

The characteristics of cereals, legumes, their components and their processing to foods.

Note:
Three hours lecture a week.

Online offering of this course is not open to the undergraduate students majoring in BSM, FSM, and MSM

Requisites:
Prerequisite: BIOCH 265 or CHM 350 and CHM 351.

Typically Offered
Fall, Spring

GRSC 612 - Feed Technology II and Laboratory

Credits: 4

Advanced study of engineering principles applicable to flour and feed plant operations, equipment selection, and processing systems.

Note:
Three hours of lecture and three hours of lab per week.

Requisites:
Prerequisite: GRSC 510 or GRSC 500, PHYS 113, and STAT 325, or consent of instructor.

Typically Offered
Fall

GRSC 615 - Animal Food Safety

Credits: 2

An introduction to the animal food safety regulations in the Food Safety Modernization Act.

Note:
Two one-hour lecture a week.

Requisites:
Recommended prerequisite: GRSC 510

Typically Offered
Fall

GRSC 620 - Extrusion Processing in the Food and Feed Industries

Credits: 4

The course is designed to provide the student with an understanding of extrusion technology and the ability to apply it to product development and production through a "hands-on" approach. Major emphasis is on laboratory exercises in which students will operate pilot scale extrusion equipment to produce readily-recognizable commercial products such as cheese curls, breakfast cereals, pasta, pet food, etc. Emphasis will also be placed on process and product development, analysis, and problem solving techniques.

Note:
Three hours lecture plus one three hour lab a week.

Requisites:
Recommended Prerequisite: GRSC 602.

Typically Offered
Fall

GRSC 625 - Flour and Dough Testing

Credits: 2

Physical and chemical methods used in evaluating wheat flour and doughs.

Note:
Two two-hour studio sessions incorporating lecture and lab elements.

Requisites:
Recommended Prerequisite: GRSC 602.

Typically Offered
Spring

GRSC 635 - Baking Science I

Credits: 2

Introduction to chemical and physical properties of flour and other principal ingredients used in production of yeast-leavened bakery foods. Study of major processing methods for making yeasted doughs such as breads, sweet goods, frozen dough, and partially baked goods. Examination of ingredient specifications role of quality control, keeping properties of bread products, and nutritional attributes of various types of breads.

Note:
Two hour lecture a week.

Online offering of this course is not open to the undergraduate students majoring in BSM, FSM, and MSM.

Requisites:
Prerequisite: BIOCH 265 or CHM 350 and CHM 351.

Recommended prerequisites: PHYS 113, MATH 205, and BIOL 455

Typically Offered
Fall

GRSC 636 - Baking Science I Laboratory

Credits: 2

A laboratory course to accompany Baking Science I (GRSC 635). Laboratory exercises in theory and production of yeast-leavened baked products.

Note:
Six hours lab a week.

Requisites:
Recommended Prerequisite: GRSC 635 or concurrent enrollment.

Typically Offered
Fall

GRSC 637 - Baking Science II

Credits: 3

Course includes study of physical, chemical, and functional properties of ingredients and processes used in production of bakery products, including cakes, cookies, doughnuts, breads and related products. Shelf-life control and packaging of baked products is also discussed. Total quality programs, specification programs and management of distribution and purchasing systems will also be included in lectures.

Note:
Three hours of lecture a week.

Requisites:
Recommended Prerequisite: GRSC 635.

Typically Offered
Spring

GRSC 638 - Baking Science II Laboratory

Credits: 1

A laboratory course to accompany Baking Science II (GRSC 637). Exercises and experiments in production of chemically-leavened and yeast-leavened bakery foods including various cakes, cookies, doughnuts, bagels, icings, and fillings.

Note:
Three hours of lab a week.

Requisites:
Recommended Prerequisite: GRSC 637 or concurrent enrollment.

Typically Offered
Spring

GRSC 645 - Pet Food Processing

Credits: 4

The course is designed to provide students with an understanding of pet foods, including food products meant for dogs, cats, pet rodents, pet snakes, ornamental fish, exotic and captive wild animals, and the various processing technologies that are deployed for their production. Extrusion, baking, canning, and injection molding technologies will be covered. Other important aspects of pet food production, such as ingredient handling and compounding, quality control, HACCP and sanitation, and packaging will also be discussed. A concurrent laboratory section will allow students to produce pet foods, visit pet food production facilities, and personally explore selected topics in depth.

Requisites:
Recommended Prerequisite: CHM 230, PHYS 114, ASI 318 or FNDH 132, Junior standing.

Typically Offered
Fall

GRSC 651 - Food and Feed Product Protection

Credits: 2

Sanitation in relation to processing, handling, and storage of human and animal foods. Emphasis on contaminants, control of causative agents, equipment and plant design, applicable laws and regulations.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: Junior Standing. BIOL 455.

Typically Offered
Spring

GRSC 655 - Feed Mill plant Design

Credits: 2

This course deals with principles of modern design, feasibility, and equipment selection for new feed mills. Emphasis is placed on the effects of logistics, ingredient availability, operating efficiency, and finished product quality.

Note:
Two-hour lecture per week.

Requisites:
Prerequisite: Junior standing and GRSC 510.

Typically Offered
Spring

GRSC 670 - Bakery Layout

Credits: 1

The layouts of facilities to produce baked goods are studied. Students prepare their own bakery layout. Current problems in a bakery production setting in the baking industry are discussed.

Note:
One two hour lab per week.

Requisites:
Prerequisite: MATH 100, PHYS 113, GRSC 210, and GRSC 636.

Typically Offered
Spring

GRSC 712 - Vibrational Spectroscopic Analysis and Chemometrics

Credits: 1-2

Infrared and particularly modern near-infrared spectroscopic analysis of foods, natural products, and synthetic substances is accomplished with direct sampling and the use of multivariate statistics. This course is intended to enable the student to understand the principles and successfully apply this technology to practical analytical problems with emphasis upon food. Method development will be taught using specific analytes in selected products. Theoretical background, working of modern instrumentation and associated software is presented in support of achieving practical competence.

Requisites:
Recommended Prerequisite: BIOCH 265 or CHM 350 and 351 or CHM 371.

Typically Offered
Spring

GRSC 713 - Contemporary Chromatographic Analysis of Food

Credits: 1

High performance liquid chromatography (HPLC) is the primary focus of this course. This will be supported by including treatment of topics in contemporary gas chromatography and supercritical fluid chromatography and extraction. Optimizing chromatographic conditions through knowledge of the column chemistry will be covered in addition to detector options, instrumentation, and sample preparation.

Requisites:
Recommended Prerequisite: BIOCH 265 or CHM 350 and CHM 351 or CHM 371.

Typically Offered
Spring

GRSC 740 - Biomaterials Processing

Credits: 3

This course is designed for students who are interested in plant biomaterials processing. This course will teach technologies of biobased materials processing including starch extraction (wet milling), plant oil extraction and refining, plant protein extraction and processing, cellulose processing, biofuel production, chemicals bioconversion, and drying technologies of biomaterials.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: BAE 575 or GRSC 602.

Typically Offered
Fall-Even Years

Crosslisted:
BAE 740

GRSC 745 - Fundamentals of Bioprocessing

Credits: 3

This course is designed for students who desire a clear understanding of bioprocessing principles as applied to the emerging bio-based industry. This course covers the fundamentals of mass and energy balances, fluid dynamics, heat and mass transfer, as applied to bioprocessing. The microbial growth, kinetics and fermenter operation will be covered in detail. Fundamentals of downstream operation as applicable to bioprocessing will be covered in this course. Industrial bioprocessing case studies that involve the integration of the course contents will be discussed.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: MATH 205 or MATH 20, PHYS 113 or PHYS 115, and BIOCH 265 or CHM 350 and CHM 351 or CHM 210.

Typically Offered
Spring

GRSC 750 - Pet Food Formulation for Commercial Production

Credits: 1

Students completing this course will become proficient at formulating pet foods and have a working knowledge of ingredients, processes, and the software necessary to create new products, revise existing formulas, and perform business and production analyses.

Note:
The course will be offered as a January intersession short-course on-site at the IGP-Institute.

Requisites:
Recommended prerequisite: GRSC 645, ASI 320, ASI 677.

Typically Offered
Intersession

GRSC 780 - Particle Technology for Solids Handling and Processing

Credits: 3

This course is designed to provide students an overview of particle technology with an emphasis on practical applications in milling and grain based operations. Conveying, storage, size reduction and separation are the important unit operations of grain processing (food, feed, chemical, pharmaceutical) industries that involve particle sizes ranging from a fraction of a micron to a few millimeters. The particle characteristics as they relate to processing operations such as milling, sieving, mixing, pelleting, etc. will be covered in this course. Subjects include size and shape characterization, size distribution and measurement, characteristic dimensions, density, and

their theories governing the behavior of the particles under different conditions.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: Graduate student status, MATH 220, STAT 325, PHYS 213 or consent of instructor.

Typically Offered
Spring

GRSC 790 - Grain Science Problem

Credits: 1-18

Graduate study in an area pertinent to grain processing and utilization.

Note:
For graduate students. Repeatable.

Requisites:
Prerequisite: Consent of department head.

Typically Offered
Fall, Spring, Summer

GRSC 815 - Fundamentals of Processing Grains for Food

Credits: 3

Unit processes in the receiving and storing of grains; grinding, sifting, mixing, separation, conveying, cooling, drying, etc. This course is not open to undergraduate majors in the department.

Note:
Two hours lecture and three hours laboratory a week.

Requisites:
Recommended Prerequisite: PHYS 213 or equivalent.

Typically Offered
Fall-Odd Years

GRSC 820 - Advanced Extrusion Processing

Credits: 4

Advanced study of the engineering principles of extrusion forming and cooking with a detailed focus on scale-up. A variety of extrusion systems will be studied in lab with associated group projects.

Note:
Three hours lecture and three hrs. laboratory a week.

Requisites:
Recommended Prerequisite: GRSC 620 or previous extrusion experience.

Typically Offered
Fall-Odd Years

GRSC 825 - Novel Uses of Biopolymers

Credits: 2

Teach existing value-added technology of cereal polymers, and explore new processes and utilization in non-traditional food/feed and in non-food/feed.

Note:
Two hours lecture a week.

Requisites:
Recommended Prerequisite: BIOCH 521 and PHYS 115.

Typically Offered
Fall

GRSC 830 - Physical Properties of Cereal Polymers

Credits: 3

Physical properties of cereal polymers include physical attributes, rheological, mechanical, thermal, electrical, and optical properties. Thermal analysis methods will be taught. Thermal analyses include glass transition, gelatinization, denaturation, and thermal softening and settings of cereal polymers. Rheological properties associated with these thermal transitions will be discussed. Applications of thermal analysis in cereal chemistry, processing, and product quality control will be discussed.

Note:
Two hours lecture and discussion, and two hour lab.

Requisites:
Recommended Prerequisite: GRSC 602.

Typically Offered
Other

GRSC 840 - Advanced Grain Processing Technology

Credits: 3

An overview of unit operations used in the grain/food processing industry will be given. Specific applications of the unit operations will be covered in detail for dry and wet milling (wheat/corn/sorghum), masa manufacturing, oilseed processing, rice milling, and packaging systems. A term project, which will include an applied research component will be developed by each student.

Note:
Three hours of lecture a week.

Requisites:
Prerequisite: Graduate Student Standing.

Typically Offered
Spring

GRSC 850 - Grain Protein Chemistry & Technology

Credits: 3

This graduate course will address the structure, chemistry, properties, and applications of proteins. The primary focus will be on plant food proteins (cereals, pulses, and oilseeds). Animal (milk, egg, meat) and microorganism-derived (mycoproteins, algae) proteins will also be moderately covered to provide students with a comprehensive understanding of the subject.

Note:
Three-hour lecture a week.

Requisites:
Recommended prerequisite: CHM 531, 532, and BIOCH 521 or equivalent.

Typically Offered
Fall-Odd Years

GRSC 891 - Study Abroad Experience in Grain Science

Credits: 0-3

Travel seminar coruse designed to prepare graduate students before their international study abroad experience and analyze, critique, and report about their faculty-led study tours or short courses. The academic topics will vary with each international activity.

Requisites:
Prerequisite: Consent of course instructor.

Typically Offered
Fall, Spring, Summer

GRSC 899 - Research in Grain Science

Credits: 1-18

Basis for the M.S. Thesis.

Requisites:
Prerequisite: Consent of staff.

Typically Offered
Fall, Spring, Summer

GRSC 900 - Professional Development in Grain Science

Credits: 1

A team-taught course that provides students with skills and practices needed to succeed in graduate school and future academic or professional careers.

Note:
One hour lecture a week. Required of all newly enrolled graduate students in grain science during their first year.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall

GRSC 901 - Starch Chemistry and Technology

Credits: 3

Chemical and physical properties of cereal and legume starches. Isolation, structure, assay methods, and properties.

Methods of modifying starches for industrial use, including chemical, physical, and enzymic modification.

Requisites:
Recommended Prerequisite: BIOCH 521, GRSC 602, PhD students, or consent of instructor.

Typically Offered
Other

GRSC 902 - Carbohydrates in Food

Credits: 3

Structure and properties of food carbohydrates, including sugars, oligosaccharides, and polysaccharides, and methods of their modification and analysis.

Requisites:
Recommended Prerequisite: CHM 350 or BIOCH 521, PhD students, or consent of instructor.

Typically Offered
Spring-Odd Years

GRSC 905 - Enzyme and Bioprocessing Applications

Credits: 3

The course explores the applications of enzymes and microbial cultures in the bioprocessing industry, including food, feed, industrial chemicals and biofuels; and major microbial pathways for product synthesis including a clear understanding of enzyme and microbial kinetics at an advanced level.

Note:
Three one hour lectures per week.

Requisites:
Recommended Prerequisite: GRSC 820 or GRSC 740/BAE 740 or BIOCH 755.

Typically Offered
Fall

GRSC 910 - Topics in Grain Science

Credits: 1-18

Discussions and lectures on important areas and contributions in the field of grain science not currently covered in present courses.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

GRSC 915 - Advanced Cereal Chemistry

Credits: 3

The chemistry of cereal components at the molecular level. The role and interactions of the various constituents, their functionality in producing an end product, and their influence on nutritional properties.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: BIOCH 521 and BIOCH 522.

Typically Offered
Fall

GRSC 920 - Grain Science Graduate Seminar

Credits: 1

Weekly evaluation of the scientific literature and the reasoning underlying the selection of research problems, the formulation and testing of hypotheses, and the evaluation and presentation of results. Discussion of research and technical problems in the discipline.

Note:
One-hour lecture per week.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring

GRSC 999 - Research in Grain Science

Credits: 1-18

Basis for Ph.D. Dissertation.

Requisites:
Prerequisite: Consent of staff.

Typically Offered
Fall, Spring, Summer

GWSS 500 - Topics in Gender, Women, and Sexuality Studies

Credits: 1-3

Topics vary.

Typically Offered
Fall or Spring

GWSS 505 - Independent Study in Gender, Women, and Sexuality Studies

Credits: 1-3

Independent, supervised study in a topic related to Queer Studies or Gender, Women, and Sexuality Studies.

Repeat for Credit
Repeatable. May be repeated once for credit with change of topic.

Requisites:
Prerequisites: GWSS 105 or GWSS 305.

Typically Offered
Fall, Spring

GWSS 510 - Research Methods in Gender, Women, and Sexuality Studies

Credits: 3

An advanced course in practices of research in Gender, Women, and Sexuality Studies, with attention to what distinguishes interdisciplinary, feminist research from traditional, disciplinary practices. Methods explored may include survey, interview, oral history, ethnography, hermeneutics, content analysis, case study, experimental, and action research.

Requisites:
Prerequisite: GWSS 410

Typically Offered
Spring

GWSS 550 - Gender and Popular Culture

Credits: 3

Using an intersectional lens, this course explores gender, race, class, global location, and sexuality in the production, portrayals, and consumption of popular culture. The popular culture forms explored in this course may include fiction, film, television, music, magazines, advertising, and/or material culture.

Requisites:
Prerequisite: GWSS 105 or at least 3 hours of Gender, Women, and Sexuality Studies credit.

Typically Offered
Other

GWSS 560 - Intersections of Violence & Resistance

Credits: 3

An examination of violence, and anti-violence justice organizing as the product of race, capitalism, gender, sexuality, nation, empire, and settler colonialism. Centers violence against women, gender violence, and the violence of the normative.

Requisites:
Prerequisite: GWSS 105 or at least 3 hours of Gender, Women and Sexuality Studies edit.

Typically Offered
Spring

GWSS 570 - Gender and Food Justice

Credits: 3

Uses the feminist concept of intersectionality to explore the ways that gender intersects with race, class, and global location in food justice and food sovereignty movements. Focusing on works by and about U.S. people of color, students will explore a variety of topics and concepts including systemic bias in food deserts and local food, decolonizing food, hunger and malnutrition, and human rights. Examination of these narratives enables students to understand how food and food systems are both a means of dominant control and powerful sites of gender resistance.

Typically Offered
Fall

GWSS 605 - Social Change Field-Experience

Credits: 3

Applied and interdisciplinary exploration of social change in community, national, and international groups and organizations. Includes field experience, professional-related training.

Requisites:
Prerequisite: Instructor permission and junior standing.

Typically Offered
On sufficient demand

GWSS 610 - Capstone Seminar in Gender, Women, and Sexuality Studies

Credits: 3

An advanced seminar for in-depth investigation of a specific topic. Students will conduct independent research and produce a substantial project or paper.

Requisites:
Prerequisite: GWSS 510.

Typically Offered
Fall

GWSS 700 - Advanced Topics in Gender, Women, and Sexuality Studies

Credits: 1-3

Provides an in-depth theoretical and empirical analysis of scholarly works relating to an interdisciplinary topic in Gender, Women, and Sexuality Studies.

Requisites:
Prerequisite: Junior standing or above and instructor permission.

GWSS 784 - Internship in Gender, Women, and Sexuality Studies

Credits: 1-12

Supervised field work at the local, state, national, or international level in a community, volunteer, activist, or political organization.

Note:
A maximum of 3 credits can count toward the Women's Studies minor, and a maximum of 6 towards the major.

Requisites:
Prerequisite: Consent of instructor and two courses in Gender, Women, and Sexuality Studies.

Typically Offered
Fall, Spring, Summer

GWSS 799 - Independent Study for Graduate Students or Advanced Undergraduate Students

Credits: 1-3

Topics Vary. Independent study in problems, issues, topics in Gender, Women, and Sexuality Studies.

Typically Offered
Fall, Spring, Summer

GWSS 810 - Theories and Methodologies

Credits: 3

Focuses on the development of women, gender, and sexuality studies as interdisciplinary fields. Readings include key texts and debates in feminist, queer, and trans theories and methodologies.

Note:
Required for Graduate Certificate in Gender, Women, and Sexuality Studies.

Typically Offered
Spring

HDFS 500 - Special Problems in Human Development & Family Services

Credits: 0-6

Independent or small group study on special topics in human development and family services.

Typically Offered
Fall, Spring, Summer

HDFS 501 - Philanthropy in Context

Credits: 3

Examines philanthropy in the context of diverse individuals and organizations, and considers the unique contributions of diversity in the areas of donor motivation, identification of funding sources, and approaches to philanthropic efforts that might be culturally or contextually influenced. Ethical considerations relevant to the field will also be explored.

Requisites:
Prerequisite: HDFS 201

Typically Offered
Spring-Even Years

HDFS 506 - Middle Childhood and Adolescence

Credits: 3

Principles of growth and development during middle childhood and adolescence, including familial, societal, and other ecological factors affecting development of youth.

Requisites:
Prerequisite: HDFS 110 or PSYCH 110

Typically Offered
Fall, Spring, Summer

HDFS 510 - Human Development and Aging

Credits: 3

Survey of issues, research, and problems in aging and human development throughout adulthood, with particular emphasis upon the later years.

Requisites:
Prerequisite: HDFS 110 or PSYCH 280.

Typically Offered
Fall, Spring, Summer

HDFS 525 - Community Mental and Relationship Health

Credits: 3

Undergraduate students will explore theoretical models and research on how social scientists, educators, and practitioners can collaborate with communities to improve mental health and relationship well-being. Teams will apply strategies by partnering with community organizations to develop a brief mental health and relationship well-being community program and walk away with materials applicable to community change in diverse future professions.

Repeat for Credit
No

Typically Offered
Spring-Even Years

HDFS 550 - Family Theory & Science

Credits: 3

This course focuses on the family as a context for relationships across the life course. Students will study and apply family theories, research findings, and methodologies used to examine features of, and changes in, families across time and within context.

Requisites:
Prerequisite: HDFS 350

Typically Offered
Fall, Spring, Summer

HDFS 552 - Families and Diversity

Credits: 3

Selected topics for understanding families in multiple contexts. Implications for professionals working with individuals and families.

Requisites:
Prerequisite: 350

Typically Offered
Fall, Spring, Summer

HDFS 579 - Orientation to Human Development and Family Science Internship

Credits: 2

Consideration and application of professional knowledge and skills necessary for selection and placement in a social agency for a supervised experience in direct service to clients.

Requisites:
Prerequisite: Senior standing; and minimum GPA of 2.50; HDFS majors only.

Typically Offered
Fall, Spring

HDFS 580 - Human Development Family Science Internship

Credits: 8-9

A block field placement in local agencies. Faculty-supervised experience in direct service to clients: individuals, groups, and communities. Weekly seminar during placement emphasizes theory underlying the practice.

Requisites:
Prerequisite: HDFS 579 with grades of B or better; senior standing; and minimum GPA of 2.50; HDFS majors only.

Typically Offered
Fall, Spring, Summer

HDFS 585 - Professional Seminar in Human Development and Family Science

Credits: 3

Seminar course for students completing the HDFS Internship. Consideration of professional roles and responsibilities of family science professionals, ethical decision-making, and career development. Focus on skills required in the delivery of human services with diverse groups.

Requisites:
Prerequisite: HDFS 579, Senior standing and HDFS majors only
Corequisite: Concurrent enrollment in HDFS 580

Typically Offered
Fall, Spring, Summer

HDFS 590 - Professional Capstone in Human Development and Family Science

Credits: 2

This course focuses on the development of career and professionals skills relevant to human development and family science professionals.

Requisites:
Prerequisite: Senior standing and HDFS majors only.

Typically Offered
Fall, Spring, Summer

HDFS 654 - Death and the Family

Credits: 2-3

Exploration of contemporary attitudes toward death and dying; related influences on individual development and family life.

Requisites:
Prerequisite: HDFS 550 or SOCIO 640.

HDFS 660 - Marriage Preparation and Enrichment

Credits: 3

History, processes, components, goals, and research support base for contemporary marriage preparation and enrichment programs.

Requisites:
Prerequisite: HDFS 350.
Recommended Prerequisite: HDFS 550.

Typically Offered
Intersession

HDFS 670 - Working with Parents

Credits: 3

Approaches to parenting and parent education with emphasis on programmatic implications of life-span developmental principles within a family context.

Requisites:
Prerequisite: HDFS 110 and HDFS 350.

Typically Offered
Fall, Spring, Summer

HDFS 700 - Problems in Human Development and Family Science

Credits: 1-6

Independent study on aspects of human development and family studies.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

HDFS 708 - Topics in Human Development and Family Science

Credits: 2-3

Review of recent research and theory related to exploration of methods and family and interpersonal processes.

Repeat for Credit
Repeatable May be taken more than one semester.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

HDFS 711 - Foundations of Youth Development

Credits: 1

This course examines the fundamentals of youth development and the youth development profession. Through this introduction to the field, students will explore the ethical, professional and historical elements of youth development as it has evolved toward professionalization.

Typically Offered
Fall, Spring, Summer

HDFS 712 - Community Youth Development

Credits: 3

Community Youth Development focuses upon the national emphasis of a strength-based or asset approach to community youth development. Emphasis is placed upon research, theory, and practice applied in communities throughout the U.S. Students will explore existing models, theoretical and applied literature and current community efforts as a basis for understanding community youth development.

Typically Offered
Fall

HDFS 713 - Adolescents and Their Families: Implications for Youth Professionals

Credits: 3

This course covers adolescent development as it is related to and intertwined with family development. The reciprocal influences between adolescents and their families will be examined. Working with youth in relation to the family system will be highlighted.

Typically Offered
Spring

HDFS 714 - Program Design, Evaluation, and Implementation

Credits: 3

Overview of the program development process and outcome evaluation of community, children, and family programs. Mode of outcome scholarship and their implications for community-based programs are discussed. Participation in community-based projects involving the practical application of program design and evaluation methods.

Typically Offered
Spring

HDFS 715 - Youth Issues and Life Skills

Credits: 2

This course will present three strands: issues faced by youth today and associated risk and resiliency factors; life skills for youth; and helping skills necessary for youth professionals who work with young people.

Typically Offered
Summer

HDFS 716 - Topics in Contemporary Youth Issues

Credits: 1-3

This course will present issues faced by youth today and associated risk and resiliency factors.

Repeat for Credit
Repeatable across different semesters.

Typically Offered
Fall, Spring, Summer

HDFS 717 - Youth Policy

Credits: 3

Examines various federal and state policies designed specifically for youth including (a) defining and identifying current youth policies; (b) examining policies designed to "protect the well-being" of youth (e.g., zero tolerance, restorative justice, juvenile justice and reform); and (c) examining targeted youth policies (e.g., foster care, policies for youth with disabilities, homeless youth).

Typically Offered
Fall

HDFS 718 - Youth Professionals as Consumers of Research

Credits: 3

Designed to help youth development professionals understand and apply research results and theories to practice. Emphasis placed on research and theory reports related to the youth development with particular attention to research procedures and outcomes.

Typically Offered
Spring

HDFS 719 - Program Administration and Management

Credits: 3

Designed to introduce students to the development, administration and management of youth, family, and community service organizations.

Typically Offered
Fall, Spring, Summer

HDFS 720 - Youth Development

Credits: 3

Designed to introduce students to the developmental period of adolescence including theory and research on positive youth development. Through a critical examination of the professional literature, students will recognize and become familiar with the major issues and transitions adolescents face as they successfully navigate this developmental stage.

Typically Offered
Summer

HDFS 722 - Youth and Cultural Contexts

Credits: 3

Examine the cultural heritage of differing family structures, types, and social and educational processes experienced by youth in these families. Students will critically examine how ethnic groups fit historically into our society, and the results of how history has shaped our present day situation.

Typically Offered
Fall

HDFS 723 - Practicum in Youth Development

Credits: 1-3

Supervised experience in youth development practice and service provision in organizational setting.

Requisites:
Prerequisite: Consent of practicum supervisor as well as on-site supervisor required.

Typically Offered
Fall, Spring, Summer

HDFS 724 - Working with Military Families

Credits: 3

Initial information necessary to prepare a service-provider

for work with military families. Introduction to the culture, context, and complexities of the contemporary military family. This course equips learners to work in capacities which support military families through times of challenge, helping them foster resilience as they cope with military life.

Typically Offered
Summer

HDFS 725 - Community Mental and Relationship Health Interventions

Credits: 3

Graduate students will explore theoretical models and research on how social scientists, educators, and practitioners can collaborate with communities to improve mental health and relationship well-being. Students will have the opportunity to lead teams that will apply strategies by partnering with community organizations to develop a brief mental health and relationship well-being community program and develop materials applicable to community change in diverse future professions.

Repeat for Credit
No

Typically Offered
Spring-Even Years

HDFS 784 - Foundations and Principles of Family and Community Services

Credits: 3

An introduction to the field of family studies and related professions that involve working with individuals and families in communities.

Typically Offered
Fall, Spring, Summer

HDFS 785 - Family Dynamics

Credits: 3

An examination of theories of family function and dysfunction, techniques of assessment, and models of family interventions.

Typically Offered
Fall, Spring, Summer

HDFS 786 - Lifespan Development

Credits: 3

Human development from both lifespan and bio-ecological perspectives focusing on major theories of development and current research on the micro-macro relationship.

Typically Offered
Fall, Spring, Summer

HDFS 787 - Resilience in Families

Credits: 3

Exploration of resilience approaches to the study of families and human develpment across the life cycle.

Typically Offered
Fall, Spring, Summer

HDFS 791 - Parenting Education

Credits: 3

An examination of theories, models, methods, research, and skills related to parenting and parent education.

Typically Offered
Fall, Spring, Summer

HDFS 801 - Grant Development and Management

Credits: 3

Introduces students to the grant development process and provides an overview of what happens after a grant is awarded. Topics include: identifying funding sources, generating fundable ideas, assessing needs, project planning, budget design, evaluation and project management.

Typically Offered
Summer

HDFS 808 - Topics in Applied Family Science

Credits: 1

Recent research focusing on selected relevant topics.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring

HDFS 825 - Family Resource Management

Credits: 3

Survey of current personal finance and family resource management literature to provide an overview of current consumer finance research from multiple perspectives.

Typically Offered
Spring, Summer

HDFS 850 - Family Science

Credits: 3

Survey of family research literature to illustrate various approaches to the study of the family and to understand family changes within the life cycle.

Typically Offered
Fall

HDFS 852 - Family Theories

Credits: 3

Survey of family conceptual frameworks and theoretical perspectives, with emphasis on the application of family theory in basic and applied family research.

Typically Offered
Fall

HDFS 860 - Family Policy

Credits: 3

Examines the development, formation, implementation, and application of policy issues related to the family issues and social problems. Emphasis placed on how policy is made and how professionals can influence policy issues and outcomes.

Typically Offered
Other

HDFS 862 - Interpersonal Relationships

Credits: 3

In-depth examination of interpersonal relationships, including theoretical perspectives, research methods, relationship forms, relationship processes, and how context affects relationships.

Requisites:
Prerequisite: HDFS 350 and HDFS 550 or consent of instructor.

Typically Offered
Fall

HDFS 871 - Program Development and Administration

Credits: 3

Understanding the development, administration, and management of family programs in prevention, family life education, intervention, outreach, or consultation settings.

Requisites:
Recommended Prerequisite: HDFS 850

Typically Offered
Fall

HDFS 881 - Practicum in Family and Community Services

Credits: 1-6

Supervised experience in providing help and/or instruction in the several areas of human development and family studies presented in terms of the special interests of the students. Consent of practicum supervisor is required for each.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: HDFS 871

Typically Offered
Fall, Spring, Summer

HDFS 882 - Practicum in Study of Student Development

Credits: 1-6

Supervised experience in providing help and/or instruction in the several areas of human development and family studies presented in terms of the special interests of the students. Consent of practicum supervisor is required for each.

Repeat for Credit
Repeatable for a maximum of 6 hours.

Typically Offered
Fall, Spring, Summer

HDFS 890 - Application of Research & Statistics in Human Development and Family Science

Credits: 3

Development of students' skills as quantitative methodologists and scholars. Students will refine their thinking about their research program and explore data sets that complement their research interests. Application, for purposes of this course, involves the utilization of statistical knowledge and techniques in practice, and the ability to convey this information to others, both through academic writing and through hands-on instruction.

Note:
Familiarity with the basic functions of SPSS and AMOS are recommended.

Repeat for Credit
Repeatable.

Requisites:
Prerequisite: FSHS 888 and any upper division or graduate level statistics courses.

Typically Offered
Spring

HDFS 893 - Program Evaluation in Human Services

Credits: 3

Study and application of program evaluation approaches and methodology pertinent to evaluating programs in human service and education settings.

Requisites:
Prerequisite: FSHS 890 or another graduate level social sciences research course.

Typically Offered
Spring

HDFS 894 - Readings in Human Development and Family Science

Credits: 1-6

Implications of research findings in preparation for professional work in counseling, teaching, and research in human development and family science.

Repeat for Credit
Repeatable for a maximum of 6 hours.

Requisites:
Prerequisite: 12 hours in social-behavioral science and consent of instructor.

Typically Offered
Fall, Spring, Summer

HDFS 898 - Professional and Ethical Issues in Applied Family Science

Credits: 1

Emphasizes the research-theory-practice connection. Includes cutting-edge issues in the field, ethics and professional development.

Typically Offered
Spring

HDFS 899 - MS Research in Human Development and Family Science

Credits: 1-8

Individual research problems which may form the basis for the master's thesis or report.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of major professor

Typically Offered
Fall, Spring, Summer

HDFS 979 - Advanced Professional Issues in Family Science

Credits: 3

Capstone course for PhD students. Examines expectations and responsibilities of working in academia or other PhD-level professional positions: submitting and reviewing scholarly publications and presentations, serving as an expert witness, professional ethics, etc.

Requisites:
Prerequisite: Completed at least 24 graduate credits.

Typically Offered
Other

HDFS 981 - Applied Practicum in Family Science

Credits: 1-3

This course is designed to provide students in the Applied Family Science doctoral program with a supervised experience in the field. The practicum experience helps students synthesize and apply their coursework while learning more about being a highly skilled professional in the field.

Repeat for Credit
Repeatable for a maximum of 6 hours.

Requisites:
Recommended Prerequisite: HDFS 871 and consent of instructor.

Typically Offered
Fall

HDFS 982 - College Teaching Practicum in Family Science

Credits: 1-3

This course is designed for students in the Applied Family Science doctoral program to gain practical skills in teaching through a structured teaching experience. This will involve observing; developing activities, lectures, assignments, and exams; teaching part of the assigned course; evaluating student performance; as well as other relevant teaching experiences.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: EDCI 943

Typically Offered
Fall, Spring, Summer

HDFS 983 - Research Practicum in Family Science

Credits: 1-3

This course is designed for students in the Applied Family Science doctoral program to gain practical, advanced skills in family science research through a structured research experience. This may consist of data collection, data analysis, literature reviews, dissemination of findings, as well as other relevant research experiences.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: FSHS 888
Corequisite: FSHS 809 or HDFS 890

Typically Offered
Fall, Spring, Summer

HDFS 990 - Dissertation Proposal Seminar

Credits: 1

Repeat for Credit
Repeatable

HDFS 999 - PhD Research in Human Development and Family Sciences

Credits: 1-18

PhD research in human development and family sciences.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

HIST 501 - Japan's Samurai Age

Credits: 3

The history of Japan from earliest times to the fall of the Tokugawa shogunate in 1868, including major developments in political institutions, social structures, and religious beliefs. Examines the rise and development of the warrior class that dominated society and government for much of this period.

Typically Offered
Other

HIST 502 - Off-Campus American Studies

Credits: 2-3

Short-term, intensive, and in-depth study of selected topics in American history that will supplement readings, lectures, discussions and other traditional classroom assignments with on-location activities.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Summer

HIST 503 - Historical Study in International Setting

Credits: 2-3

Course work that enhances the experience of international travel and study. Requires an historical engagement with the travel experience through readings, lectures, discussion, and written work.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Summer

HIST 504 - Intellectual History of Early China

Credits: 3

Introduction to the development of Chinese thought during the period from about 1200 BC to 100 BC, with emphasis on the foundational ideas of Confucianism, Daoism, and Legalism and their incorporation within the emerging imperial order.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 505 - South Asian Civilizations

Credits: 3

Interdisciplinary survey of the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, Nepal, Bhutan, and Afghanistan, including geography, philosophy, social, economic, political institutions, and historical movements.

Requisites:
Prerequisite: 3 hours of Social Science or junior standing.

Typically Offered
Fall-Even Years

Crosslisted:
GEOG 505, ECON 505, POLSC 505, SOCIO 505, ANTH 505

HIST 506 - Modern India and South Asia

Credits: 3

The history of India, Pakistan, and Bangladesh since 1500, beginning with Mogul rule and continuing through European colonialism, the anti-imperial struggle, and the troubled transition to independence.

HIST 507 - China Since 1644

Credits: 3

China from the founding of the Manchu Qing dynasty to the present. Includes the western imperialist challenge in the nineteenth century, the Revolution of 1949, and the post-Mao Reforms. Emphasis on social, political and intellectual changes in the context of increasing contact with western nations and Japan.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Fall-Even Years

HIST 508 - Introduction to Modern East Asia

Credits: 3

The history of China, Japan, and surrounding countries including the arrival of Europeans in the sixteenth century, reactions to Western imperialism, the rise of nationalism, and revolution. The impact of the two world wars, the era of post war developments, communism in China, democracy in Japan, and the end of Western colonialism are also examined.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 509 - Japan Since 1550

Credits: 3

Japan from reunification in the sixteenth century through the Tokugawa and Imperial eras to the postwar recovery. Emphasis on understanding modern Japan as the product of traditional culture, the Meiji Restoration, and World War II.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 510 - World War I

Credits: 3

Examines the origins, events and consequences of the "war to end all wars." The impact and influence of the war on colonialism, imperialism, and popular culture will be discussed.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 511 - Environmental History

Credits: 3

An introduction to environmental history as an academic specialization through selected reading and topical lectures. The course emphasizes the study of people in nature through time; it stresses people's response to environmental change through three broadly defined periods: pre-industrial, modern industrial, and contemporary.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 512 - Women in European History

Credits: 3

A study of women in primitive European societies, in preindustrial times, and in the industrial era. Emphasis will be upon the position and role of women within the society.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 513 - Battles and Leaders

Credits: 3

The course will emphasize military organization, tactics and strategy, generalship and grand strategy, manpower and logistics, and the wartime ramifications of war on land, at sea, and in the air.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 514 - World War II

Credits: 3

Origins, conduct, and consequence of World War II. Films from the TV series "The World at War" form an integral part of the course.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 515 - History of Sport

Credits: 3

The historical development of sport (especially in Europe and North America) including the growth of competition, the rise of mass spectator sports, elitism, and the changing function of sport. History of sport as business and history of the relationship between sport and other institutions.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

Crosslisted:
PE 515

HIST 519 - Science and Technology in the United States

Credits: 3

A survey of U.S. science and technology from the colonial era to the present, with special attention to how the wider social context, including the role of institutions and government, affected processes of scientific and technological development. Coverage also of the challenges of addressing the social problems that arose in connection with scientific and technological development throughout U.S. history.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 520 - Death and Dying in History

Credits: 3

Examines European and American attitudes toward death and dying in various historical periods. Topics include: death and dying in the European Middle Ages and in nineteenth and twentieth century America, the impact of the Nazi Holocaust on modern opinions about death, suicide as a historical problem, the fear of cancer in modern times, and others.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 521 - History of Christianity

Credits: 3

A history of the Christian religion from the era of Jesus Christ to the present with special emphasis on people and ideas.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 522 - Religion in American History

Credits: 3

A study of the impact of religion on American culture and of American culture on religion, the Social Gospel and related issues, and the interrelationship of Christianity and politics.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 523 - A History of the Occult and Witchcraft

Credits: 3

A study of the history of the occult and witchcraft in Western civilization with special attention to religious, intellectual, and social issues and influences.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 524 - The History of Baseball in American Culture

Credits: 3

The history of baseball from its origins in the early nineteenth century to the present, with emphasis on the major leagues and their collateral organizations but also with attention to semi-pro and amateur baseball and to the old Negro Leagues. The history of the game will be examined in the context of American history with special reference to social issues, politics, religion, literature, music, and the medial.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 525 - Colonial America

Credits: 3

About 1450 to 1763. Includes the European background of North American colonization, the rivalry for new world empire, seventeenth century English colonial foundations, and development of the various colonial societies.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 526 - The American Revolution

Credits: 3

Eighteenth century colonial background of the Revolution and the revolutionary era itself, 1763-1789. Stresses ideological and other causes of the Revolution, the course of the war, its social results, the Confederation and its demise.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 527 - The Early National Period

Credits: 3

Foundations of the new nation from the adoption of the Constitution to the conclusion of the War of 1812, approximately 1789-1815. Stresses the contest between Hamiltonians and Jeffersonians for philosophical dominance of institutions; other topics include diplomacy, westward expansion, military developments, the social and intellectual life of the era.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 528 - America in the Age of Jackson

Credits: 3

A survey of the Age of Jackson, opening with Jackson's election as America's seventh president in 1828 and closing in 1850 as the tumultuous debates over the expansion of slavery tear the country apart.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 529 - Civil War and Reconstruction

Credits: 3

1848-1877. Examination of the sectional controversy, the failure of the political system to resolve peacefully the

conflict between North and South, the resort to arms, the nature of the post-war settlement. Emphasis is on the attempt of mid-nineteenth-century American leaders to deal with the complex problems of slavery and race.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 530 - United States in the 19th Century

Credits: 3

Explores the history of the United States during the 19th century and traces the transition of the country from a fragile, uncertain republic to a robust imperial power standing in the first rank of the world's nations.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 531 - The United States in the Twentieth Century

Credits: 3

Examines the creation of modern America, 1890 to the present. Emphasis on the social and cultural roots, and political consequences, of Progressivism, World War I, the Great Depression, World War II, the Sixties, and Post-Vietnam America.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 533 - Topics in the History of the Americas

Credits: 1-3

Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in the history of North, Central, or South America. Topics vary.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 534 - Social History of Medicine

Credits: 3

An exploration of the development of American social thought and practices regarding health care from colonial times to the present. The course stresses changing cultural attitudes toward disease as well as alterations in social practices and institutions related to healing. Special emphasis is given to the insitutional development and professionalization of modern medicine.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 536 - The American West

Credits: 3

Primary emphasis on the nineteenth century when Americans were rapidly spreading across the continent. Also examines the earlier developments of the frontier and considers the twentieth century role of the trans-Mississippi region.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 537 - History of Indigenous Peoples of North America

Credits: 3

A survey of the Indigenous peoples of the North American continent, with a focus on the United States, from 30,000 BP to the present. Drawing on the work of anthropologists, ethnologists, historians, and the voices of Native peoples,

this course provides students a Native-based perspective that challenges common stereotypes and provides a pathway for understanding contemporary sovereignty movements.

Typically Offered
Other

HIST 538 - Women in Sport

Credits: 3

A survey of the history of the female athlete, with special emphasis on the significance of women in sport in the United States. Themes covered include the evolution of the social roles of sport, the relationship between sport and gender, and athletes' construction of identity.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 539 - African-American History

Credits: 3

An overview of the African-American experience from the seventeenth century through the civil rights movement. Emphasizes social, legal, economic, political, and intellectual aspects of black history as well African-American contributions to American life and culture.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 540 - Women in America, 1600 to the Civil War

Credits: 3

An overview of the history of American women from the beginning of the European colonization to the Civil War. Women's changing social role and its relation to the major transformations in American culture and society during this period is stressed. Special emphasis is given to ethnic, racial, and class variations among women.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 542 - Women in America, Civil War to the Present

Credits: 3

An overview of the history of American women from the end of the Civil War to the present. Examines women's changing role in modern industrial society with special emphasis upon the women's rights movement of both the nineteenth and twentieth centuries.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 543 - U.S. World Affairs to 1920

Credits: 3

History of U.S. foreign relations from its origins in the colonial era through World War I.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Fall

HIST 544 - U.S. and World Affairs since 1920

Credits: 3

History of U.S. foreign relations from the end of World War I through the present day. Explores how the United States engaged the world as a global power.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Fall

HIST 545 - War in the Twentieth Century

Credits: 3

Considers the military theory and practice, the technology, and the political and ideological constraints of World Wars I and II, the Spanish Civil War, the Korean War, and the Indo-chinese wars. Students are to gain an understanding of the varieties of military experience in the twentieth century, including civil wars, "total war,"and guerrilla warfare.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 546 - History of American Military Affairs

Credits: 3

Deals with the development of military institutions in colonial America and the United States, civil-military relations and conflicts between political constraints and strategic demands, popular attitudes toward the military, and the rise of the military-industrial complex.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 547 - Economic History of the United States

Credits: 3

Major topics in American economic history from the colonial period to the present. Focus is on nineteenth- and twentieth- century issues, including the rise of big business; the expanding role of the government in the economy; the Great Depression; the postwar boom and its end; issues of class, race, and gender; America's shifting roles in the global economy.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Fall

HIST 549 - Modern Africa from 1850

Credits: 3

Introduction to modern African history since 1850. Key topics include the establishment and impact of the colonial empires that dominated Africa between the 1880s and 1960s; the process of decolonization; African responses to colonial rule; and the development of post-Independence Africa with a special emphasis on the challenges faced by African countries.

Requisites:
Prerequisite: Sophomore standing recommended.

Typically Offered
Fall, Spring, Summer

HIST 551 - History of Family Violence

Credits: 3

Explores the history of family violence in America as a social, cultural, legal, and public policy issue from colonial times to the present. Stress is placed upon the cultural roots and evolution of domestic law. The development of state-controlled social welfare agencies as well as the emergence of the "battered women's movement" is particularly emphasized.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Intersession

HIST 553 - History of American Culture

Credits: 3

Main emphasis is on political, religious, and social thought and ideology, 1620 to present.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 554 - History of the South

Credits: 3

Topical analysis of important issues in Southern history. Compares the plantation myth of popular films with

interpretations by important historians. Emphasis on plantation agriculture, slavery, race relations, class, and gender in the Old South. Post-Civil War topics include federal Reconstruction efforts, segretation, economic reform, and the modern Civil Rights movement.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 555 - American Constitutional History

Credits: 3

Survey of constitutional and legal development from colonial times to the present. English constitutional ideas and the common law in the American colonies, formation of the Constitution, the role of the Supreme Court, development of the modern American legal system, growth of the legal profession, the problem of civil liberties. The course offers insight into the relationship of constitutional-legal institutions to American society.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 556 - Bill of Rights in American History

Credits: 3

This course provides a topical survey of the American Bill of Rights from the colonial era to the present. It begins with the origins of American rights in England and colonial America. An analysis of the need for a Bill of Rights at the founding and Supreme Court interpretations in 1835 and during the Reconstruction era follow. The bulk of the course is concerned with the nationalization and expansion of the Bill of Rights in the twentieth century and its meaning in the everyday lives of American citizens.

HIST 557 - History of American Agriculture

Credits: 3

Concentrates on the period since 1850 in an attempt to acquaint the student with the political and economic history of American agriculture. No attempt will be made to present the scientific or technological side of agriculture in detail, but agriculture will be shown in relation to the life of the entire United States. The life of the farmer and his family, the relationship between agricultural changes and other parts of the economy will be part of this course. Special attention will be paid to agriculture in Kansas and the Great Plains.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 558 - History of Kansas

Credits: 3

Land, people, and cultural developments in Kansas, from the earliest written records to the present. Provides the student with an intimate understanding of the state of Kansas.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Fall, Spring

HIST 559 - History of Aztecs, Inca, and Maya

Credits: 3

Introduction to the history of ancient Mesoamerican and Andean civilizations through a multi-disciplinary approach combining materials from the fields of history, art history, anthropology, and archaeology.

Requisites:
Prerequisite: Sophomore Standing

Typically Offered
Spring

HIST 560 - Latin American Nations

Credits: 3

Survey of economic, social, and political developments of the Latin American nations from independence to the present decade with emphasis on Argentina, Brazil, Peru, Chile, and Mexico. Stresses reform and revolution of the last 50 years.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 561 - Colonial Hispanic America

Credits: 3

Iberian and indigenous American background, exploration, conquest, settlement, and development of Latin America. Stresses growth of mestizo culture, colonial styles of living, and wars of independence.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 562 - Modern Mexico

Credits: 3

Brief survey of lines of national development, 1821-1910, and major emphasis on the twentieth-century revolution and its reforms (1910-1940) as well as its subsequent implications.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 564 - History of Mass Communications in America

Credits: 3

Growth and Development of media and media technology in the United States and their economic, political, and social significance.

Typically Offered
Fall, Spring

Crosslisted:
Cross-listed: MC 564.

HIST 565 - History and Culture of Greece

Credits: 3

The rise of civilization in the ancient Near East, the migrations of the Greeks and the Heroic Age, the Greek city-states, commerce and colonization, the Persian invasion, Athens' leadership of Greece, the war between Athens and Sparta, Alexander the Great, and the total Hellenic achievement.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 566 - History and Culture of Rome

Credits: 3

Examines the various theories of Rome's origin, the causes, problems, and influences upon the republican government, political and economic problems of Roman expansion, and the Roman world. Various reforms including those of the Gracchi, Caesar, and Augustus. Contact with Greece and the older areas of civilization. The Roman imperial system, the many causes of Rome's fall, and Rome's role as a synthesizer of the ancient classical culture.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 567 - Europe in the Middle Ages

Credits: 3

Europe from the fall of the Roman Empire to the thirteenth century. Investigates the conflict and interaction of Roman, Christian, and Germanic ideals and attitudes in the early Middle Ages, and the increasing complexity and sophistication of society, culture, religion, and government of the high Middle Ages.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 568 - The Renaissance

Credits: 3

The Italian Renaissance as a major phase in the history of Western civilization and its spread to northern Europe.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 569 - The Reformation

Credits: 3

A study of the Protestant, Catholic, and Radical Reformations with special attention to Luther, Calvin, the origins of the Church of England and the Presbyterian Church, the Anabaptists, the Puritans, and Roman Catholic Reform, and the impact of religious developments on the politic al, economic, social, and intellectual history of the Western world. Covers the period from approximately 1500 to 1660.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 570 - Europe in the Seventeenth Century

Credits: 3

Surveys the economic, social, political and intellectual history of western Europe in the seventeenth century, a period marked by economic depression, international conflict, and domestic revolutions as well as by cultural achievement. Emphasizes the complex interaction among social groups; the rise of a European state system; the development of constitutional monarchy in England and absolute monarchy in France; and the change in values generated by the scientific revolution.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 571 - Eighteenth-Century Europe

Credits: 3

Europe from the death of Louis XIV in 1715 to the fall of Napoleon in 1815. The origins and development of the French Revolution and the Napoleonic legacy, also examines reform and counter-revolutionary movements in England, Italy, Russia, Poland, and the Germanies.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 572 - Nineteenth Century Europe

Credits: 3

The history of Europe from the French Revolution to the end of the first World War. Major topics covered will include the rise of conservatism as an ideology and its application in practice, the nature of liberalism and socialism, the impact of science and technology, the origins and course of World War I.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 573 - Twentieth Century Europe

Credits: 3

Examines the political, social, and intellectual developments of Europe in the period of the two world wars. Emphasis on the failure of democracy and the rise of competing antidemocratic and nondemocratic mass movements and ideologies. The course will also deal with the attempted system of collective security, its failure, and the origins and course of World War II.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 574 - Europe since World War II

Credits: 3

Postwar European society, politics, economy, and culture. The effects of total war on the population; restoration and reconstruction. The influence of the U.S. and U.S.S.R. on Europe. Capitalism, socialism, and communism in technological society. European unity movements and their conflicts with traditional values.

Typically Offered
Other

HIST 576 - European International Relations to 1815

Credits: 3

The nature, evolution, and function of the diplomatic system for the Ancient World to 1815. Analyzes the Greek and Roman diplomatic tradition, international relations during the Medieval, Renaissance, and Early Modern periods, and the works of various theorists. Sophomore standing.

Typically Offered
Other

HIST 577 - European International Relations Since 1815

Credits: 3

The nature, evolution, and functions of the European diplomatic system from 1815 to the present. Focuses on the Vienna settlement, the Eastern Question, the Crimean War, Italian and German unification, origins of World War I, international developments between the two world wars, the cold war, and the post-cold war era. Includes analysis of major theorists. Sophomore standing.

Typically Offered
Other

HIST 578 - Central Europe, 1500-1914

Credits: 3

The diplomatic, military, political, cultural, and social aspects of the Hapsburg empire in Central Europe from its foundation to its dissolution in the twentieth century.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 579 - The British Isles to 1603

Credits: 3

English, Scottish, and Irish culture in the medieval and pre-modern periods. Early folk societies, feudalism, the church in society and politics, the origins of representative institutions and the religious reformations are studied topically.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 580 - The British Isles Since 1603

Credits: 3

English society and politics in modern times with reference also to Scotland and Ireland. Emphasis on topics such as the three orders of society (king, lords, and commons), the churches and religion, the appearance of parliamentary sovereignty, the industrial revolution, and the extension of democratic institutions.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 582 - Eastern Europe Since 1914

Credits: 3

The growth of nationalism, the formation of nation-states after World War I, the devastation of World War II, the establishment of Soviet rule, the dramatic revolutions of 1989, and Yugoslavia's ethnic wars.

Requisites:
Prerequisite: Sophomore standing.

HIST 583 - History of France, 1400-1715

Credits: 3

France from the conclusion of the Hundred Years War to the death of Louis XIV. French economy, society, and royal administration, and the changes generated in these areas by significant events: the Reformation and the Wars of Religion; the rise of France to world power; peasant uprisings and constitutional crisis; and the reforms of Richelieu, Colbert, and Louis XIV. Trends in art, architecture, and philosophy.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 585 - Medieval Christianity

Credits: 3

A survey of the development of Christianity in western Europe during the Middle Ages (c. 500-1500). Topics include the development of the papacy and the ecclesiastical hierarchy, the role of kings and other rulers, the Crusades, scholasticism, purgatory, penance, monasticism, specific religious orders like the Franciscans, baptism, marriage, asceticism, how medieval Christians read the Bible, saints, the roles of women, and heresy.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Fall, Spring

HIST 586 - Advanced Seminar in History

Credits: 3

An undergraduate seminar that focuses on the intellectual principles of the historical discipline as well as the fundamental research techniques and writing skills used by historians. Each section of the Seminar will center on a particular topic or historical problem. The students will prepare a research project pertinent to the seminar topic. All history majors must take this seminar to complete the requirements for their degree.

Requisites:
Prerequisite: Six hours of History courses at or above the 500 level.

Typically Offered
Fall, Spring

HIST 587 - Nineteenth-Century Imperial Germany

Credits: 3

Central Europe in the French Revolutionary era, the revolutions of 1848, German unification, imperial Germany, emphasizing social changes, especially the transition from agrarian to industrial society.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 588 - Nazi Germany and the Holocaust

Credits: 3

Examines the political, social, economic, and intellectual developments in Germany from World War I to the end of World War II, including the Nazi ideology and the Holocaust.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 589 - Lost Kansas Communities

Credits: 3

Combined lecture-field research course in the history of vanished Kansas towns. Overview of settlement, persistence, and decline. Students also research a lost community of their choosing.

Note:
Open to all majors with no pre-requisites, sophomore standing required.

Requisites:
Prerequisite: Sophomore Standing.

Typically Offered
Fall, Spring, Summer

HIST 591 - The Russian Empire

Credits: 3

Imperial Russia from the earliest Slavic tribes through 1881, with emphasis on Russia's heritage as a multi-ethnic state and the phenomenon of Russia's revolutional intellectuals.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 592 - Twentieth Century Russia

Credits: 3

The turbulent history of modern Russia, including the upheaval of the Russian Revolution and Civil War, Stalin's transformation of Soviet society, World War II, failed attempts to transform the Soviet system, and the fall of the Soviet Union.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 593 - The Vietnam War

Credits: 3

This course examines the origins, actions, and consequences of the Indochina wars fought by the French, Japanese, and Americans during the last century. Particular emphasis is placed on America's experience in Southeast Asia. Videos from the PBS series, "Vietnam: A Television History," are used in the course.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 595 - French Revolution, 1789-1815

Credits: 3

The political, economic, cultural, and social development of France from the origins of the Revolution to the Congress of Vienna.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 597 - Topics in European History

Credits: 1-3

Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in European history.

Note:
Topics vary. May be repeated for credit.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Other

HIST 598 - Topics in Non-Western History

Credits: 1-3

Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in non-Western history.

Note:
Topics vary.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
On sufficient demand

HIST 650 - Internship in History

Credits: 3

Practical professional experience involving at least three weeks in an archive, museum, historical library, or business. Student projects must be approved in advance and a report submitted at the end of the work period.

Repeat for Credit
Repeatable. May be repeated once for credit.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

HIST 703 - Overseas European Studies

Credits: 2-3

Short-term, intensive, and in-depth study of various aspects of European history and culture with readings, lectures, discussions, and on-the-spot experiences which will relate historical events to the places visited.

Requisites:
Prerequisite: Senior or graduate standing.

Typically Offered
Intersession

HIST 798 - Readings in History

Credits: 1-3

Students will read on a central theme, attend weekly discussions, and write a final report.

HIST 799 - Problems in History

Credits: 1-18

Intensive study of a particular phase of history. Students will attend weekly discussions and write a major research paper on their findings.

HIST 801 - Historiography

Credits: 3-4

Main currents in historical research, the writing of history, and the influence of the great historians from Herodotus to the present.

HIST 810 - Security Studies Methodology

Credits: 2

An exploration of commonly used research methods in history and political science. Students will investigate quantitative and qualitative humanities and social sciences methodology through selected readings and limited research exercises.

Requisites:
Prerequisite: POLSC 812/HIST 812 or concurrent enrollment.

Typically Offered
Fall, Spring

Crosslisted:
POLSC 810

HIST 812 - Foundations of Security Studies

Credits: 3

An interdisciplinary introduction to the major historical developments and scholarly approaches in the fields of military history, international relations, and security studies.

Typically Offered
Fall, Spring, Summer

HIST 815 - Research Design in Security Studies

Credits: 1

An exploration of research methods in history and political science culminating in a piece of original research in Security Studies.

Requisites:
Prerequisite: HIST 810/POLSC 810.

Typically Offered
Fall, Spring

Crosslisted:
POLSC 815

HIST 850 - History and Security: East Asia

Credits: 3

An examination of the major historical problems and literature relating to national and international security in East Asia.

Requisites:
Prerequisite: HIST 801 or HIST 812/POLSC 812 or concurrent enrollment.

Typically Offered
Other

HIST 851 - History and Security: Latin America

Credits: 3

An examination of the major historical problems and literature relating to national and international security in Latin America.

Requisites:
Prerequisite: HIST 801 or HIST 812/POLSC 812 or concurrent enrollment.

Typically Offered
Other

HIST 852 - History and Security: the Middle East

Credits: 3

An examination of the major historical problems and literature relating to national and international security in the Middle East.

Requisites:
Prerequisite: HIST 801 or HIST 812/POLSC 812 or concurrent enrollment.

Typically Offered
Fall

HIST 853 - History and Security: Russia/Central Asia

Credits: 3

An examination of the major historical problems and literature relating to national and international security in Russian and Central Asia.

Requisites:
Prerequisite: HIST 801 or HIST 812/POLSC 812 or concurrent enrollment.

Typically Offered
Other

HIST 854 - History and Security: South Asia

Credits: 3

An examination of the major historical problems and literature relating to national and international security in South Asia.

Requisites:
Prerequisite: HIST 801 or HIST 812/POLSC 812 or concurrent enrollment.

Typically Offered
Other

HIST 855 - History and Security: Modern Africa since 1850

Credits: 3

Focuses on major political events and their repercussions. Key topics include war in African history, the creation and administration of colonial empires, decolonization, and the political and security struggles of the post-independence era.

Typically Offered
Fall, Spring

HIST 860 - Topics in International History

Credits: 3

Introduce the most important themes and issues in historical topics and subjects of transnational and global significance. Contextualizes historical literature to help students prepare for teaching and for their general field exams.

Typically Offered
Fall, Spring

HIST 899 - Master's Research in History

Credits: 1-18

HIST 901 - Advanced Historiography

Credits: 1-4

Advanced work offered on demand and by arrangement, in main currents in historical research, the writing of history, and the influence of great historians.

HIST 903 - Renaissance and Reformation Europe

Credits: 3

An examination of the major historical problems and literature.

Note:
This survey course is intended to introduce students to the most important themes and issues in their respective fields. It aims to put the historical literature in broad context to help students prepare for teaching and for their general field exams.

Typically Offered
Other

HIST 904 - Early Modern Europe

Credits: 3

An examination of the major historical problems and literature.

Note:
This survey course is intended to introduce students to the most important themes and issues in their respective fields. It aims to put the historical literature in broad context to help students prepare for teaching and for their general field exams.

Typically Offered
Other

HIST 905 - Nineteenth-Century Europe

Credits: 3

An examination of the major historical problems and literature.

Note:
This survey course is intended to introduce students to the most important themes and issues in their respective fields. It aims to put the historical literature in broad context to help students prepare for teaching and for their general field exams.

Typically Offered
Other

HIST 906 - Twentieth-Century Europe

Credits: 3

An examination of the major historical problems and literature.

Note:
This survey course is intended to introduce students to the most important themes and issues in their respective fields. It aims to put the historical literature in broad context to help students prepare for teaching and for their general field exams.

Typically Offered
Other

HIST 907 - Colonial/Revolutionary America

Credits: 3

An examination of the major historical problems and literature.

Note:
This survey course is intended to introduce students to the most important themes and issues in their respective fields. It aims to put the historical literature in broad context to help students prepare for teaching and for their general field exams.

Requisites:
Prerequisite: HIST 801 or concurrent enrollment.

Typically Offered
Other

HIST 908 - Nineteenth-Century America

Credits: 3

An examination of the major historical problems and literature.

Note:
This survey course is intended to introduce students to the most important themes and issues in their respective fields. It aims to put the historical literature in broad context to

help students prepare for teaching and for their general field exams.

Requisites:
Prerequisite: HIST 801 or concurrent enrollment.

Typically Offered
Other

HIST 909 - Twentieth-Century America

Credits: 3

An examination of the major historical problems and literature.

Note:
This survey course is intended to introduce students to the most important themes and issues in their respective fields. It aims to put the historical literature in broad context to help students prepare for teaching and for their general field exams.

Requisites:
Prerequisite: HIST 801 or concurrent enrollment.

Typically Offered
Other

HIST 911 - Historical Approaches to Security

Credits: 3

Examination of theories and approaches to military history and the history of international relations.

Typically Offered
Fall

HIST 912 - Historical Methods in Security Studies

Credits: 3

Training in primary-source research in military history, foreign policy, and international relations.

Typically Offered
Spring

HIST 919 - Seminar in History of Christianity

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in thee class schedule for the semester in which they are offered,

HIST 920 - Seminar in American Social History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 921 - Seminar in Latin American History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:

Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 922 - Seminar in American Diplomatic History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 923 - Seminar in the History of the American West

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 924 - Seminar in Colonial America

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 926 - Seminar in American Economic History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specfic topics will be listed in the class schedule for the semester in which they are offered.

HIST 927 - Seminar in American Science and Technology

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 928 - Seminar in American History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 930 - Seminar in Modern European History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 931 - Seminar in German History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 932 - Seminar in French History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 933 - Seminar in European Diplomatic History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 935 - Seminar in Modern Russian History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools

and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 936 - Seminar in Renaissance and Reformation

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 937 - Seminar in British History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 950 - Seminar in South Asian History

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 979 - Seminar in the History of Science

Credits: 3

This seminar is a course in which students are expected to study the primary source material for particular topics within a general area of study and to write a paper based on research using such sources. These courses are intended to develop graduate students' skills in the use of research tools and methods, ability to conceptualize and organize an argument, and facility in presenting research findings. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 980 - Topics in European History

Credits: 1-3

The topics courses are designed through reading and discussion to acquaint students with the literature in various fields or areas of history. They are also intended to familiarize students with major substantive areas of dispute and historical debate within a field of study. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 981 - Topics in Third World History

Credits: 1-3

The topics courses are designed through reading and discussion to acquaint students with the literature in various fields or areas of history. They are also intended to familiarize students with major substantive areas of dispute and historical debate within a field of study. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 982 - Topics in the History of Science

Credits: 1-3

The topics courses are designed through reading and discussion to acquaint students with the literature in various fields or areas of history. They are also intended to familiarize students with major substantive areas of dispute and historical debate within a field of study. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 983 - Topics in Military History

Credits: 1-3

The topics courses are designed through reading and discussion to acquaint students with the literature in various fields or areas of history. They are also intended to familiarize students with major substantive areas of dispute and historical debate within a field of study. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 984 - Topics in American History

Credits: 1-3

The topics courses are designed through reading and discussion to acquaint students with the literature in various fields or areas of history. They are also intended to familiarize students with major substantive areas of dispute and historical debate within a field of study. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 985 - Readings in History

Credits: 1-3

The topics courses are designed through reading and discussion to acquaint students with the literature in various fields or areas of history. They are also intended to familiarize students with major substantive areas of dispute and historical debate within a field of study. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 986 - Problems in History

Credits: 1-3

The topics courses are designed through reading and discussion to acquaint students with the literature in various fields or areas of history. They are also intended to familiarize students with major substantive areas of dispute and historical debate within a field of study. Within the general areas listed below, these courses may focus inter alia upon political, diplomatic, social, religious, intellectual, or environmental history.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

HIST 987 - Seminar in Writing History for Publication

Credits: 3

Students will take an example of their past or current

written work (a seminar paper, a section of a thesis or dissertation) and refine it for publication as a scholarly article. Emphasis will be on writing in a clear, correct, and well-organized way; on sharpening arguments and interpretations; on undertaking additional research in primary and secondary sources; and on critiquing the work of fellow students in a professional manner.

Requisites:
Prerequisite: Must be enrolled in the Graduate Program.

HIST 990 - Seminar in Military History

Credits: 3

Discusses such problems as command, the military and diplomacy, the officer corps, training, and women in the military.

Requisites:
Prerequisite: HIST 801 or concurrent enrollment.

Typically Offered
Other

HIST 991 - Seminar in American Military Affairs

Credits: 3

Studies the great writers of American military history and emphasizes student research into such topics as the War for American Independence, limited wars, the Civil War, the role of the President as commander in chief, and the militia.

Requisites:
Prerequisite: HIST 801 or concurrent enrollment.

Typically Offered
Other

HIST 993 - History of Military Thought

Credits: 3

The History of Military Thought from Machiavelli to the Present.

Requisites:
Prerequisite: HIST 801 or concurrent enrollment.

Typically Offered
Other

HIST 999 - PhD Research in History

Credits: 1-18

HM 504 - Fair and Festival Management

Credits: 3

Examination of fairs, festivals, and special events. Understanding of the similarities and differences across different event types and the key elements that make them successful.

Typically Offered
Fall

HM 621 - Hospitality Law

Credits: 3

Legal aspects of managing hospitality operations and responsibilities for the operations, patron civil rights, governmental regulations, franchising, and commercial transactions.

Requisites:
Prerequisite: HM 475

Typically Offered
Fall

HM 624 - Procurement in the Hospitality Industry

Credits: 2

Principles and theories of procurement of food and supplies for hospitality operations. Includes management, financial, safety, and ethical considerations in the procurement process.

Requisites:
Prerequisite: HM 342.

Typically Offered
On sufficient demand

HM 640 - Entrepreneurship in Hospitality Management

Credits: 3

Development and management of small businesses or private practice within the dietetics or hospitality industry. Business plan development, marketing, cost considerations. Overview of consulting to healthcare and hospitality operations and examination of skills required for success.

Requisites:
Prerequisite: ACCTG 231.

Typically Offered
Spring-Even Years

HM 650 - Senior Seminar in Hospitality Management

Credits: 3

The application of critical thinking skills to explore hospitality management problems and perspectives. Decision-making tools will integrate marketing, human resources, diversity, ethics, leadership, team work, strategic management, and financial performance for foodservice, lodging, and event management.

Requisites:
Prerequisite: Senior Standing

Typically Offered
Spring

HM 662 - Foodservice Systems Management

Credits: 3

A capstone course in foodservice management that focuses on the management, analysis, and evaluation of food and beverage systems. Emphasis on planning, coordinating, and improving commercial and noncommercial operations. Development of analytical and decision-making skills for solving managerial and operational problems.

Requisites:
Prerequisite: HM 351, HM 375.
Recommended Prerequisite: HM 422 and HM 475.

Typically Offered
Spring

HM 663 - Business Event Management

Credits: 3

A capstone course in meeting and event management. This course will provide students with an opportunity to integrate knowledge, concepts and capacities from different parts of their learning experiences into realworld event planning experiences. This course will enable students to plan an event from initial conception to final evaluation.

Requisites:
Prerequisite: HM 463 Senior Standing
Recommended Prerequisite: HM 475

Typically Offered
Fall

HM 664 - Advanced Hotel Operations

Credits: 3

This senior-level course provides students the opportunity to utilize a strategic management process as a decision-making tool that integrates marketing, human resources, operations, and financial performance measures. This is a computer simulation class, where teams will compete with each other in real-time to understand and evaluate the market dynamics of a competitive set of hotels.

Requisites:
Prerequisite: HM 464; Senior Standing

Typically Offered
Fall

HM 665 - Casino Management

Credits: 3

Investigation of the histories and overall operations of casino properties and their impacts on the foodservice and hospitality industry from the social, economical, political and environmental perspectives.

Requisites:
Prerequisite: Junior standing, 60 hours or more.

Typically Offered
Fall

HM 705 - Information Technology Systems in Hospitality Operations

Credits: 3

Review of computer development in foodservice and

hospitality operations; development of criteria for implementation of a computer system; analysis of foodservice and hospitality hardware and software.

Requisites:
Prerequisite: CIS 101; and HM 480 or HM 560 or MANGT 420.

Typically Offered
Other

HM 710 - Readings in Hospitality Administration

Credits: 1-3

Directed study of current literature in foodservice and hospitality management and related areas.

Requisites:
Prerequisite: HM 480 or HM 560 or MANGT 420.

Typically Offered
Fall, Spring, Summer

HM 785 - Practicum in Hospitality Management

Credits: 1-6

Professional experiences in approved foodservice organization as a member of the management team under faculty supervision.

Requisites:
Prerequisite or concurrent enrollment: HM 342; and HM 480 or HM 560 or MANGT 420.

Typically Offered
Fall, Spring, Summer

HM 800 - Topics in Hospitality Management

Credits: 1-3

Presentation of timely, cutting-edge material pertinent to professional practice in hospitality management and dietetics.

Requisites:
Prerequisite: Consent of Instructor

Typically Offered
Fall, Spring, Summer

HM 805 - Advanced Foodservice Management

Credits: 3

Production planning and controls in foodservice systems analysis in foodservice systems. Decision optimization and systems analysis in foodservice organizations. Consideration of various types of foodservice systems.

Requisites:
Prerequisite: HM 662 and MANGT 420 or equivalent.

Typically Offered
Fall-Odd Years

HM 810 - Research Techniques in Hospitality Management

Credits: 3

Survey and application of research methodology in foodservice and hospitality management.

Requisites:
Prerequisite: STAT 702 or STAT 703.

Typically Offered
Spring

HM 815 - Advanced Lodging Management

Credits: 3

This course provides an introduction to conceptual and empirical research in the lodging industry and academic discipline. The course will familiarize students with the historical streams of lodging-focused research and introduce them to the current methods, trends, theory, and application of research in the lodging industry.

Requisites:
Prerequisite: HM 664 or equivalent.

Typically Offered
Fall-Odd Years

HM 820 - Problems in Hospitality Management

Credits: 1-18

Individual investigation of problems in foodservice and hospitality management. Conferences and reports at appointed hours.

Requisites:
Prerequisite: HM 342; and HM 480 or HM 560 or MANGT 400.

Typically Offered
Fall, Spring, Summer

HM 825 - Advanced Meetings and Business Event Management

Credits: 3

This three-hour seminar course will expose students to a variety of higher level event management concepts. By the end of the course, students will be able to complete executive tasks, conduct effective event management research, incorporate findings into applicable strategic plans for the future, and disseminate knowledge to educators, industry, and executives.

Requisites:
Prerequisite: HM 663 or equivalent.

Typically Offered
Fall-Even Years

HM 835 - Survey of Research in Hospitality Management

Credits: 3

Explores classic and contemporary research to introduce research topics and trends in the hospitality discipline. Underlying theories, research designs, and industry implications of both theoretical and empirical research will be analyzed and critiqued.

Requisites:
Prerequisite: Required for Master's students only

Typically Offered
Fall-Even Years

HM 885 - Seminar in Hospitality Administration

Credits: 1

Discussions of research related to foodservice and hospitality management.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

HM 890 - Administration of Hospitality Organizations

Credits: 3

Advanced study of management applied to foodservice and hospitality organizations.

Requisites:
Prerequisite: HM 480 or HM 560 and MANGT 420.

Typically Offered
Fall

HM 895 - Financial Management and Cost Controls for the Hospitality Industry

Credits: 3

Overview of fundamental knowledge of financial management, managerial accounting and operational cost controls for the hospitality industry. Important topics include review of managerial accounting concepts based on the Uniform System of Accounts for the Lodging Industry, value and risk analyses, budgeting, asset management, expansion via franchising and management contracts, cost-volume-profit analyses, and operational applications for financial performance.

Requisites:
Prerequisite: A basic financial or managerial accounting course

Typically Offered
Fall-Odd Years

HM 899 - Research in Hospitality Administration

Credits: 1-18

Individual research which may form the basis for master's report or thesis.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

HM 905 - Advanced Hospitality Strategic Management

Credits: 3

Through lecture, case and literature review and analysis, and projects; Advanced Hospitality Strategic Management introduces students to empirical research in hospitality strategic management and is designed to improve knowledge and abilities to analyze and apply different perspectives of strategic management in the hospitality industry. Topics include but are not limited to environmental scanning techniques, value chain analyses, strategies of choice in variety of business levels, implementation strategies, and maximizing effectiveness of strategic management.

Requisites:
Prerequisite: HM 895, Instructor consent required.
Other Requirements: An undergraduate or master's level strategic management course is recommended.

Typically Offered
Spring-Even Years

HM 975 - Research and Applied Theories in Hospitality Management

Credits: 3

Critique of theoretical constructs and research applications in the study in foodservice and hospitality management. Emphasis on preliminary stages of research development including preparation of literature reviews and preliminary proposals for research.

Typically Offered
Fall-Even Years

HM 980 - Higher Education in Hospitality Management

Credits: 3

An in-depth study of the higher education system in hospitality administration and professional development that prepares for a successful scholar/educator in hospitality education.

Requisites:
Prerequisite: EDCEP 927 and consent of instructor.

Typically Offered
Spring-Odd Years

HM 985 - Advances in Hospitality Management

Credits: 3

Analysis of selected topics and research in foodservice and hospitality management.

Requisites:
Prerequisite: HM 810 and consent of instructor.

Typically Offered
Other

HM 990 - Dissertation Proposal Seminar

Credits: 1

Presentation and discussion of proposals for dissertation research.

Requisites:
Prerequisite: Six hours of statistics, 3 hours of research design or methods, and consent of major professor.

Typically Offered
Fall, Spring, Summer

HM 993 - Teaching Practicum in Hospitality Management

Credits: 3

This course is designed to serve as a culminating experience in which students apply the teaching and learning strategies learned in coursework through practice in the higher education classroom. In addition to teaching a subsection of a current course, weekly meetings will discuss relevant topics that affect instructors in the

classroom environment.

Requisites:
Prerequisite: EDCI 943 and permission of instructor.

Typically Offered
Fall, Spring

HM 995 - Grantsmanship and Publication

Credits: 3

Grant writing, identifying external funding, managing grants, preparing manuscripts for peer-reviewed publication, and preparing papers and poster for presentation at professional meetings.

Requisites:
Prerequisite: Graduate level research methods class.

Typically Offered
Spring-Odd Years

HM 999 - Research in Hospitality Administration

Credits: 1-18

Research in hospitality management for the doctoral dissertation.

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

HMD 892 - Leadership in Hospitality and Dietetics Administration

Credits: 3

Explores classic and contemporary leadership theories and their applications to dietetics, healthcare, and hospitality organizations.

Typically Offered
Summer

HORT 508 - Sustainable Landscape Maintenance Practices

Credits: 2

Understanding and implementing maintenance requirements for the care of young trees, shrubs and herbaceous plants that focus on practices that address environmental issues related to the management of residential and commercial landscapes. Students will learn how to analyze and apply landscape maintenance practices while creating an attractive landscape in balance with the local climate that requires minimal resource inputs, such as human energy, fertilizers, pesticides and water.

Requisites:
Recommended Prerequisite: HORT 201; HORT 374 or HORT 375; and AGRON 305.

Typically Offered
Fall

HORT 510 - Horticultural Design II

Credits: 3

Reinforcement of the horticultural design process as applied to the use of native and introduced plant materials. Emphasis on functional and aesthetic arrangement of plants in small-scale design to meet site design objectives and adaptation to microclimates. Students expected to develop site adapted plant palettes and graphic ability to present their design.

Note:
Two three hour studio periods a week.

Requisites:
Prerequisite: HORT 275 and two plant materials courses.

Typically Offered
Spring

HORT 515 - Basic Turfgrasss Culture

Credits: 3

Turfgrass identification and adaptation; establishment and maintenance of turf for golf courses, sports fields, home lawns, parks, and commercial/institutional grounds.

Note:
Two hours recitation and two hours lab each week.

Requisites:
Recommended Prerequisite: HORT 201 and AGRON 305.

Typically Offered
Spring

HORT 517 - Golf Course and Sports Turf Operations

Credits: 2

Strategies involved in golf course and sports turf operation, including development of cultural practices, effective communication, personnel management, and budgeting.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Recommended Prerequisite: HORT 515.

Typically Offered
Fall

HORT 520 - Fruit Production

Credits: 3

Principles and practices of cultivating fruit and nut crops commercially. Laboratory offers experiences in pomological practices.

Note:
Two hours recitation and two hours lab a week.

Requisites:
Prerequisite: HORT 201 or equiv. and HORT 350.

Typically Offered
Spring-Odd Years

HORT 525 - Horticulture for Special Populations

Credits: 3

An intensive study of the concepts and methods of using plants and gardening as therapeutic activities with developmentally disabled, geriatric, economically and socially disadvantaged, emotionally disturbed, or educationally deprived clients.

Note:
Two hours recitation and two hours lab a week.

Typically Offered
Fall

HORT 530 - Horticultural Therapy Case Management

Credits: 1

Guest lecturer and student presentations of topics relating to professionalism, current issues, or goals of horticultural therapy. The course is intended to help students focus expectations and assumptions about a professional career in horticultural therapy and to give them practice in articulating their understanding of the field. Client case management is used as part of career practice.

Note:
One hour recitation a week.

Typically Offered
Spring

HORT 535 - Horticultural Therapy Field Techniques

Credits: 3

Students under supervision will plan, conduct, and evaluate horticultural therapy activities at Manhattan institutional sites selected according to student's interest. A weekly discussion session addresses evaluation and issues of professionalism.

Note:
Two hours recitation and two hours lab a week.

Requisites:
Prerequisite: HORT 525.

Typically Offered
Fall

HORT 540 - Horticultural Therapy Field Experiences

Credits: 3-6

Supervised training at institutions with horticultural therapy programs to gain experience in the application and use of horticultural activities for special populations. Six months (1,000) hours continuous internships required in psychiatric and correctional programs.

Note:
Two 3-month (500 hours) internships may be completed at different sites. Students are required to complete six credits of field experience before graduation.

Typically Offered
Fall, Spring, Summer

HORT 545 - Computer Applications in Horticultural Design

Credits: 3

Introduction to a variety of computer software packages which students may encounter in the nursery/garden center environment. These include planning, routing, and estimating packages. Students must provide their own laptop computer.

Note:
One hour recitation and four hours lab per week.

Requisites:
Prerequisite: HORT 510, or instructor permission.

Typically Offered
Fall

HORT 550 - Horticultural Irrigation Systems

Credits: 3

Application of the principles and practices of horticultural irrigation which involve the various aspects of irrigation system installation, maintenance and scheduling, electrical troubleshooting, basic hydraulics, and drip irrigation as these topics pertain to residential and commercial landscapes, recreational turf areas, and greenhouse and field production systems.

Note:
Two hour lecture and two hours lab a week.

Requisites:
Recommended Prerequisite: MATH 100; HORT 201 or BIOL 210; and AGRON 305.

Typically Offered
Fall

HORT 551 - The Business of Landscape Contracting

Credits: 1

The study of contracts and specifications, and the bidding and estimating processes as applied to landscape contracting.

Note:
Two hours recitation a week, for the first seven weeks of the semester.

Requisites:
Recommended Prerequisite: HORT 275.

Typically Offered
Spring

HORT 552 - Horticultural Landscape Construction

Credits: 1

The interpretation and implementation of small-scale landscape construction (hardscape) projects.

Note:
Three hours lab a week, for the last 11 weeks of the semester.

Requisites:
Recommended Prerequisite: HORT 275.

Typically Offered
Spring

HORT 560 - Vegetable Crop Production

Credits: 3

Study of production principles and cultural practices involved in the growing of vegetable crops.

Note:
Two hours lecture and two hours lab or field trips a week.

Requisites:
Prerequisite: HORT 201.

Typically Offered
Fall-Even Years

HORT 570 - Greenhouse Operations Management

Credits: 3

Greenhouse systems operations and management including greenhouse layout; structures; glazing materials; heating, ventilation, irrigation, lighting, benching, growing medium handling, and fertilization systems; traffic flow; crop handling, processing and shipping.

Note:
Two hours recitation and two hours lab a week.

Requisites:
Prerequisite: HORT 201.

Typically Offered
Fall

HORT 575 - Nursery Management

Credits: 3

A study of the various practices and methods of operating a commercial nursery for the production of woody ornamental plants for the landscape industry. Nursery layout, planting systems, nutrition management, plant maintenance and harvesting technologies will be discussed.

Note:
Two hours recitation and three hours lab a week. Field trips may be required.

Requisites:
Recommended Prerequisite: HORT 350 and AGRON 305.

Typically Offered
Fall

HORT 580 - Advanced Horticultural Design

Credits: 3

Emphasis is on horticultural design projects with clients, working with the design process, design articulation and communication with the clients.

Requisites:
Prerequisite: HORT 510.

Typically Offered
Other

HORT 582 - Foundations of Horticultural Pest Management

Credits: 1

Pesticide use and handling, horticultural pesticides and their characteristics, integrated pest management approaches, and pesticide applicator certification.

Note:
Two hours lecture and two hours lab a week, for the first five weeks of the semester.

Requisites:
Recommended Prerequisite: HORT 201 and an entomology, plant pathology, or weed science course.

Typically Offered
Fall

HORT 585 - Arboriculture

Credits: 3

Principles and practices of maintaining shade and ornamental trees under urban environments.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Recommended Prerequisite: HORT 201 and HORT 374.

Typically Offered
Spring

HORT 587 - Turfgrass Diseases and Their Management

Credits: 1

Biology, diagnosis and integrated management of turfgrass diseases. Emphasis is on diseases of intensively maintained turfgrass.

Note:
Two hours lecture and two hours lab a week for the first five weeks of the semester.

Requisites:
Prerequisite: HORT 582 or concurrent enrollment and HORT 515 or concurrent enrollment

Typically Offered
Fall

Crosslisted:
PLPTH 587

HORT 588 - Turfgrass Weeds and Their Management

Credits: 1

Biology, diagnosis and integrated management of turfgrass weeds.

Note:
Two hours lecture and two hours lab a week for the middle five weeks of the semester.

Requisites:
Prerequisite: HORT 582 or concurrent enrollment and HORT 515 or concurrent enrollment

Typically Offered
Fall

HORT 589 - Turfgrass Insects and Their Management

Credits: 1

Biology, diagnosis and integrated management of turfgrass insect pests.

Note:
Two hours lecture and two hours lab a week for the last five weeks of the semester.

Requisites:
Prerequisite: HORT 582 or concurrent enrollment and HORT 515 or concurrent enrollment

Typically Offered
Fall

Crosslisted:
ENTOM 589

HORT 590 - Horticulture Internship

Credits: 2-6

Principles of commercial or public horticulture activity including exposure to multiple phases of the working horticulture operation. Students will be placed according to specific interest. Required for horticulture majors after having completed 60 hours.

Requisites:
Recommended Prerequisite: HORT 190, HORT 201, and one 500-level horticulture commodity course.

Typically Offered
Fall, Spring, Summer

HORT 591 - Small Farm Practicum

Credits: 3

Project-based practical experience in small-scale, diversified, agricultural production.

Requisites:
Recommended prerequisite: HORT 520 or HORT 560 or HORT 570

Typically Offered
Fall, Spring, Summer

HORT 595 - Horticulture Study Abroad

Credits: 3

Seminar and travel course designed to prepare students before an international study abroad experience focused on horticulture. Upon completion of travel, students will analyze, critique, and report their experiences. Course will focus on appropriate oral and written documentation of the experience.

Repeat for Credit
Repeatable

Requisites:
Prerequisites: Instructor permission.

Typically Offered
Fall, Spring, Summer

HORT 599 - The Horticultural Professional

Credits: 0

Completion of horticulture program assessment tools. Completion of modules associated with professional development during careers in horticultural disciplines, including diversity and ethics in the workplace, job search skills, and providing leadership in the profession.

Typically Offered
Fall, Spring

HORT 600 - Herbaceous Plant Production

Credits: 3

The principles and commercial practices for producing annual and herbaceous perennial plants from seed and cuttings, including vegetable and herb crops in controlled environments. Analysis of crop production costs and plant growth regulation will be emphasized.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Recommended Prerequisite: HORT 350 and HORT 570.

Typically Offered
Spring

HORT 625 - Floral Crops Production and Handling

Credits: 2

The principles and commercial practices for producing floral potted crops and fresh flower crops, emphasizing the physical responses of plants to their environment. Aspects of postharvest physiology of fresh flowers will be covered.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: HORT 201. Recommended Prerequisite: BIOL 500, HORT 350 and HORT 570.

Typically Offered
Spring-Odd Years

HORT 630 - General Viticulture

Credits: 3

Focus is on aspects of grapes, from vine anatomy to final products produced from them. Includes cultivars, propagation, canopy management, diseases, weed control, physiology, anatomy, irrigation, wine production, climates and soils.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: HORT 520.

Typically Offered
Spring-Odd Years

HORT 640 - Horticultural Problems

Credits: 0-3

Problems and reports in floriculture, olericulture, ornamental horticulture, pomology, turfgrass and horticultural therapy.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

HORT 695 - Introduction to Permaculture

Credits: 3

Exploration of a thinking/design methodology that seeks to provide for the physical needs of humans, including food, water, shelter, energy, etc. while doing so in an environmentally-friendly, sustainable manner.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: HORT 201 and HORT 275.

Typically Offered
Fall-Odd Years

HORT 705 - Hydroponic Food Production

Credits: 3

This hands-on course explores hydroponic growing methods both regionally and internationally, incorporating production of tomatoes, cucumbers, peppers, leafy greens, herbs, microgreens, and berries into a variety of production systems used in controlled environment agriculture. Topics will also include sustainability of the systems and an introduction to safe food handling practices.

Requisites:
Requisite: Junior Standing or Consent of Instructor
Recommended prerequisite: HORT 570

Typically Offered
Spring-Even Years

HORT 706 - Advanced Culture of Gold and Sports Turf

Credits: 3

Advanced topics in golf and sports turf maintenance focusing on construction methods and management of abiotic and biotic stresses.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: HORT 515.

Typically Offered
Fall

HORT 710 - Plant Cell, Tissue and Organ Culture.

Credits: 3

Course will cover the principles and laboratory exercises that demonstrate major concepts and practical techniques in plant cell, tissue and organ culture. The history and use of plant cell-, tissue-, and organ-culture for crop improvement will be explained. The variety of tissue-culture techniques will be highlighted. Selected readings and practical tissue culture projects will be required.

Note:
Two hours lecture and three hours lab per week.

Requisites:
Recommended Prerequisite: HORT 350.

Typically Offered
Spring

HORT 715 - Advanced Interiorscaping

Credits: 3

Focus is the physiological principles and industry practices in the production, moving, care, and maintenance of interior plants. This course will provide students the career tools to design, install and maintain interior plantscapes through knowledge of interior plant physiology, care and maintenance.

Note:
Two hours lecture and two hours lab a week

Requisites:
Recommended Prerequisite: HORT 201 and BIOL 500.

Typically Offered
Spring-Even Years

HORT 720 - Environmental Nursery Production

Credits: 3

Cultural practices used with nursery production will be presented with focus on the adoption of best management practices, conservation of resources, scientific research-based investigations related to nursery cultural practices, potential risks to nursery personnel, and off-site movement of air-borne materials and effluents to surrounding areas and public watersheds.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: HORT 575.

Typically Offered
Spring-Odd Years

HORT 725 - Postharvest Technology and Physiology of Horticultural Crops

Credits: 3

A study of the principles and practices involved in the

harvesting, handling and storage of horticultural products. The relationship of plant structure and physiology will be emphasized in discussing effects of postharvest handling and storage to maximize quality and shelf life of products.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: One horticulture commodity course and BIOL 500.

Typically Offered
Fall-Even Years

HORT 751 - Human Issues in Horticultural Therapy

Credits: 3

This course will explore human issues In horticulture generally, and human issues in horticultural therapy specifically. Consideration of selected topics and issues such as peopleplant relationship theories, horticultural therapy as a specialized allied health field, health-care gardens and their use, societal impacts on horticultural therapy, and research issues. Provides students with a knowledge and understanding of the literature in horticultural therapy and develops an appreciation of the interrelationships involved in this multidisciplinary area.

Requisites:
Recommended Prerequisite: A course in research methods and a course in statistics.

Typically Offered
Fall

HORT 752 - Horticulture in Horticultural Therapy

Credits: 3

Application of horticulture principles and practices in therapeutic settings; considerations for greenhouse systems operations and management in therapeutic settings; landscape maintenance, fruit and vegetable gardening, and production horticulture as part of a therapeutic program; and plant propagation for production and therapy.

Typically Offered
Spring

HORT 753 - Clinical Skills in Horticulture Therapy

Credits: 3

Development of horticultural therapy skills and methodology is facilitated through real-life case studies. Includes instruction, practice, and evaluation of clinical skills with population groups typically served through horticultural therapy.

Typically Offered
Fall

HORT 755 - Practicum in Horticultural Therapy

Credits: 3

The practicum is a means of demonstrating the interconnections between 'theory' and 'practice'. By conducting a practicum project, students demonstrate the ability to apply concepts and ideas from their study of horticultural therapy to a specific poplulation or setting.

Typically Offered
Fall, Spring

HORT 760 - Business Management for Horticultural Enterprises

Credits: 3

Focus is on developing a detailed business plan for the service, design and production businesses in horticulture that incorporates considerations of start-up capitalization, insurance, investments, legal accounting and employee compensation. Strategic decision-making and aspects of a horticulture firms that are unique to its industries, such as product seasonality and perishability, will be discussed.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: HORT 500-level or above.

Typically Offered
Fall

HORT 775 - Plant Breeding Methods in Horticulture

Credits: 3

Focus is on introductory plant breeding principles with emphasis on traditional methods of developing improved cultivars of cross-pollinated, self-pollinated, and asexually-propagated horticultural crops, and the genetic principles on which breeding methods are based. The course provides a general background in all areas of plant breeding as a foundation for mastering more complex breeding principles.

Note:
Three hours lecture a week

Requisites:
Recommended Prerequisite: ASI 500 and STAT 300-level or above.

Typically Offered
Fall-Even Years

HORT 780 - Health-Promoting Phytochemicals: Fruits and Vegetables

Credits: 2

The course deals with various aspects of phytochemicals in plant-based foods including fruits and vegetables and their impact on human health and well-being. It includes potential effects of phytochemicals in promoting human health, preventing various diseases and fostering wellness. It also includes biosynthesis and metabolism of phytochemicals in plants. Emphasis is placed on developing strategies to improve the phytochemical content of food crops through approaches involving crop management, environmental and biotechnology tools. Two hours lecture per week.

Requisites:
Prerequisite: Senior standing and CHM 110 or CHM 210.

Typically Offered
Spring

HORT 790 - Sustainable Agriculture

Credits: 2

Historical perspectives of the sustainable agriculture movement in the U.S. and world-wide will be examined and critiqued. Components of sustainable agriculture such as agroecosystem theory, permaculture, energy use efficiency, and organic standards will be compared and evaluated. Students will demonstrate their understanding and application of the material by conducting research on a topic within sustainable agriculture and presenting the topic to the rest of the class.

Requisites:
Prerequisite: Junior Standing.

Typically Offered
Fall-Odd Years

HORT 791 - Urban Agriculture

Credits: 2

Students will become familiar with a wide variety of urban agriculture types and production systems utilized in urban settings. The course will include background readings, case studies, guest speakers, student-facilitated class discussion and lectures.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall

Crosslisted:
UFS 791

HORT 792 - Urban Food Production Practicum

Credits: 1

Students will complete a practicum in an approved urban agriculture setting to gain exposure to a broad range of tasks facing the urban farmer. This includes planning, production and marketing of crops in high tunnels and open field.

Requisites:
Recommended Prerequisite: HORT 520 and HORT 560.

Typically Offered
Fall, Spring, Summer

HORT 793 - Farm to Fork Produce Safety

Credits: 2

This course will cover all aspects of food safety for fresh produce grown in urban and rural environments, including

pathogen ecology and production aspects as well as pre-harvest and postharvest factors that influence the risk of microbial contamination. More specifically, we will discuss ways to minimize the risk of human pathogens on fresh produce using strategies such as the implementation of Good Agricultural Practices (GAPs) and Good Handling Practices (GHPs). The course will cover postharvest interventions that are currently used (chemical sanitizers) as well as innovative technology applications like physical treatments, irradiation, and biological control techniques. Additionally, students will explore the impact of foodborne outbreaks on public health and the fresh produce industry in terms of economics, consumer acceptance, and legal aspects.

Requisites:
Recommended Prerequisite: A course in microbiology.

Typically Offered
Fall-Even Years

HORT 794 - Urban Food Systems

Credits: 2

This course will cover all components of urban food systems through the lens of food security, food justice, access, policy, and community planning. Students will gain skills in grant-writing, non-profit planning and management, and working with urban policy and planning boards.

Typically Offered
Spring-Even Years

Crosslisted:
HORT 794

HORT 795 - Urban Agriculture Study Tour

Credits: 1

Faculty-led trip for students to explore leading examples of urban agriculture. Each year, a trip will occur within North America, lasting approximately 7 days. The study tours will focus on urban food system development in major cities and will highlight examples of how food is being grown in urban areas and the impacts that it has on the community.

Requisites:
Prerequisite: Instructor's permission.

Typically Offered
Fall, Spring, Summer

HORT 796 - Professional Development in Urban Food Systems

Credits: 0-1

A team instructed seminar course that provides urban food systems students with a suite of skills complimentary to their research experience but still necessary for professional career success. Urban Food System students will be expected to enroll in this course 4 semesters.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring

Crosslisted:
HORT 796

HORT 800 - Horticultural Physiology

Credits: 3

Discussions of recent advances in horticultural crop plant physiology, including improvements in horticultural crops resulting from applications of molecular biology and biotechnology.

Note:
Three hours recitation a week.

Typically Offered
Spring

HORT 815 - Plant Nutrition and Nutrient Management

Credits: 3

Focuses on the macro and micronutrient elements and their function in the growth and development of plants. Emphasis will be placed on the roles of single elements, interactions/balances between elements, and nutrient deficiency/toxicity symptoms as they affect the physiology of the whole plant and management of nutrient applications. The relationships between crop nutrition and production and environmental considerations (yield, drought, temperature, pests) will be explored.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: AGRON 305 and BIOL 500.

Typically Offered
Spring-Even Years

HORT 820 - Quantitative Agricultural Remote Sensing

Credits: 3

Focus is on the theory and application of remote sensing to quantifying soil and vegetation characteristics relevant to agriculture and natural biosystems, including turfgrass.

Note:
Three hours lecture a week.

Requisites:
Recommended Prerequisite: AGRON 305 and PHYS 100-level or above.

Typically Offered
Fall-Odd Years

HORT 846 - Plant Research Methods

Credits: 3

Review of history and forms of plant science literature. Discussion on selecting experimental procedures, interpreting data, and reporting results.

Note:
Two hours recitation and two hours lab a week.

Requisites:
Prerequisite: One statistics course or consent of instructor.

Typically Offered
Fall

HORT 880 - Topics in Horticulture

Credits: 0-18

Discussion and lectures of important papers and contributions in this field.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

HORT 898 - Master's Report

Credits: 1-18

Investigations in pomology, olericulture, floriculture, ornamental horticulture, turfgrass, or horticultural therapy for preparation of master's report.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

HORT 899 - Research-MS

Credits: 1-18

Investigations in pomology, olericulture, floriculture, ornamental horticulture, turfgrass, or horticultural therapy for preparation of master's thesis.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

HORT 910 - Advances in Plant Cell Culture

Credits: 2

Course will cover current topics in plant cell culture, applications and commercial practices, with emphasis on plant genetic improvement. Research-level skills in this area will be taught.

Note:
Two hours lecture a week.

Requisites:
Recommended Prerequisite: HORT 710.

Typically Offered
Spring-Odd Years

HORT 940 - Plant Regulators in Horticulture

Credits: 3

A study of synthetic plant regulators used to initiate, induce, promote, inhibit, or alter characteristics of horticultural plants and crops. Included are kinds and types of exogenous plant regulators used on crops, their activity, plant responses, benefits and problems, and application technology.

Note:
One hour lecture and two hours recitation a week.

Requisites:
Prerequisite: BIOCH 510 or BIOL 500, and one graduate plant commodity course.

Typically Offered
Fall-Even Years

HORT 951 - Horticulture Graduate Seminar

Credits: 1

Student presentations and discussion of investigational works in the various disciplines of Horticulture and Natural Resources.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring

HORT 960 - Environmental Plant Stress

Credits: 3

Physiological, biochemical and morphological factors involved in stress development and resistance will be discussed.

Requisites:
Prerequisite:

Typically Offered
Fall-Odd Years

HORT 970 - Topics in Horticultural Therapy

Credits: 0-18

Discussion and lectures on important papers and contributions in horticultural therapy.

Requisites:
Prerequisite: Permission of instructor.

Typically Offered
Fall, Spring, Summer

HORT 999 - Research in Horticulture, PhD

Credits: 1-18

Investigations in pomology, olericulture, floriculture, ornamental horticulture, and turfgrass. Data collected may form basis for a thesis or dissertation.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

IARC 210 - Introduction to Digital Applications

Credits: 1

This course introduces basic design software skills in development of both 3D digital models and 2D graphics renderings and diagramming. Additionally, this course introduces best practices with regard to basic computer skills (ie, assembly, file management, etc.).

Requisites:
Prerequisite: Admission to the professional program in interior architecture.

Corequisite: IARC 320.

Typically Offered
Spring

IARC 248 - Fundamentals of Architectural Technology

Credits: 3

Instruction in the fundamentals of architectural technology with emphasis on the concepts and principles necessary for

developing an integrated approach to building design.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: PHYS 115 or PHYS 113 and admission to a professional program in the college.

Typically Offered
Fall, Spring

Crosslisted:
ARCH 248

IARC 300 - Design and Material Culture

Credits: 3

People's personal characteristics or social position can be expressed by the products they purchase, the possessions they own, and the physical environments they create. Design has become a major factor influencing one's final decision for purchasing these products. This course examines material culture which is created from the influences of human behavior, design, history, marketing, economics, politics, geography, the arts, and sociology.

Typically Offered
Fall, Spring

IARC 307 - IARC & INDD Design Studio I

Credits: 5

Introduction to the Interior Architecture and Industrial Design process. Generation of design concept and design alternatives for small-scale projects. Introduction to basic design theory, beginning design research, human scale, behavior, ergonomics and anthropometrics as they affect design decisions. Introduction of structure and environmental analysis as informants and determinants of design. Focus on multiple graphic representations and compositions, including diagramming, sketching, freehand drawing, and enhancing through digital means.

Requisites:
Prerequisite: Admission to the professional program in interior architecture.

Typically Offered
Fall, Spring, Summer

IARC 310 - IARC Digital Applications

Credits: 2

This course addresses current digital media as it is used by the profession to draft and visualize design projects. Survey a wide variety of contemporary design and visualization software. The intention is not mastery of any single software but instead to form an understanding of the interface and use of the tools and when they are appropriate. Enable the thoughtful discussion and understanding of design representation and process in both drafting and visualization. Enable and empower the student to comfortably engage design software as they continue to evolve.

Requisites:
Prerequisite: Admission to the professional program in interior architecture.

Typically Offered
Fall, Summer

IARC 320 - IARC Design Studio II

Credits: 5

This studio introduces the principles of design, design terminology, and the values of a human centered design philosophy for the interior environment. Significant emphasis will be on the theoretical underpinnings of project ideation and development; and formal design processes and decision-making. Oral, graphic and visual communication skills and model making techniques will also be stressed to assist students in representing their design ideas.

Requisites:
Prerequisite: IARC 307; no grade lower than a C in any interior architecture and product design studio course.

Typically Offered
Fall, Spring, Summer

IARC 391 - Topics in Contemporary Design Seminar

Credits: 3

Seminar on current interior architecture, industrial design, and furniture design that illustrate principles and practical concerns that motivate design with readings, class discussion, student presentations, research papers or projects.

Requisites:
Prerequisite: Open to non-majors accepted in the College of Architecture, Planning and Design; third-year standing.

Typically Offered
Fall, Spring

IARC 406 - Problems in IARC

Credits: 1-18

Study of specific interior architectural problems under direct supervision of a member of the department.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: ENVD 201.

Typically Offered
Fall, Spring, Summer

IARC 407 - Design Workshop I

Credits: 3

An introduction to shop procedures, equipment, design materials, joinery, and elementary design experiences in turning and shaping various materials. The course also includes identification and application of specific interior finishes and provides the student the opportunity through a series of small projects to be exposed to the total creative design process by researching, designing, constructing, and evaluating finished products.

Requisites:
Prerequisite: IARC 435 or INDD 435.
Corequisite: IARC 412.

Typically Offered
Fall, Spring, Summer

IARC 409 - Materials and Finishes

Credits: 3

Introduction to materials, textiles, and finishes specific to interior applications. Criteria for evaluation, selection, and application of interior materials and finishes with the building fabric and their impact on building design. Preparation of written and graphic communications to illustrate and direct the construction process.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: Admission to the professional program in interior architecture.

Typically Offered
Fall, Spring, Summer

IARC 410 - Interior Architecture Digital Applications

Credits: 3

Introduction to software and digital means to investigate, visualize, model, and represent design.

Note:
Six contact hours per week.

Requisites:
Prerequisite: IARC 307 and admission to the professional program in interior architecture.

Typically Offered
Fall, Spring, Summer

IARC 411 - Drawing in Black and White

Credits: 3

Freehand representational drawing of architectonic space using graphite pencil and ink pen. Emphasis is on the development of the visual perception of space and the communication of the perceived space through drawings that are clear and expressive.

Requisites:
Prerequisite: Third-year standing.

Typically Offered
Fall, Spring, Summer

IARC 412 - Design Workshop I Studio

Credits: 1

Exploration of design alternatives; process, presentation and construction graphics communicating design.

Requisites:
Corequisite: IARC 407.

Typically Offered
Fall, Spring, Summer

IARC 416 - History of Furniture

Credits: 3

Exploration of furniture history from prehistory to the present. Focus on socio-cultural, architectural, technological, material culture, manufacturing, spiritual, aesthetic, sustainable factors over the human timeline.

Requisites:
Prerequisite: IARC 320 or INDD 320.

Typically Offered
Fall, Spring, Summer

IARC 420 - Theory of Furniture Design

Credits: 2

Analysis, materials, and construction techniques from the early American period through the contemporary movement, with a focus on contemporary furniture design from the 1960's to the present.

Requisites:
Prerequisite: Admission to the professional program in architecture, interior architecture, or landscape architecture.

Typically Offered
Spring

IARC 430 - Visual Communication I

Credits: 2

Seeks to provide a basic understanding of design visualization and presentation in both traditional and digital applications. A two and three-dimensional sensitivity is developed through a series of projects and lectures utilizing the principles of proportion, scale, hierarchy, balance, movement, line, plane, volume, texture, color and an introduction of vector and raster graphics software.

Requisites:
Prerequisite: ENVD 202.

Typically Offered
Fall, Spring, Summer

IARC 431 - Visual Communications II

Credits: 2

Provides an advanced understanding of design visualization and presentation. Introduces a variety of 3D modeling and rendering software commonly used in the Industrial and Product Design field. Explores digital form development, materials representation, perceptual education and visual communication.

Requisites:
Prerequisite: IARC 430

Typically Offered
Spring

IARC 435 - IARC Design Studio III

Credits: 5

This studio builds on the knowledge and skills developed in IARC 320. It provides an in-depth understanding of the design methodologies and principles of interior architecture enhanced with an introduction to evidence-based design through the principles of environment-behavior, review and analysis of historic precedents, user needs, and the impact of shapes and forms, materials, lighting and color.

Requisites:
Prerequisite: IARC 320, no grade lower than a C in any interior architecture studio course.

Typically Offered
Fall, Spring, Summer

IARC 440 - IARC Design Studio IV

Credits: 5

This course will build upon and extend the knowledge and skill base gained by students in previous studios, and will include the introduction of programming methodology and its relationship to the design and organization of interior space. Emphasis will be placed on an understanding of how human behavior affects the designed environment, including the elements and objects that shape it such as the appropriate selection of furniture, finishes, fixtures, and equipment within the context of their relationships to form, function, task and users' needs.

Requisites:
Prerequisite: IARC 435, no grade lower than a C in any interior architecture and industrial design studio course.

Typically Offered
Fall, Spring, Summer

IARC 520 - Design Graphics Workshop

Credits: 3

A course in the use of colored pencils, to render and present form and space using different techniques. Emphasis on the visual perception and composition of elements in design drawings and presentation.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring, Summer

IARC 602 - Design Workshop II

Credits: 3

Design Workshop II is intended to further develop the student's understanding of the three-dimensional design process through research, design, prototype construction, evaluation, and redesign. Enhance and increase the student's understanding of the structural characteristics of materials.

Requisites:
Prerequisite: IARC 407, IARC 412, and no grade lower than a C in any IARC or INDD studio course.

Corequisite: IARC 603.

Typically Offered
Fall, Spring, Summer

IARC 603 - Design Workshop II Studio

Credits: 1

Studio component of Design Workshop II. Exploration of design alternatives; process, presentation and construction graphics, students increase their proficiency at communicating ideas through working and presentation drawings for projects to be created in IARC 802: Design Workshop II.

Typically Offered
Prerequisite: IARC 412, IARC 407 and no grade lower than a C in any IARC or INDD studio course.

Corequisite: IARC 602.

IARC 605 - Problems in IARC

Credits: 1-18

Study of specific problems related to interior architecture, industrial design, or furniture design.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

IARC 606 - IARC Design Studio VI

Credits: 5

This semester of study provides an option for an interdisciplinary collaborative studio course oriented towards replicating the learning experience and interactive activities that takes place in the modern multidisciplinary professional office or a validated equivalent studio completed in an approved study program.

Requisites:
Prerequisite: ARCH 433, IARC 801 and no grade lower than a C in any interior architecture studio course.

Typically Offered
Spring

IARC 610 - Advanced Digital Applications and Fabrications

Credits: 3

Exploration of advanced representation and fabrication techniques for the design professions.

Typically Offered
Fall, Spring, Summer

IARC 625 - Lighting

Credits: 3

An examination of design and technical issues related to luminous environments in building interiors. Topics include color and light, vision, light sources, luminaire selection and design, and the evaluation of lighting solutions.

Requisites:
Prerequisite: IARC 435 or INDD 435.

Typically Offered
Fall, Spring, Summer

IARC 628 - Building Construction Systems IA

Credits: 3

A technical capstone course that explores the development of construction documentation for interior architecture projects includes demolition, partition, and reflected ceiling plans, power & communications plans, finish and furnishings plans, interior elevations, sections, details and schedules. Understanding of the mechanical, electrical, plumbing and structural systems, as well as building and life-safety codes, and the Americans with Disabilities Act will be demonstrated through completion of the set of drawings.

Requisites:
Prerequisite: IARC 435.

Typically Offered
Fall, Spring, Summer

IARC 644 - Internship

Credits: 9

Fifteen week internship in a professional environment with a focus on interior architecture, product/industrial design and/or furniture design: office and field experience.

Requisites:
Prerequisite: IARC 440 or INDD 440. Corequisite: IARC 645.

Typically Offered
Fall, Spring

IARC 645 - Internship Report

Credits: 5

Development of the student's analysis, observation and communication skills in relationship to the professional office and field environment. Detailed documentation, online and on-campus, of the experiences encountered during internship, allowing classmates to learn from their peer's varied experiences as well as provide a detailed documentation of the student's work during internship.

Requisites:
Corequisiste: IARC 644.

Typically Offered
Fall, Spring

IARC 664 - Summer Internship

Credits: 6

Ten week internship in a professional environment with a focus on interior architecture, industrial/product design and/or furniture design: office and field experience.

Requisites:
Prerequisite: IARC 440 or INDD 440 and IARC 628 and no grade lower than a C in any IARC or INDD studio course.

Corequisite: IARC 665.

Typically Offered
Summer

IARC 665 - Summer Internship Report

Credits: 1

Development of the student's analysis, observation and communication skills in relationship to the professional office and field environment. Detailed documentation, online and on-campus, of the experiences encountered during internship, allowing classmates to learn from their peer's varied experiences as well as provide a detailed documentation of the student's work during internship.

Requisites:
Corequisite: IARC 664.

Typically Offered
Summer

IARC 668 - Study Abroad Experience

Credits: 1-18

Courses taken from a university in an approved foreign studies program.

Repeat for Credit
Repeatable. May be repeated for credit.

Typically Offered
Summer

IARC 680 - Production Furniture for the Contract Market Research

Credits: 1

Introduction and implementation of market research; client end-user research; manufacturing implications; BIFMA and other testing requirements; and, competitive market analysis and implications to develop a complete "design brief" for a line of contract furniture within a major manufacturer's existing line.

Typically Offered
Fall

IARC 681 - Production Furniture for the Contract Market Design

Credits: 2

This course builds upon the knowledge gained and the design brief developed in IARC 680, Production Furniture for the Contract Market Research and develops the designers' understanding of intersecting forces affecting the design of a line of furniture, from conception to final production. Students work in teams with a manufacturer in the design and development of a line/family of products-expectations of design, prototyping, royalties and licensing-as well as the manufacturing processes and knowledge of effectively specifying furnishings.

Requisites:
Prerequisite: IARC 680.

Typically Offered
Spring

IARC 710 - Advanced 3-D Computer Modeling

Credits: 3

Lighting, materials, animation, advanced modeling techniques, sound, and storyboarding are methodologies required to successfully build a digital presentation for projection in a two dimensional, or 3-dimensional environment using the vision domes. Projects that utilize these topics will include an introduction to 3D modeling, animation, sound, titling, lighting, and a material editor.

Requisites:
Prerequisite: IARC 410.

Typically Offered
Fall

IARC 753 - Professional Practice: Professional Responsibility

Credits: 1

Interdisciplinary course addresses the connections between allied design professions and the larger community. It helps students to understand and appreciate their professional legal and ethical responsibilities.

Typically Offered
Fall, Spring

IARC 754 - Professional Practice: Office Practices

Credits: 1

Interdisciplinary course addresses practice-based issues concerning professional relationships in the design and delivery process, management of projects, communication practices, and fiscal concerns.

Typically Offered
Fall, Spring

IARC 755 - Professional Practice: Discipline-Specific Topics

Credits: 1

Covers discipline-specific concerns, focusing on issues specific to architecture, interior architecture and product design, landscape architecture or regional and community planning.

Typically Offered
Fall, Spring

IARC 760 - IARC Seminar

Credits: 0-18

Readings and discussion of contemporary thought and movements within the field of interior architecture and product design with special emphasis on the societal factors that produce and effect change.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring

IARC 801 - IARC Design Studio V

Credits: 5

This semester of study provides an option for an interdisciplinary collaborative studio course oriented towards replicating the learning experience and interactive activities that take place in the modern multi-disciplinary professional office.

Requisites:
Prerequisite: IARC 440 and no grade lower than a C in any IARC studio course.

Typically Offered
Fall, Spring, Summer

IARC 802 - Design Workshop II

Credits: 3

Design Workshop II is intended to further develop the student's understanding of the three dimensional design process through research, design, prototype construction, evaluation and redesign. Enhance and increase the student's understanding of the structural characteristics of materials.

Requisites:
Prerequisite: IARC 407, IARC 412 and no grade lower than a C in any IARC or INDD studio course.
Corequisite: IARC 803.

Typically Offered
Fall, Spring, Summer

IARC 803 - Design Workshop II Studio

Credits: 1

Studio component of Design Workshop II. Exploration of design alternatives, process, presentation and construction graphics, students increase their proficiency at communicating ideas through working and presentation drawings for projects to be created in IARC 802: Design Workshop II.

Requisites:
Prerequisite: IARC 407, IARC 412 and no grade lower than a C in any IARC or INDD studio course.
Corequisite: IARC 802.

Typically Offered
Fall, Spring, Summer

IARC 810 - IAPD Capstone Studio

Credits: 5

Students are to pursue design projects that encompass their previous educational experience validating their knowledge of the IARC program studies. The project will be based on extensive research and review. The project presentation will suggest unique and applicable solutions with clearly identified methodology of implementation.

Requisites:
Prerequisite: IARC 801 and IARC 811.

Typically Offered
Fall, Spring, Summer

IARC 811 - Design Research

Credits: 2

Identify evaluation criteria appropriate for design research and problem solving, analysis of literature, construction of problem statements, development and documentation of design problem proposals and reports.

Requisites:
Prerequisite: IARC 440.

Typically Offered
Fall, Spring, Summer

IARC 813 - Furniture Design Workshop Studio

Credits: 1

Studio component of IARC 814 Furniture Design Workshop. Exploration of contemporary design alternatives, students explore innovation and demonstrate knowledge through design processes and including process, presentation and construction graphics for projects to be created in IARC 814: Furniture Design Workshop.

Requisites:
Prerequisite: IARC 603.
Corequisite: IARC 814.

Typically Offered
Fall, Spring, Summer

IARC 814 - Furniture Design Workshop

Credits: 3

Design, construction and finishing of contemporary furniture and accessories.

Requisites:
Prerequisite: IARC 602.
Corequisite: IARC 813.

Typically Offered
Fall, Spring, Summer

IARC 815 - Advanced Studio Programming

Credits: 2

Research of programming methodologies culminating in a programmatic document used as the basis for the design project in IARC 822, IARC 823 or IARC 824.

Requisites:
Prerequisite: IARC 801.

Typically Offered
Fall, Summer

IARC 820 - Advanced Seminar in IA

Credits: 0-18

Advanced readings and discussions of environmental issues related to the practice of interior architecture. Readings, discussions, reports.

Typically Offered
Fall, Spring

IARC 822 - Advanced Product Design Studio

Credits: 6

Students explore projects programmed under the previous semester IARC 815 Advanced Studio Programming. Projects must be relevant in a contemporary socio-cultural, architectural and technological context; employ rigorous design research processes and methodologies; identify user and usability needs/desires; accommodate market opportunities and constraints; explore multiple conceptual solutions in a variety of hand and digital media; build and document models and prototypes; and estimate material and manufacturing costs. A book, oral and visual presentation, and display materials for exhibition of the student's work will be required at the completion of the course.

Requisites:
Prerequisite: IARC 810 and IARC 815.

Typically Offered
Fall, Spring, Summer

IARC 823 - Advanced Interior Architecture Design Studio

Credits: 6

Students explore projects programmed under the previous semester IAPD 815 Advanced Studio Programming. Projects focus on interior architecture represent a suitable design relevancy and proper academic rigor on the level of graduate design study. Design solutions must be relevant in a contemporary socio-cultural and architectural context; employ rigorous design research processes and methodologies; respond to user needs and desires; explore multiple innovative conceptual solutions in a variety of hand and digital media; and illustrate advanced knowledge and application of materiality, understanding of structural and building environmental systems' implication on interior architecture, and the selection or design of furnishings that enhance the goals for the spaces.

Requisites:
Prerequisite: IARC 810 and IARC 815.

Typically Offered
Fall, Spring, Summer

IARC 824 - Advanced Furniture Design Studio & Workshop

Credits: 6

Advanced design, construction, and finishing of contemporary furniture. Students explore projects programmed under the previous semester's Advanced Studio Programming. Projects must be relevant in a contemporary socio-cultural, architectural and technological context; employ rigorous design research processes and methodologies; identify user and usability needs/ desires; accommodate market opportunities and constraints; explore multiple conceptual solutions in a variety of hand and digital media; and demonstrate experimentation in the design of spatial components utilizing advanced construction techniques and materials through the development and documentation of models and prototypes. A book, oral and visual presentation and display materials for exhibition of the student's work will be required at the completion of the course.

Requisites:
Prerequisite: IARC 810 or INDD 810, IARC 815 or INDD 815.

Typically Offered
Fall, Spring, Summer

IARC 830 - Problems in IARC

Credits: 0-18

Study of specific interior architectural problems under direct supervision of the departmental staff.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring

IARC 831 - Facilities Management

Credits: 2

A survey of the methods of managing the physical assets of large facilities-corporate, institutional, and governmental-through a review of current literature, presentations by professionals active in the field, and case studies.

Typically Offered
Spring

IARC 853 - Professional Practice

Credits: 3

Studies of conventional and newly developing modes of professional design practice. Presented are the relationships of interior architects, architects, and landscape architects and other design professionals to users, clients, building industry, society, government, and one another.

Requisites:
Prerequisite: Fifth year standing.

Typically Offered
Spring

IARC 891 - Contemporary Design Seminar

Credits: 3

Seminar on current interior architecture, product design and furniture design that illustrate principles and practical concerns that motivate design with readings, class discussion, student presentations, research papers or projects.

Note:
Open to non-majors accepted in the College of Architecture, Planning and Design.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring, Summer

ID 500 - Intermediate Interior Design Studio

Credits: 3

Problem-solving in interior design. May substitute for Interior Design studio IDH 445, IDH 545, or IDH 645. Students should plan to substitute this course for the next level studio in sequence.

Requisites:
Prerequisite: ID 315, ID 345, ID 435, and admitted to the Interior Design major.

Typically Offered
Summer

ID 530 - Interior Design Practices and Procedures

Credits: 3

Ethics, business procedures, and professional development; contract services and administration; and preparation for job market entry as applied to the practice of interior design.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ID 425 with a "C" or better and admission to the Interior Design program.

Typically Offered
Spring

ID 545 - Interior Design Studio 7

Credits: 4

Application of design theory to create solutions for complex, large-scale interior spaces. Projects require implementation of all phases of the design process. Students will gain greater understanding of the interior designerÆs responsibilities within the context of the design professions.

Note:
Eight hours studio per week.

Requisites:
Prerequisite: ID 445 and ID 530 with a C or better.

Typically Offered
Fall

ID 599 - Interior Design Internship

Credits: 3-4

Supervised off-campus professional experience in appropriate design-related firms, government agencies, or the housing industry.

Requisites:
Prerequisite: ID 445 and ID 530 with a "C" or better and admission to the Interior Design program and a 2.2 cumulative GPA and 2.5 GPA in professional areas.

Typically Offered
Fall, Spring, Summer

ID 600 - Interior Design Study Tour

Credits: 1-3

Supervised off-campus tour to acquaint the student with rich artistic and cultural locations around the world and expand student's global perspectives of the design profession. Lectures and tours target important interior/architectural design and furniture collections.

Repeat for Credit
Repeatable for a maximum of nine hours.

Requisites:
Prerequisite: Instructor's permission.

Typically Offered
Fall, Spring, Summer

ID 630 - Topics in Advanced Interior Design Theory

Credits: 3

An examination of contemporary social and cultural influences on design theory and applications within the interior design profession.

Requisites:
Prerequisite: ID 345 with a "C" or better.

Typically Offered
Fall or Spring

ID 645 - Interior Design Studio 8

Credits: 4

Application of design theory to create solutions for complex, large-scale interior spaces. Projects will conform to professional standards regarding design process, protection of health, safety, and welfare, and construction methods.

Note:
Eight hours studio per week.

Requisites:
Prerequisite: ID 445 and ID 530 with a C or better.

Typically Offered
Spring

ID 650 - Advanced Design and Behavior in the Interior Environment

Credits: 3

The design of interior environments explored in an ecological, behavioral, and cultural context.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: ID 345 or consent of instructor.

Typically Offered
Other

ID 651 - Design for Supportive Environments

Credits: 3

Analysis of the age and ability related needs and challenges faced by children, older adults, and persons with disabilities. Team approaches to providing living and work environments that accommodate both universal and special human needs.

Note:
Two hours lecture Two hours studio/recitation per week.

Requisites:
Prerequisite: ID 345 with a "C" or better.

Typically Offered
Fall

ID 660 - Advanced Kitchen and Bath Design

Credits: 3

Functional and research basis for planning and arranging based on activity analysis, equipment, materials, lighting, and ventilation.

Note:
Two hours lecture and two hours lab per week.

Requisites:
Prerequisite: ID 345 and ID 435 with a "C" or better and admission to the Interior Design Program.

Typically Offered
Spring

ID 680 - Historic Fabric Design

Credits: 3

Interrelationships of fabric design and social, cultural, political, economic, and geographical environments from prehistoric times to present.

Requisites:
Prerequisite: HIST 101; and AT 260; or AT 265 and AT 266.

Typically Offered
Fall

ID 710 - Housing and Facilities Management Processes/Applications

Credits: 3

Application of theories, principles, and practices used in managing physical facilities and the residents or workers they house. Issues and problems encountered by professional managers in providing quality living or working environments within cost-effective operations.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: ID 410, MANGT 420 or MANGT 720, and consent of instructor.

Typically Offered
Spring

ID 725 - Community Housing Assessment

Credits: 3

Developing local and regional housing needs assessments and strategies to meet the challenges faced by lower-income people and racial and ethnic minorities. Analysis of current housing and community development programs and public-private partnerships for affordable housing.

Note:
Three hour seminar.

Requisites:
Prerequisite: ID 410 or instructor consent.

Typically Offered
Fall

ID 760 - Historic Preservation and Restoration of Interiors

Credits: 3

Principles, guidelines, and qualities of preservation and restoration of interiors. Research and application.

Requisites:
Prerequisite: ID 320 and ID 360; or ENVD 250 and ENVD 251.

Typically Offered
Other

ID 800 - Interior Design Studio VI

Credits: 3

Advanced studio experiences in residential interior environments.

Repeat for Credit
Repeatable for a maximum of six hours and only six hours may be applied toward graduate degree.

Requisites:
Prerequisite: ID 545 or ID 645; and ID 651 or concurrent enrollment, or ID 760 or concurrent enrollment

Typically Offered
Fall, Spring, Summer

ID 825 - Social Effects of the Housing Environment

Credits: 3

A critical analysis of the literature on the social influences on the family and the individual attributable to the nature of the housing and neighborhood environment. Alternative physical determinist and socio-cultural interpretations are developed.

Requisites:
Prerequisite: ID 410 and STAT 702 or STAT 703.

Typically Offered
Spring

ID 840 - Experimental Methods in Household Equipment

Credits: 2

Philosophy of household equipment evaluation and experimentation; emphasis upon instrumentation, selection of variables, and data analysis.

Requisites:
Prerequisite: A course in statistics and ID 740.

Typically Offered
Other

ID 870 - Problems in Interior Design and Housing

Credits: 0-18

Independent study in interior design and housing.

Requisites:
Prerequisite: Six hours of credit basic to field.

Typically Offered
Fall, Spring, Summer

ID 875 - Practicum in Interior Design and Housing

Credits: 0-18

Preplanned and supervised off-campus experience in business, industry, museums, government agencies, or the cooperative extension service.

Requisites:
Prerequisite: Twelve hours in the field.

Typically Offered
Fall, Spring, Summer

ID 899 - Research in Interior Design and Housing

Credits: 0-18

Research which may form the basis for the master's thesis.

Requisites:
Prerequisite: AT 850; graduate standing.

Typically Offered
Fall, Spring

ID 920 - Housing Economics

Credits: 3

Analysis of economic research related to consumer and government decisions about housing, including financing, regulation, subsidy programs, energy conservation, and choice of characteristics.

Requisites:
Prerequisite: ECON 520, course in statistics, and two courses in housing, urban economics, or planning.

Typically Offered
Spring

IMSE 501 - Industrial Management

Credits: 3

Basic functions in an industrial organization and their interrelationships; management considerations involving product, process, plant, and personnel.

Note:
Three hours recitation a week.

Typically Offered
Fall, Spring

IMSE 530 - Engineering Economic Analysis

Credits: 2

The analysis of the economic aspects of engineering/industrial projects. Focus on decision making among competing alternatives, including replacement decisions. Includes: cost estimating, time-value of money and effects of depreciation and taxation. Methods of comparing alternatives are developed, including: equivalent worth, rate of return, break even analysis, and benefit-cost ratio. The course period lasts the first ten weeks of a semester.

Requisites:
Prerequisite: MATH 220.

Typically Offered
Fall, Spring

IMSE 532 - Industrial Project Evaluation

Credits: 1

The analysis and selection of engineering/industrial projects. This course is a continuation of IMSE 530. Topics in addition to IMSE 530 includes: risk/uncertainty, impact of inflation, capital rationing, multiple criteria decision making, and determining the MARR. The course period lasts the last five weeks of a semester.

Requisites:
Prerequisite: This course must be taken concurrently with IMSE 530 in the same semester.

Typically Offered
Fall, Spring

IMSE 541 - Statistical Quality Control

Credits: 3

Normal, binomial, and frequency distributions. Seven process improvement tools. Control charts on means and variances for variables and attributes. Design of experiments for process and product design. Acceptance sampling plans.

Note:
Two hours recitation and two hours laboratory a week.

Requisites:
Prerequisite: STAT 511.

Typically Offered
Fall

IMSE 555 - Industrial Facilities Layout and Design

Credits: 3

Design of industrial facilities with emphasis on manufacturing engineering and material handling.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 251 and corequisite or prerequisite: IMSE 530.

Typically Offered
Spring

IMSE 560 - Introduction to Operations Research I

Credits: 3

A study of the methods of operations research including model formulation and optimization. Topics include: linear programming, sensitivity analysis, network flows, and graph optimization.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: MATH 222 and MATH 551.

Typically Offered
Fall

IMSE 562 - Materials and the Impact of Manufacturing Processes

Credits: 3

The categorization and analysis of materials used in manufacturing is introduced. Emphasis is placed on the electronic and mechanical properties of materials along with the impact that manufacturing processes have on these properties. Through laboratory work, the students will learn how to design and conduct manufacturing experiments to measure material properties and explore the interplay between processes and properties. 3 credit hours, 2 hours lecture, 1 hour lab per week [2 lab sections]. Offered spring semesters every year.

Requisites:
Prerequisite: PHYS 214, CHE 354.

Typically Offered
Spring

IMSE 563 - Manufacturing Processes Engineering

Credits: 3

The effects of operating variables on manufacturing processes such as machining, metal forming, casting, welding, plastics, etc. Emphases are on manufacturing process theory, process variables measurement, and the technical inferences of collected data. Strength of materials, manufacturing process theory, instrumentation, computer data acquisition, and data analysis concepts are included. Laboratory testing of manufacturing processes and the engineering design of experiments for process variable measurements are used to develop efficient manufacturing processes.

Note:
Three hours recitation and two hours lab a week.

Requisites:
Prerequisite: IMSE 251, CHE 356, and CE 530.

Typically Offered
Spring-Odd Years

IMSE 564 - Product and Process Engineering

Credits: 3

A study of the interrelationships between product design and production process selection. Emphasis is on the development of economic production systems for discrete products in a competitive manufacturing environment. Concepts of design for manufacture and assembly, tool engineering, and manufacturing systems design are included.

Note:
Two hours lecture and three hours lab per week.

Requisites:
Prerequisite: IMSE 250 and IMSE 251 and IMSE 530.

Typically Offered
Fall

IMSE 580 - Manufacturing Systems Design and Analysis

Credits: 4

Comprehensive design and analysis of a manufacturing system: integration of the undergraduate industrial engineering and manufacturing engineering courses.

Note:
Two hours recitation and four hours lab a week.

Requisites:
Prerequisite or concurrent enrollment: 24 credit hours of IMSE 500 level and above courses.

Typically Offered
Spring

IMSE 591 - Senior Design Project I

Credits: 2

Students organize themselves in teams, not exceeding five students in each team. Each team is responsible to establish a client. The teams select a general subject agreeable to the client, formulate a specific design project, and gather data and resources needed to support the project.

Note:
Two hours recitation a week.

Requisites:
Prerequisite or concurrent enrollment: 24 credit hours of IMSE 500 level and above courses.

Typically Offered
Fall, Spring

IMSE 592 - Senior Design Project II

Credits: 2

Continuation of IMSE 591 in which student teams complete engineering design projects formulated and approved in IMSE 591.

Note:
Two hours recitation a week.

Requisites:
Prerequisite: IMSE 591.

Typically Offered
Fall, Spring

IMSE 602 - Topics in Industrial Engineering

Credits: 1-18

Lectures on recent topics in industrial engineering.

Typically Offered
Fall, Spring, Summer

IMSE 604 - Independent Study of Industrial Engineering

Credits: 1-18

This course involves independent study at the introductory graduate level.

Typically Offered
Fall, Spring, Summer

IMSE 605 - Advanced Industrial Management

Credits: 3

Contemporary management philosophies and their impact on engineers and engineering managers. Topics include: planning, organizing, leading, and controlling.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 501 or MANGT 420.

Typically Offered
Fall

IMSE 610 - Occupational Safety Engineering

Credits: 3

An overview of factors affecting safety in organizations, emphasizing analysis techniques and design strategies. Topics include occupational safety, accidents, fire protection, industrial hygiene, hazardous waste, toxicology, radiation safety, product liability and federal standards. A project involving a hazard analysis and the design of a solution for a field location is required.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 251.

Typically Offered
Spring-Even Years

IMSE 623 - Industrial Ergonomics

Credits: 3

Process analysis and charting; principles of motion economy and ergonomics; work stations and environments; micromotion analysis and an introduction to standard data systems.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: STAT 510.

Typically Offered
Fall

IMSE 625 - Work Environments

Credits: 3

Basic structure and performance of the human, viewed as a component in information processing and control systems. Effect of visual, auditory, toxic, and thermal environments.

Note:
Two hours recitation and two hours lab a week.

Requisites:
Prerequisite: IMSE 251.

Typically Offered
Other

IMSE 633 - Production Planning and Inventory Control

Credits: 3

Principles, techniques, and applications of production planning and inventory control. The course covers strategic planning tools such as forecasting and aggregate planning as well as tactical tools such as inventory management and scheduling.

Note:
Three hours recitation

Requisites:
Prerequisite: IMSE 250. Prerequisite or concurrent enrollment: IMSE 560.

Typically Offered
Fall

IMSE 641 - Quality Engineering

Credits: 3

An introduction to the modern practice of quality engineering concepts, systems, strategies, and tools to both manufacturing and service industries. Topics include advanced techniques related to statistical process control, international quality standards, quality data management, and automatic inspection.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: STAT 511.

Typically Offered
Spring

IMSE 643 - Industrial Simulation

Credits: 3

Basic concepts of computer simulation modeling of manufacturing, production, service and other stochastic systems. Use of a commercial simulation software environment to build, analyze, verify and validate models. Use of models as a system design tool through statistical and optimization techniques.

Note:
Three hours recitation per week.

Requisites:
Prerequisite: IMSE computer programming elective (from approved Departmental list). Prerequisite or concurrent enrollment: STAT 511, IMSE 660.

Typically Offered
Fall, Spring

IMSE 660 - Operations Research II

Credits: 3

Continuation of IMSE 560. Topics include: integer programming, nonlinear programming, Markov chains, and queuing theory.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 560 and STAT 510.

Typically Offered
Spring

IMSE 662 - Computer Aided Manufacturing

Credits: 3

Concepts in CAM, integrated control of machine tools and transport devices with production control. Concepts of CAM and automated assembly in small lot production environment.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: IMSE 251 and CIS 209, or CIS 200, or ME 400.

Typically Offered
Fall

IMSE 664 - Additive Manufacturing

Credits: 3

A study of current 3D printing or additive manufacturing technologies that convert a digital file into a physical object. Emphasis is on rapid prototyping involving materials, processes, techniques, and 3D printing machines. Capabilities and limitations of 3D printing technologies are included.

Note:
2 hours lecture 2 hours lab

Requisites:
Pre-requisite: ME 212

Typically Offered
Spring

IMSE 666 - Operations Research III

Credits: 3

A continuation of IMSE 660. Covers more advanced aspects of LP and NLP. Introduces three new topics: normative theory of decision and games, dynamic programming and Markov decision systems.

Requisites:
Prerequisite: IMSE 660, IMSE 530 (or concurrent enrollment).

Typically Offered
Spring

IMSE 680 - Quantitative Problem Solving Techniques

Credits: 3

Survey of decision making techniques. Topics covered include: Linear, Integer adn Nonlinear Programming, Network Flows and Stochastic Processes. A focus of the course will include modeling and the use of software to solve these problems.

Note:
Three hours of lecture a week.

Requisites:
Prerequisite: MATH 205.

IMSE 685 - Principles of Manufacturing Information Systems

Credits: 3

Introduction to the theory and concepts of information for manufacturing. Design of manufacturing systems such as MRP, SFRS, CAD/CAM, etc. Concerns of integration and man-machine interface in manufacturing systems.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE computer programming elective (from approved Departmental list).
Prerequisite or concurrent enrollment: IMSE 633.

Typically Offered
Spring

IMSE 710 - Transportation Logistics

Credits: 3

This course provides comprehensive coverage of logistics system design, analysis, and management, with a particular emphasis on freight transportation and supply chain systems. It introduces key challenges arising in supply chain systems, quantitative models for addressing these challenges, and methods for solving the models. Emphasis is placed on analyzing model results and communicating their implications for decision-making.

Requisites:
Prerequisite: IMSE 660, IMSE 680 or IMSE 780.

Typically Offered
Fall-Even Years

IMSE 751 - Normative Theory of Decisions and Games

Credits: 3

Bayes theorem, Bayesian estimators, utility, loss function and risk, minimax strategies, elementary game theory.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: STAT 511.

Typically Offered
Other

IMSE 752 - Multiple Criteria Decision Analysis

Credits: 3

This course covers decision processes for problems involving multiple conflicting criteria, including individual and group decision making. Multiple approaches, including value function methods, goal/aspiration methods, and outranking methods, are considered.

Requisites:
Prerequisite: IMSE 560

Typically Offered
Spring-Even Years

IMSE 760 - Stochastic Calculus Financial Engineering

Credits: 3

This course will serve as an introduction to the basic concepts and computing techniques of financial engineering and its real-life applications. These basics can be applied in many other aspects of Industrial Engineering used throughout stochastic processes, probability theory, system simulation, portfolio/risk management, and supply chain optimization.

Requisites:
Prerequisite: IMSE 530; IMSE 660; and CIS 209, or CIS 200, or ME 400.

Typically Offered
Fall

IMSE 780 - Methods of Operations Research

Credits: 3

This course is intended to give an overview of OR at the graduate level. After this course, the student will have the general basic knowledge in OR and a better idea about the usefulness and interrelationships of the various subjects in O.R. Topics to be covered include the various optimization techniques, stochastic processes and optimization, and the various approaches in the treatment of uncertainty.

Note:
Three hours recitation per week.

Requisites:
Prerequisite: MATH 560 and STAT 510.

Typically Offered
Spring

IMSE 785 - Big Data Analytics

Credits: 3

Topics include big data management, data architecture of hosting big data, big data retrieval languages, parallel computing methods, big data analytical methods, and data visualization.

Requisites:
Prerequisite: CIS 209; STAT 510 or STAT 350.

Typically Offered
Other

IMSE 802 - Advanced Topics in Industrial Engineering

Credits: 1-18

Lectures on recent advanced topics in industrial engineering.

Typically Offered
Fall, Spring, Summer

IMSE 804 - Advanced Independent Study in Industrial Engineering

Credits: 1-18

This course involves independent study of recent advanced topics in industrial engineering.

Typically Offered
Fall, Spring, Summer

IMSE 805 - Management of Research and Engineering

Credits: 3

Engineering administration; organization factors in decision-making.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: IMSE 501 or MANGT 420.

Typically Offered
Fall

IMSE 806 - Engineering Project Management

Credits: 3

Planning, scheduling, and controlling engineering projects. Includes determination of appropriate project team, cost/benefit analysis, PERT and CPM scheduling techniques, reporting, and use of computerized project management tools.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 530 and IMSE 501 or MANGT 420.

Typically Offered
Spring

IMSE 808 - Systems Engineering Fundamentals

Credits: 3

Systems engineering is an interdisciplinary engineering management process used to develop an integrated, life-cycle balanced set of system solutions that satisfy customer needs. This course provides the fundamentals of a systems engineering approach to solving complex engineering systems problems. This course will address systems engineering processes and tools as they relate to the development and life cycle management of complex systems. Topics included in the course are analyzing customer's needs, requirements development, systems design, development and integration, developing technical performance measures, system verification and managing cost, schedule, and risk in engineering tasks. This course will also introduce reliability, availability and maintainability concepts and their applicability with complex systems. This course is applicable to all engineering disciplines involved with complex engineering systems.

Requisites:
Prerequisite: 9 graduate credits from any engineering discipline, B.S. Engineering or Computer Science degree.

Typically Offered
On sufficient demand

IMSE 810 - Industrial Logistics Engineering

Credits: 3

The course provides comprehensive coverage of supply chain logistics components and system issues, including control of the movement of goods and information, coordination of supply and demand in creation and maximization of time and place utility. Emphasis is given to integrating workflow modeling, control, and design concepts and performance evaluation of logistic activities such as transportation, inventory, warehousing, and information technology. The systems viewpoint is explored at the individual firm level and from the perspective of inter-firm relationships among participants in logistics supply chains. Recognition is also given to important

interrelationships between logistics and production, marketing, and financial management.

Note:
Three hours recitation per week.

Requisites:
Prerequisite: IMSE 660, IMSE 680 or IMSE 780.

Typically Offered
Fall-Even Years

IMSE 811 - Advanced Production and Inventory Control

Credits: 3

Analytical and mathematical methods of making decisions on production, inventories, human resources, and shipping in modern industrial plants.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: IMSE 633.

Typically Offered
Spring

IMSE 822 - Advanced Engineering Economy

Credits: 3

This course expands on the principles of the fundamental engineering economics analysis. Emphasis is placed on quantification and evaluation of risk and uncertainty factors, effects of inflation and taxes, economic consequences of estimating models, utility theory, engineering capital equipment replacement analysis and decision-tree and multi-attribute decision models.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 530, or ME 560, or CE 680.

Typically Offered
Fall

IMSE 825 - Tribology in Manufacturing

Credits: 3

An introduction to system approach to Tribology; Surface Topography; Physical, Chemical, and Geometric Nature of Surfaces; and the Mechanics of contact between surfaces. This course also investigates various theories of friction and wear; hydrodynamic; elastohydrodynamic, and boundary lubrication; frictional instabilities; rolling contact problems; and application of system methodology to tribological problems in engineering design and manufacturing.

Requisites:
Prerequisite: PHYS 214 and IMSE 563.

Typically Offered
On sufficient demand

IMSE 830 - Applied Fuzzy Set Theory

Credits: 3

The emphasis will be on applicational aspects. Topics covered are elementary fuzzy set theory, fuzzy measure, possibility theory, fuzzy linear programming and other fuzzy optimization techniques, fuzzy linguistics and expert systems, fuzzy production and inventory control, and fuzzy operations research models.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: STAT 510.

Typically Offered
Fall

IMSE 841 - Advanced Topics in Quality Engineering

Credits: 3

A survey of current advances in quality engineering. Includes both off-line and on-line quality engineering.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: STAT 704, STAT 705; IMSE 641 and CIS 209, or CIS 200, or ME 400.

Typically Offered
Fall-Odd Years

IMSE 842 - Reliability Theory

Credits: 3

The mathematics of reliability theory. The hazard function. Calculation of failure density and mean life for series, parallel systems, and various types of standby systems. Hypotheses tests on mean life. Life testing with censoring.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: STAT 511.

Typically Offered
Fall

IMSE 850 - Ergonomics (Human Factors) Engineering

Credits: 3

The design and analysis of applied experimental research on human behavior as applied to engineering systems. An experimental project.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: STAT 702 or STAT 703.

Typically Offered
Fall

IMSE 865 - Simulation of Industrial Management Systems

Credits: 3

Simulating industrial management systems on computers utilizing Monte Carlo techniques and simulation languages. Numerical methods related to simulation.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: IMSE 643.

Typically Offered
Spring

IMSE 866 - Applied Stochastic Processes

Credits: 3

Survey of stochastic processes. Topics covered include: discrete and continuous Markov chains, random walks, queuing theory and renewal theory.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: STAT 510.

Typically Offered
Summer-Even Years

IMSE 867 - Stochastic Programming

Credits: 3

Stochastic programming (SP) aims to determine optimal solutions in the presence of data uncertainty. The course covers two-stage stochastic linear programming, recourse, chance constraint optimization, multi-stage SP, stochastic integer programming, Benders decomposition, L-shaped method, heuristics, simulation-based (Monte Carlo simulation) methods, and bounds on optimal solutions. Numerous applications exist, and examples may be taken from agriculture planning, manufacturing, supply chain, reliability, cyber security, power grids or other systems.

Requisites:
IMSE 560 and STAT 510 or equivalent

Typically Offered
Fall

IMSE 868 - Manufacturing Processes for Semiconductor Materials and Devices

Credits: 3

Research topics on manufacturing processes for semiconductor materials and devices. Processes covered include; crystal growing, slicing, edge profiling, lapping, wafer grinding, wet etching, polishing, cleaning, oxidation, lithography, dry etching, diffusion, metallization, CMP

(Chemical-Mechanical Planarization), backside thinning, dicing, bonding, packaging, final testing.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 250 and IMSE 563.

Typically Offered
On sufficient demand

IMSE 871 - Advanced Topics in Computer Integrated Manufacturing

Credits: 3

Modern issues of computerized manufacturing considering both hardware and software approaches and methods. Advanced concepts in intelligent machine programming and applications, group technology, computer aided process planning, and scheduling will be discussed. Research issues will be presented.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 633, IMSE 662 or equivalents.

Typically Offered
Spring

IMSE 872 - Industrial Forecasting Techniques and Applications

Credits: 3

The problems of model construction for industrial forecasting. The application of least squares, regression, exponential smoothing, and adaptive fitting will be studied in solving industrial engineering problems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: STAT 511 or STAT 705.

Typically Offered
Fall

IMSE 873 - Industrial Systems Analysis

Credits: 1-18

Analysis and synthesis of automatic control systems with application to machines and processes and industrial management systems. A study of optimal control, stability, and sensibility of industrial management systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: Consent of instructor and IMSE 660.

Typically Offered
Spring

IMSE 881 - Linear Programming

Credits: 3

Development of the theory of linear programming and related topics including simplex methods, duality theory, integer programming, transportation methods, and stochastic linear programming. Application to industrial problems and the use of computer solutions are emphasized.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: IMSE 560.

Typically Offered
Fall-Odd Years

IMSE 882 - Network Flows and Graph Theory

Credits: 3

Survey of topics from Network Flows and Graph Theory with an emphasis on algorithmic analysis. The topics covered include: Complexity Analysis, Shortest Paths, Maximum Flows, Network Simplex, Minimum Spanning Trees, Matching, Planar Graphs, Colorings, Perfect Graphs and Heuristics.

Note:
Three hours lecture a week.

Typically Offered
Spring-Odd Years

IMSE 884 - Integer Programming and Combinatorial Optimization

Credits: 3

Solution techniques to optimization problems invloving integer variables. The topics covered include: single-and multiple-branching, implicit enumeration, polyhedral theory and cutting planes, mixed integer programs, unimodular matrices and matroids.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 660.

Typically Offered
Spring-Even Years

IMSE 885 - Advanced Manufacturing Information Systems

Credits: 3

Survey of topics in Computer Integrated Manufacturing. Issues such as the Manufacturing Automation Protocol (MAP), representation of solids in CAD, storage and retrieval of such information are considered.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: IMSE 685 or equivalent.

Typically Offered
Fall

IMSE 888 - Research Methods in Industrial Engineering

Credits: 3

This course will provide students with effective methods to perform literature reviews, survey current solution methodologies, develop and evaluate research and present research results.

Requisites:
Prerequisite or concurrent enrollment: at least one of IMSE 780, IMSE 641, or IMSE 811.

Typically Offered
Spring

IMSE 889 - Applied Methods in Industrial Engineering

Credits: 1

This class requires students to have at least 6 weeks of full-time work experience in a job related to Industrial Engineering.

Note:
This course can be taken only once by a graduate student.

Requisites:
Prerequisite: Approval of major professor and department head.

Typically Offered
Summer

IMSE 890 - Applied Methods in Industrial Engineering II

Credits: 2

This class requires students to have at least 12 weeks of full-time work experience in a job related to Industrial Engineering.

Note:
This course can be taken only once by a graduate student.

Requisites:
Prerequisite: Approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

IMSE 892 - Graduate Seminar in Industrial Engineering

Credits: 0

Presentation and discussion of topics of contemporary interest in industrial or manufacturing engineering. M.S. and Ph.D. candidates make one presentation.

Note:
One one-hour seminar meeting a week.

Typically Offered
Fall, Spring

IMSE 898 - Master's Report

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

IMSE 899 - Master's Thesis

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

IMSE 971 - Industrial Queuing Processes

Credits: 3

Introduction to the queuing process and theory of queues; analysis of single and multistation queues; application to production, materials handling, inventory and maintenance systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: STAT 510.

Typically Offered
Fall, Spring

IMSE 976 - Scheduling Theory

Credits: 3

Project scheduling, assembly line balancing, shop scheduling, basic structure, measures of performance, combinatorial and statistical aspects. Various approaches to the analysis of shop scheduling.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

IMSE 980 - Advanced Topics in Manufacturing Research

Credits: 1-3

Study of topics related to recent advances in manufacturing processes and manufacturing engineering. Selected topics vary by semester according to the interests and needs of students and faculty.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

IMSE 982 - Nonlinear Programming

Credits: 3

Study of nonlinear models and their solution. Topics covered are nonlinear programming including Kuhn-Tucker theory, quadratic programming, separable programming, geometric programming, gradient and search methods, quasilinearization, and invariant imbedding.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: STAT 510.

Typically Offered
Fall, Spring

IMSE 990 - Advanced Topics in Operations Research

Credits: 1-6

Study of topics related to operations research not covered in other courses. Selected according to the interests and needs of graduate students.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

IMSE 991 - Advanced Topics in Decision Theory

Credits: 3

Decision processes for problems involving multiple conflicting criteria; multiple attribute decision making; multiple objective decision making, and group decision making under multiple criteria. Various methods/approaches for different problems are discussed.

Note:
We are concurrently introducing IMSE 752 so that the undergraduate student can take it. This 991 course will be for graduate students only.

Requisites:
Prerequisite: IMSE 751 or IMSE 752.

Typically Offered
Spring-Even Years

IMSE 999 - Dissertation Research

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

INDD 310 - INDD Digital Applications

Credits: 2

Provides an advanced understanding of digital lighting, materials, animation, advanced modeling techniques, and renders. Explores parametric design uses and applications. Investigates strategies and techniques to create products using digital tools.

Requisites:
Prerequisite: IARC 431.

Typically Offered
Fall

INDD 320 - INDD Design Studio II

Credits: 3

Basic principles of Product Design process through research, ideation, sketching, modeling, prototyping and presentation. Explores and analyzes complex social, cultural, and economical aspects of society for product design development.

Requisites:
Prerequisite: IARC 307.

Typically Offered
Spring

INDD 325 - Human Factors in Industrial Design

Credits: 3

Deals with an interdisciplinary science focusing on the interaction of human performance, capabilities, limitations and behavior with design factors in performance environments like workplaces and products with the emphasis on optimal safety, efficiency, productivity and comfort.

Requisites:
Prerequisite: INDD 456.

Typically Offered
Fall

INDD 350 - Product Semantics

Credits: 3

Explores visual and symbolic qualities of the man-made forms in the context of their use and application of this knowledge in order to understand the aspects of communication in Industrial Design. Course also focuses on the cognitive and social context of the products.

Requisites:
Prerequisite: IAPD 456

Typically Offered
Spring

INDD 435 - INDD Design Studio III

Credits: 5

Advanced principles of the Industrial Design process. Explores different theories and techniques to develop products utilizing Human Centered Design, Design Thinking, and Universal Design. Holistic thinking in regard to ethical responsibility throughout the product's Life Cycle from decisions made in manufacturing processes, material choices and human factor design.

Requisites:
Prerequisite: INDD 320.

Typically Offered
Fall

INDD 440 - INDD Design Studio IV

Credits: 5

Exposes students to a deeper understanding about user experience, user interface and form development in the Industrial Design process. Provides an advance research and analysis of design problems and opportunities, using Human Centered Design, Universal Design and Design Thinking.

Requisites:
Prerequisite: INDD 435.

Typically Offered
Spring

INDD 456 - Introduction to Product/Industrial Design

Credits: 2

Introduction to the Profession of Product/Industrial Design including history; major movements; key practitioners; socio-cultural, architectural and technological drivers; unique design/make processes and methodologies; materials and manufacturing techniques; and, contemporary issues.

Typically Offered
Fall, Spring, Summer

INDD 500 - Materials and Manufacturing Processes

Credits: 3

Seeks to provide an advanced understanding of materials and processes commonly used by Industrial Designers and manufacturers. The objective is to develop a more precise, professional and accurate approach to design while broadening the student's technical base.

Requisites:
Prerequisite: IMSE 250 and IARC 456.

Typically Offered
Spring

INDD 606 - INDD Design Studio V

Credits: 5

This semester of study provides an option for an interdisciplinary collaborative studio course oriented towards replicating the learning experience and interactive activities that take place in the modern multidisciplinary professional office or a validated equivalent studio completed in an approved study program.

Requisites:
Prerequisite: INDD 440

Typically Offered
Fall

INDD 800 - Professional Practice

Credits: 3

Studies of conventional and newly developing modes of professional design practice. Presented are the relationships of Industrial Designers to users, clients, manufacturing industry, society, government, and one another. Provides an overview of design services and principal structures for industrial designers including consultancy, in-house, freelance, and self-production.

Requisites:
Prerequisite: Fourth-year standing.

Typically Offered
Spring

INDD 801 - INDD Design Studio VI

Credits: 5

Examines the interdisciplinary and collaborative design process with the aim of different formations in accordance with entrepreneurship studies, marketing, business, and engineering, as well as research and development. Focus areas vary from interdisciplinary practices to innovative technologies.

Typically Offered
Spring

INDD 810 - INDD Capstone Studio

Credits: 5

Students are to pursue design projects that encompass their previous educational experience validating their knowledge of the INDD program studies. The project will be based on extensive research and review. The project presentation will suggest unique and applicable solutions with clearly identified methodology of implementation.

Requisites:
Prerequisite: INDD 801, INDD 811.

Typically Offered
Fall, Spring, Summer

INDD 811 - Design Research

Credits: 3

Identify evaluation criteria appropriate for design research and problem-solving; analysis of literature; construction of problem statements, development and documentation of design problem proposals and reports.

Requisites:
Prerequisite: INDD 440.

Typically Offered
Fall, Spring, Summer

INDD 815 - Advanced Studio Programming

Credits: 2

Research of programming methodologies culminating in a programmatic document used as the basis for the design project in INDD 822 or IAPD 824.

Requisites:
Prerequisite: INDD 801.

Typically Offered
Fall, Spring, Summer

INDD 822 - Advanced Industrial Design Studio

Credits: 6

Students explore projects programmed under the previous semester INDD 815: Advanced Studio Programming. Projects must be relevant in a contemporary socio-cultural, architectural and technological context; employ rigorous design research processes and methodologies; identify user and usability needs/desires; accommodate market opportunities and constraints; explore multiple conceptual solutions in a variety of hand and digital media; build and document models and prototypes; and estimate material and manufacturing costs.

Note

A book, oral and visual presentation and display materials for an exhibition of the student's work will be required at the completion of the course.

Requisites:
Prerequisite: INDD 810, INDD 815.

Typically Offered
Fall, Spring, Summer

ITAL 520 - Special Studies in Italian

Credits: 1-18

Requisites:
Prerequisite: Consent of department head and instructor involved.

Typically Offered
Other

JAPAN 599 - Special Studies in Japanese

Credits: 0-18

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of department head and instructor.

KIN 520 - Practicum in Fitness Settings

Credits: 1-3

Practical experiences in the fitness setting such as observation and participation in exercise testing and prescription, exercise leadership, and record keeping and program management.

Requisites:
Prerequisite: Instructor consent

Typically Offered
Fall, Spring, Summer

KIN 521 - Practical Experiences in Public Health Physical Activity

Credits: 1-3

Practical experiences in the public health setting, such as observation and participation in public health physical activity program planning and evaluation.

Requisites:
Prerequisite: C or better in both KIN 310 and KIN 345 and instructor consent.

Typically Offered
Fall, Spring, Summer

KIN 591 - Psychology of Exercise and Sport Injury

Credits: 3

Intersession only. Underlying effects, treatment of psychological consequences, and physical trauma of exercise and sport injury. Topics include the impact of injury on exercise behavior, the athlete at risk, behavioral risk factors, injury assessment, treament of injury, and psychological factors addressed by the sports medicine team.

Requisites:
Prerequisite: C or better in KIN 310 and KIN 345.

KIN 592 - Sport and Exercise Personality

Credits: 3

Intersession only The role of personality in sport, sport performance and exercise behavior. Theories relevant to sport and exercise peresonality will be examined to provide a theoretical framerwork for understanding and applying research. Assessment instruments and relevant research will be examined and critiqued.

Requisites:
Prerequisite: a grade of C or higher in KIN 310 and 345.

KIN 594 - Sport and Exercise Psychology

Credits: 3

This course is designed to introduce the student to the basic psychological principles related to sport and exercise behavior and performance. Factors that influence sport performance will be examined as will the principles related to exercise and exercise behavior.

Typically Offered
Spring, Summer

KIN 596 - Teaching Experience in Kinesiology

Credits: 3

This course will be a learning experience for students supporting a faculty course. Objectives include identifying and discussing learning and teaching, leading discussions, and providing assistance and direction to students in the course.

Typically Offered
Fall, Spring, Summer

KIN 597 - Research Experience in Kinesiology

Credits: 0-3

Exposure to and assisting with current research projects in a laboratory setting in Kinesiology.

Note:
Maximum of 3 hours applicable toward a degree.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of undergraduate coordinator

Typically Offered
Fall, Spring, Summer

KIN 598 - Topics in Kinesiology

Credits: 1-3

Study of a selected topic in Kinesiology involving either an in-depth study or application of theory presented in a related core course.

Repeat for Credit
Repeatable. Topics vary.

Requisites:
Prerequisite: Related core course.

Typically Offered
On sufficient demand

KIN 599 - Independent Studies in Kinesiology

Credits: 1-3

Selected topics in kinesiology. Maximum of 3 hours applicable towards a degree.

Requisites:
Prerequisite: Consent of undergraduate coordinator.

Typically Offered
Fall, Spring

KIN 600 - Interpersonal Aspects of Physical Activity

Credits: 3

Examination of theory and research related to interpersonal aspects of physical activity. Topics include: social networks, social support, social influence, cohesion and intervention strategies that target interpersonal factors to increase and maintain physical activity participation.

Requisites:
Prerequisite: Grade of C or better in KIN 310 and KIN 312; and a grade of C or better in KIN 345.

Typically Offered
Fall, Spring

KIN 601 - Cardiorespiratory Physiology

Credits: 3

An examination of the structure and function of the respiratory system and the manner in which oxygen passes from the atmosphere to its site of utilization in the mitochondria. Exercise, disease, and environmental stresses will form the basis for examining the capacity, plasticity, and limitations to respiratory function.

Requisites:
Prerequisite: A grade of C or higher in both KIN 310 and KIN 335.

Typically Offered
Spring-Odd Years

Crosslisted:
AP 601

KIN 602 - Social Structural Determinants of Physical Activity

Credits: 3

An examination of how social structural determinants impact participation in physical activity. Topics include: social class, race and ethnicity, gender, sexual orientation, family, education and work. Promising physical activity intervention strategies are also discussed.

Requisites:
Prerequisite: grade of C or better in KIN 310 or Kin 312; and a grade of C or better in KIN 345.

Typically Offered
Fall

KIN 603 - Cardiovascular Physiology

Credits: 3

Study of the structure and function of the cardiovascular system as it pertains to health and disease. Topics include the control of blood pressure, vascular volume, and blood flow during orthostasis, aging and disease.

Requisites:
Prerequisite: A grade of C or higher in both KIN 310 and KIN 335.

Typically Offered
Spring

Crosslisted:
AP 603

KIN 605 - Topics in the Biological Basis of Kinesiology

Credits: 1-3

Study of a selected topic in the biological basis of kinesiology involving either an in-depth study or application of theory presented in a related course area.

Requisites:
Prerequisite: A grade of C or higher in KIN 310 and KIN 335.

Typically Offered
On sufficient demand

KIN 606 - Topics in the Behavioral Basis of Kinesiology

Credits: 1-3

Study of a selected topic in the behavioral basis of kinesiology involving either an in-depth study or application of theory presented in a related course area.

Requisites:
Prerequisite: A grade of C or higher in KIN 310 and KIN 345.

Typically Offered
On sufficient demand

KIN 607 - Muscle Physiology

Credits: 3

Subcellular, cellular, and tissue structure of skeletal muscle and the relationship of these structural characteristics to the functioning of the muscle. Examines energy pathways available to the muscle to support the various functions, and mechanisms underlying changes in exercise tolerance that accompany exercise training and detraining, aging, and diseases that affect skeletal muscle.

Requisites:
Prerequisite: A grade of C or higher in both KIN 310 and KIN 335.

Typically Offered
Fall

KIN 609 - Environmental Physiology

Credits: 3

Study of the physiological adaptations to acute and chronic challenges imposed by the environment. Topics will focus on how different physiological systems respond to different environmental stressors (heat, cold, deep sea diving, high altitude).

Requisites:
Prerequisite: C or better in both KIN 310 and KIN 335.

Typically Offered
Spring

KIN 610 - Program Planning and Evaluation

Credits: 3

Theories and models and the stages and activities of planning, implementing, and evaluating health promotion programs.

Note:
K-State 8: Ethical Reasoning and Responsibility; Social Sciences

Requisites:
Prerequisite: grade of C or better in KIN 310 or KIN 312; and a grade of C or better in KIN 345.

Typically Offered
Fall

KIN 611 - Autonomic Neurophysiology

Credits: 3

Study of the structure and function of the autonomic nervous system primarily as it pertains to physical stress. Particular emphasis is placed on the mechanisms evoking changes in the autonomic nervous system during physical stress including feed-forward and feedback autonomic control signals. The effects of disease and exercise training on those neural control signals are discussed

Requisites:
Prerequisite: C or better in both KIN 310 and KIN 335

Typically Offered
Fall, Summer

KIN 612 - Policy, Built Environment and Physical Activity

Credits: 3

Examination of the characteristics of active living policies and neighborhood/community design that contribute to improved health.

Requisites:
Prerequisite: grade of C or better in KIN 310 or KIN 312; and a grade of C or better in KIN 345.

Typically Offered
Fall

KIN 614 - Physical Activity Behavior Settings: Youth Sport to Senior Centers

Credits: 3

The course is a study of key physical activity behavior settings across life-span development. Topics include observation of social and physical environmental variables, surveillance of physical activity in behavior settings, motivational theory and responses, setting interventions and developmental outcomes, and intervention evaluation methods.

Requisites:
Prerequisite: KIN 310 and KIN 345 with grades of C or higher.

Typically Offered
Spring

KIN 615 - Cardiorespiratory/Comparative Physiology in Health and Disease

Credits: 3

This course seeks to fulfill the following objectives: (1) To provide the student with an awareness and mechanistic understanding of the effects of physical activity on humans and animals and the concept of homeostasis. (2) Foster an understanding of the integrative nature of kinesiology/physiology by considering the relationships among different systems and their response to stress in humans and animal species in health and disease. Focus is brought to bear in particular on the pulmonary, cardiovascular and muscle systems. Chronic and acute adaptations to special environments and physical stress are considered and the students are asked to consider how the different systems are controlled in health and disease. This course is recommended for pre-med students, biology and physiology majors, aspiring scientists in physiology and/or medicine and those interested in a career in health and human services.

Requisites:
Prerequisite: C or better in both KIN 310 and KIN 335

Typically Offered
Fall, Spring, Summer

KIN 616 - Obesity and Physical Activity: Behavioral, Environment, and Policy Influences

Credits: 3

Examines the contributing factors to obesity, especially through the lens of physical activity/inactivity. Attention is paid to the environment and policy influences on behaviors that contribute to weight gain.

Requisites:
Prerequisite: grade of C or better in KIN 310 or KIN 312 and a grade of C or better in KIN 345.

Typically Offered
Fall or Spring

KIN 617 - Signaling Pathways in Physiology

Credits: 3

Current concepts of biological signaling transduction and its role in controlling genes expression and protein synthesis involved in exercise adaptation, including resistance and endurance exercise, and disease states, including cardiovascular disease and cancer. This course seeks to fulfill the following objectives: (1) To train students to understand the molecular and cellular signaling mechanisms associated with changes in skeletal and cardiac muscle mass, cardiac function, and endothelial function change in response to exercise and disease. (2) Foster an understanding of the correlation of 'macro-level' concepts like muscle hypertrophy to 'micro-level' concepts such as mTOR signaling with the goal of understanding the role cell signaling plays in mediating chronic adaptation. This course is recommended for pre-med students, pre-physical

therapy students, biology and physiology majors,and those interested in a career in health and human services. This course will cover concepts that are of emphasis of the MCAT exam.

Requisites:
Prerequisite: C or better in both KIN 310 and KIN 335; or Instructor Permission.

Typically Offered
Fall, Spring

KIN 618 - Seminar Public Health Practice

Credits: 1

Pre-practicum course of field-based observations and experiences to connect academic concepts to practice in public health culminating in a portfolio to showcase accomplishments to prospective employers and peers.

Requisites:
Prerequisite: A grade of C or higher in KIN 110.

Typically Offered
Fall, Spring

KIN 619 - Public Health Practicum

Credits: 3

Course provides students with an opportunity to synthesize, integrate, and apply practical skills, knowledge, and training learned in courses, to gain professional experience in a public health work environment, and to work on public health practice projects that are of particular interest.

Requisites:
Prerequisite: KIN 110, KIN 312, and KIN 618 with a grade of C or higher; and permission of public health-coordinator.

Typically Offered
Fall, Spring

KIN 622 - Capstone Project in Public Health

Credits: 2

Focuses on integrating public health knowledge, skills, and practice acquired during coursework and the practicum experience, and culminating in a paper and presentation demonstrating critical thinking on public health topics and further understanding in an area of public health practice. This course is typically completed in the last semester of the undergraduate public health program.

Requisites:
Prerequisites: A grade of C or higher in KIN 110; KIN 618, and KIN 619.

Typically Offered
Fall, Spring, Summer

KIN 625 - Exercise Testing and Prescription

Credits: 3

Benefits and risks of exercise testing and prescription with healthy populations, individuals at risk, and patients with cardiovascular and metabolic diseases. Includes experiences with exercise test technology and methods of exercise prescription.

Note:
Two hours recitation and two hours lab a week.

Requisites:
Prerequisite: C or better in KIN 310 and KIN 335, CPR and First Aid.

Typically Offered
Fall, Spring

KIN 635 - Nutrition and Exercise

Credits: 3

The interrelationships between diet, nutrition, and exercise. Topics covered include physical fitness, weight control, nutrient metabolism during exercise, and athletic performance.

Requisites:
Prerequisite: HN 132 or HN 400 and a grade of C or higher in KIN 310 and KIN 335.

Typically Offered
Fall

KIN 650 - Development of Motor Control

Credits: 3

A multi-level analysis of the neurophysiological activation of muscle, reflexes, sensory integration during movement, and theories of voluntary movement.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Prerequisite: C or better in both KIN 310 and either BIOL 340, KIN 360 or 8 hours of transfer anatomy and physiology.

Typically Offered
On sufficient demand

KIN 655 - Individual Physical Activity Promotion

Credits: 3

An in-depth study of individual-level influences on physical activity and strategies to promote physical activity among individuals.

Requisites:
Prerequisite: Grade of C or better in KIN 310 or KIN 312; and a grade of C or better in KIN 345.

Typically Offered
Spring

KIN 657 - Integrative Human Pathophysiology

Credits: 3

This course is designed to introduce the student to the mechanistic pathways of prominent chronic diseases (e.g., cardiovascular, respiratory, renal, cancer) and the mechanistic basis for current recommended treatments. This course will focus on the vertical integration of cardiovascular, renal, respiratory, and neural physiological pathways as they relate to pathogenesis, diagnosis, and treatment of these chronic diseases. A large emphasis will be placed on the cellular and molecular response, how they manifest in histological analysis and subsequent organ system dysfunction with the role of exercise therapy (example: cardiac/respiratory therapy) and pharmacology in mitigating these physiological changes.

Requisites:
Prerequisite: A grade of C or higher in both KIN 310 and KIN 335.

Typically Offered
Fall, Spring

KIN 792 - Health-Fitness Instructor Internship

Credits: 3-8

Supervised field experience in settings such as Hospital Wellness Centers, YMCA, YWCA, municipal recreation agency, or industrial fitness agency.

Note:
May be completed with half-time assignment for 12-16 weeks or full-time assignment for 6-8 weeks.

Requisites:
Prerequisite: Consent of instructor

Typically Offered
Fall, Spring, Summer

KIN 793 - Internship/Public Health Physical Activity

Credits: 1-8

Supervised field experience in settings such as public health departments, foundations, government offices, or research programs.

Requisites:
Prerequisite: KIN 345, KIN 346, KIN 521, KIN 655.

Typically Offered
Fall, Spring, Summer

KIN 796 - Topics in Exercise Physiology

Credits: 3

Selected topics in excercise physiology involving either greater in-depth study or application of theory presented in a related course.

Repeat for Credit
Repeatable. Topics vary. Only 6 hours may be counted toward degree.

Requisites:
Prerequisite: C or better in both KIN 310 and KIN 335 and consent of instructor.

Typically Offered

On sufficient demand

Crosslisted:
AP 796

KIN 797 - Topics in Public Health Physical Activity Behavior

Credits: 3

Selected topics in public health physical activity behavior involving either greater in-depth study or application of theory presented in a related course.

Repeat for Credit
Repeatable as topic varies. Only 6 hours may be counted toward degree.

Requisites:
Prerequisite: C or better in both KIN 310 and KIN 345 and consent of instructor.

Typically Offered
On sufficient demand

KIN 800 - Advanced Physiology of Exercise

Credits: 3

An in-depth study of the physiological responses of the human body during exercise, the adaptations that occur with exercise training, and the laboratory techniques to assess these responses and adaptations.

Requisites:
Prerequisite: KIN 335.

Typically Offered
Fall

Crosslisted:
Anatomy and Physiology See AP 800

KIN 801 - Physical Activity: Physiology to Public Health Impact

Credits: 3

This graduate seminar covers the study of physical activity and its impact on public health across levels of analysis from basic exercise physiology to social ecology.

Typically Offered
Fall

KIN 805 - Physical Activity and Human Behavior

Credits: 3

An examination of the theory and research related to the psychological antecedents and outcomes of participation in physical activity and exercise. Topics include models of exercise motivation, social cognitive theory of exercise and social ecological models of physical activity.

Requisites:
Prerequisite: KIN 655.

Typically Offered
Fall

KIN 806 - Motor Development

Credits: 3

A study of psychomotor development. The focus is on the growth years, though developmental considerations for all age groups are considered. Implications for sport, exercise, and physical activity are discussed.

Requisites:
Prerequisite: KIN 320.

Typically Offered
On sufficient demand

KIN 807 - Motor Learning and Control

Credits: 3

Application of learning principles to skill acquisition in sport and human domain; and practical applications.

Requisites:
Prerequisite: KIN 320 or 9 hours of graduate credit in psychology (500 level or above).

Typically Offered
Fall

KIN 808 - Social Epidemiology of Physical Activity

Credits: 3

An examination of the social factors that contribute to an understanding of why people participate in physical activity. Topics include the consideration of individual social and demographic factors such as gender, race, socioeconomic status, education, and social support as well as social structural factors such as the role of the social institutions (e.g. family, work and school environments).

Requisites:
Prerequisite: KIN 655.

Typically Offered
Fall

KIN 815 - Research Methods in Kinesiology

Credits: 3

A study of techniques of the research process including the identification of a research problem, the design of experimental and non-experimental strategies, and the presentation of written research.

Typically Offered
Spring

KIN 818 - Social and Behavioral Bases of Public Health

Credits: 3

The role of behavioral, social, psychological, economic, environmental, and social structural factors in both the occurrence of health problems in groups and populations, and in the development of the risk factors that contribute to these problems. Principles of health behavior change and the application of these principles to a variety of health issues as well as an emphasis on how social structural factors impact health are examined to better understand health behavior and health inequities in contemporary society.

Requisites:
Prerequisite: Graduate status in public health or kinesiology program.

Typically Offered
Fall

Crosslisted:
MPH 818

KIN 820 - Physical Activity Leadership

Credits: 3

Examination of leadership as it pertains to physical activity environments for older adults. Emphasis placed on gaining a broad understanding of the current state of leadership research and the application of a conceptual model of leadership to physical activity outcomes.

Requisites:
Prerequisite: KIN 655.

Typically Offered
Spring

KIN 822 - Advanced Muscle Physiology

Credits: 3

Course will examine current topics in muscle physiology. Format to include discussion of scientific papers, oral presentations, and debate of controversial topics.

Requisites:
Prerequisite: KIN 335 or permission of instructor

Typically Offered
Spring

KIN 824 - Physiology of Oxygen Transport

Credits: 3

This course is designed to promote critical reading of the literature, particularly with respect to the understanding of exercise physiology and cardiorespiratory, vascular and muscle energetics responses. Activities will include presenting papers, debate and discussion regarding all aspects of science and scientific philosophy.

Requisites:
Prerequisite: KIN 335 or permission of instructor

Typically Offered
Spring

KIN 825 - Mechanical Analysis of Human Movement

Credits: 3

Mechanical principles and analysis procedures for the study of overt human movement. Applications to movements in exercise, sport, occupational, and daily living activities will be emphasized.

Requisites:
Prerequisite: KIN 330.

Typically Offered
Spring

KIN 826 - Advanced Cardiovascular Physiology

Credits: 3

Discussion and critical examination of cardiovascular control mechanisms, with specific emphasis on regulation of blood pressure during severe challenges such as exercise, heat stress, and upright posture.

Requisites:
Prerequisite: KIN 335 or permission of instructor

Typically Offered
Fall

KIN 830 - Advanced Public Health Physical Activity

Credits: 3

Exploration of the social and behavioral epidemiology of physical activity in public health: outcomes, influences, and promotion in individuals, settings, and communities.

Typically Offered
Spring

KIN 835 - Group Dynamics and Physical Activity

Credits: 3

Examines the principles of group development and maintenance in physical activity environments. Topics include the nature of groups, group environment, important member attributes, group structure, group cohesion, group processes and tactics of group development.

Requisites:
Prerequisite: KIN 655.

Typically Offered
Spring

KIN 840 - Public Health Practice

Credits: 3-6

Supervised field experience in an international, state, local, or district health agency or other appropriate health agency.

Repeat for Credit
Repeatable. Only 6 hours may be applied toward the MPH degree.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

KIN 845 - Exercise Adherence

Credits: 3

Study and discussion of empirical research and theory as it relates to exercise adherence from psychological, behavioral, and public health perspectives. Topics addressed are epidemiological trends, conceptual issues of measurement, research design, statistical analysis, and interventions focusing on settings and populations.

Requisites:
Prerequisite: KIN 600 or KIN 805.

Typically Offered
Spring

KIN 851 - Topics in the Physiological Basis of Kinesiology

Credits: 1-3

Study of a selected topic in the physiological basis of kinesiology involving either an in-depth study or application of theory presented in a related course area.

Typically Offered
On sufficient demand

KIN 852 - Topics in the Behavioral Basis of Kinesiology

Credits: 1-3

Study of a selected topic in the behavioral basis of kinesiology involving either an in-depth study or application of theory presented in a related course area.

Typically Offered
On sufficient demand

KIN 855 - Exercise Psychology in Special Populations

Credits: 3

A study of the psychological determinants and outcomes of exercise participation in special populations (e.g. arthritic, obese, cardiovascular disease). Emphasis in understanding the motive underlying involvement in exercise and physical activity and the situational and personal determinants associated with failure to initiate and/or adhere to exercise and physical activity programs.

Requisites:
Prerequisite: KIN 655.

Typically Offered
Fall

KIN 890 - Graduate Seminar in Kinesiology

Credits: 1

Designed to provide students opportunities to improve oral and written communication skills and to expose them to the breadth of research topics within the Kinesiology department.

Repeat for Credit
Repeatable

Requisites:
Prerequisites: Current graduate student status (MS, PhD, MPH). Undergraduate students by instructor permission only.

Typically Offered
Fall, Spring

KIN 896 - Independent Study in Kinesiology

Credits: 1-4

Intensive independent study in a topic or problem involving the integration, application, and synthesis of theory presented in a related course. The course culminates in the preparation of an original paper.

Requisites:
Prerequisite: KIN 815 and related graduate subject core courses.

Typically Offered
Fall, Spring, Summer

KIN 897 - Research in Kinesiology

Credits: 1-4

Independent study in one or more of the research processes involved in the scientific method.

Requisites:
Prerequisite: STAT 702 or STAT 703, KIN 815, and related graduate subject core course.

Typically Offered
Fall, Spring, Summer

KIN 898 - Master's Report

Credits: 1-4

KIN 899 - Master's Thesis

Credits: 1-6

KIN 999 - Dissertation Research

Credits: 1-15

Typically Offered
Fall, Spring, Summer

LAR 010 - Travel: Regional 1

Credits: 0

Multi-day regional field trip experience. Students will study existing natural and/or built environments to develop landscape architecture knowledge base and apply findings to other courses.

Requisites:
Prerequisite: LAR 220.

Typically Offered
Spring, Summer

LAR 020 - Travel: Regional 2

Credits: 0

Multi-day field trip experience in an urban environment. Students will study notable works of landscape architecture, and visit professional offices to develop landscape architecture knowledge base and apply findings to other courses.

Requisites:
Prerequisite: LAR 010.
Corequisite: LAR 433.

Typically Offered
Spring

LAR 030 - Travel: Narratives and Placemaking

Credits: 0

Immersive field trip experience that supports the Narrative and Placemaking Studio.

Requisites:
Prerequisite: LAR 020.
Corequisites: LAR 425, LAR 430, LAR 352.

Typically Offered
Summer

LAR 040 - Travel: Major City 1

Credits: 0

Multi-day field trip experience in a major city. Students will study notable works of landscape architecture, and visit professional offices to develop landscape architecture knowledge base and apply findings to other courses.

Requisites:
Prerequisite: LAR 030.
Corequisite: LAR 442.

Typically Offered
Fall

LAR 050 - Travel: Major City 2

Credits: 0

Multi-day field trip experience in a major city. Students will study notable works of landscape architecture, and visit professional offices to develop landscape architecture knowledge base and apply findings to other courses.

Requisites:
Prerequisite: LAR 040.
Corequisite: LAR 646.

Typically Offered
Spring

LAR 101 - Introduction to Landscape Architecture

Credits: 3

Exploratory lecture course open to students in all majors providing an overview of landscape architecture which focuses on innovations in natural and built environments. Students will learn about a wide variety of global issues and perspectives, types of planning and design projects, and professional aspects of the discipline.

Typically Offered
Fall

LAR 220 - Drawing Landscapes Studio

Credits: 5

Foundational aspects of 2D analog and digital medium. Students will learn how to view, analyze, represent and design through the lens of landscape architecture.

Requisites:
Prerequisite: Admission to the LA professional program.
Corequisite: LAR 350.

Typically Offered
Fall

LAR 230 - Modeling Landscapes Studio

Credits: 5

Foundational aspects of 3D modeling using both analog and digital medium. Students will learn how to view,

analyze, represent and design through creation and fabrication of 3D models.

Requisites:
Prerequisite: LAR 220.

Typically Offered
Fall

LAR 248 - Landscape Architecture Materials and Methods

Credits: 3

To provide the student a basic understanding of materials and methods commonly utilized in the practice of landscape architecture as a basis to pursue subsequent land design and land construction course work.

Requisites:
Prerequisite: PHYS 113, PHYS 115 or PHYS 213. Prerequisite or co-requisite: LAR 520.

Typically Offered
Spring

LAR 310 - Design Graphics and Visual Thinking

Credits: 2

A study of graphic communication techniques for the exploration and presentation of landscape architecture design ideas.

Requisites:
Prerequisite: Admission to the LA professional program.

Typically Offered
Fall

LAR 311 - Unlocking Creativity

Credits: 3

Do you want to become creative? Good news, you already are! For students in all majors, this course is designed to help you access your creative potential and become more imaginative, innovative, and courageous. Learning outcomes include overcoming blocks, refining your creative process, practicing activities to enhance creativity, and effectively communicating ideas.

Typically Offered
Fall, Spring

LAR 320 - Site Design Studio II

Credits: 5

Small- to medium-scale site design studies with emphasis placed on design process, response to cultural and natural conditions, detailed articulation of space including definition and use of materials, and design communication.

Requisites:
Prerequisite: LAR 220. Prerequisite or corequisite: LAR 520.

Typically Offered
Spring

LAR 322 - Ethics and Environmental Dilemmas

Credits: 3

Introduction to environmental ethics and significant local and global dilemmas. Students will learn about how humans have impacted the environment through time and the implications of those actions, and environmental/social movements and justice.

Typically Offered
Spring

LAR 350 - Introduction to Plants

Credits: 1

Introduction to plant morphology, forms of classification, and a basic understanding of plant habitat. Students will learn to identify a palette of plants in the field and understand their application for design.

Requisites:
Corequisite: LAR 220.

Typically Offered
Fall

LAR 351 - Plant Patterns and Use

Credits: 1

Introduction to the patterns and use of plants in cultural and natural contexts. Students will identify plant palettes and communities in historical and contemporary landscapes.

Requisites:
Prerequisite: LAR 350.
Corequisite: LAR 433.

Typically Offered
Spring

LAR 352 - Landscape Performance Lab

Credits: 3

Introduction to the scientific process as well as methods for assessing landscape performance. Students will learn how to acquire, organize and analyze information using qualitative and quantitative methods.

Requisites:
Prerequisite: LAR 351, LAR 322, LAR 420.
Corequisite: LAR 030, LAR 425, LAR 430.

Typically Offered
Summer

LAR 353 - Plant Selection

Credits: 1

Selection of plants for specific site requirements. Students learn how to anticipate plant performance and identify plants to achieve design goals in associated courses.

Requisites:
Prerequisite: LAR 352.

Typically Offered
Fall

LAR 354 - Landscape Restoration

Credits: 1

Development of landscape restoration plans. Students will learn the principles, methods, and plants of ecological restoration at local and regional scales.

Requisites:
Prerequisite: LAR 353.
Corequisite: LAR 439.

Typically Offered
Spring

LAR 410 - Planting Design Studio

Credits: 5

Design studies emphasizing functional, aesthetic, and ecological uses of plants. projects emphasize design process and the relationship between plants and the built environment; elements and principles of planting design; plant selection; preparation of planting plans; specification writing; and design implementation.

Requisites:
Prerequisite: LAR 320. Prerequisite or corequisite: LAR 520, HORT 374.

Typically Offered
Fall

LAR 420 - Socio-Ecological Systems Studio

Credits: 5

Introduction to key principles of ecology as related to ecological planning and design. Students will learn how to connect theoretical knowledge of socio-ecological systems and processes to address multi-scale problems in urban and rural contexts.

Requisites:
Prerequisite: LAR 230.

Typically Offered
Fall

LAR 425 - Narratives and Placemaking Seminar

Credits: 2

Immersive exploration into fundamentals of landscape narratives, place theory and placemaking. Students will examine and engage in a variety of locations, create expressions of narrative using a variety of representational techniques, and apply knowledge gained in site design.

Requisites:
Prerequisite: LAR 420.
Corequisite: LAR 030, LAR 352.

Typically Offered
Summer

LAR 430 - Narratives and Placemaking Studio

Credits: 4

Immersive exploration into fundamentals of landscape narratives, place theory and placemaking. Students will examine and engage in a variety of locations, create expressions of narrative using a variety of representational techniques, and apply knowledge gained in site design.

Requisites:
Prerequisite: LAR 420.
Corequisite: LAR 030, LAR 352, LAR 425.

Typically Offered
Summer

LAR 433 - Landscape History and Design Studio

Credits: 5

Introduction to the history and theory of landscape architecture materials and design from the Middle Ages to the present with a focus on Europe and North America. Students will gain competency in landscape architecture vocabulary, the ability to recognize notable works and practitioners, and apply historical precedents to site design projects.

Requisites:
Prerequisite: LAR 230.
Corequisite: LAR 351.

Typically Offered
Fall

LAR 438 - Site Design Implementation

Credits: 5

Introduction to construction materials, methods, and documentation appropriate for design implementation at the site scale. Focus on producing a set of construction documents including grading, stormwater management, plants and materials.

Requisites:
Prerequisite: LAR 425, LAR 430.
Corequisite: LAR 353.

Typically Offered
Fall

LAR 439 - Master Plan Design and Implementation

Credits: 5

Design implementation at the master plan and regional scales. Focus on suitability analyses and systems supporting community services such as pedestrian and vehicular transportation, land use, hydrology and other natural systems.

Requisites:
Prerequisite: LAR 438.
Corequisite: LAR 354.

Typically Offered
Spring

LAR 442 - Site Research and Design Studio

Credits: 5

Iterative development of site plans and designs. Students will research and share precedent studies to expand knowledge base, and will apply findings to multiple design projects.

Requisites:
Prerequisite: LAR 352, LAR 425, LAR 430.
Corequisite: LAR 040.

Typically Offered
Fall

LAR 444 - Career and Academic Planning

Credits: 2

Exploration and identification of career paths and development of academic plans for reaching personal and professional goals including specific coursework, internships, study abroad and extracurricular activities.

Requisites:
Prerequisite: LAR 430.

Typically Offered
Fall

Crosslisted:
PLAN 444

LAR 445 - Career Development Communications

Credits: 1

Development of visual, written and oral communication skills for career development. Students will prepare materials for internship application, job search, or career advancement.

Requisites:
Prerequisite: LAR 444.

Typically Offered
Spring

Crosslisted:
PLAN 444

LAR 500 - Site Planning and Design

Credits: 3

Theory, principles, and elements of site planning and design. Lectures, readings, short problems, and site visits dealing with site analysis, ecological consideration, grading drainage, circulation and parking, lighting, planting design, materials and details, management and maintenance, and cost factors.

Requisites:
Prerequisite: ARCH 403 or concurrent with ARCH 403, or admission to RCP professional program.

Typically Offered
Fall, Spring

LAR 501 - Landscape Architecture Seminar I

Credits: 2

Discussion of current trends in landscape architecture and related fields by students, faculty, and invited speakers.

Typically Offered
Fall, Spring

LAR 510 - Landscape Architecture Tech Module I

Credits: 1

Introductory theory, methods, and application of technological skills and support of concurrent landscape architecture studios and courses. Emphasis is on data collection and management and mapping and analysis.

Requisites:
Prerequisite: Admission to LA professional program.

Typically Offered
Fall

LAR 520 - Landscape Architecture Tech Module II

Credits: 1

Introductory theory, methods, and application of technological skills and support of concurrent landscape architecture studios and courses. Emphasis is on CAD and 3-D modeling.

Requisites:
Prerequisite: LAR 510.

Typically Offered
Spring

LAR 530 - Landscape Architecture Tech Module III

Credits: 2

Intermediate theory, methods, and application of technological skills and support of concurrent landscape architecture studios and courses. Emphasis is on CAD and 3-D modeling and surveying.

Requisites:
Prerequisite: LAR 520.

Typically Offered
Fall

LAR 540 - Landscape Architecture Tech Module IV

Credits: 1

Intermediate theory, methods, and application of technological skills and support of concurrent landscape architecture studios and courses. Emphasis is on CAD and 3-D modeling and presentation graphics.

Requisites:
Prerequisite: LAR 530.

Typically Offered
Spring

LAR 550 - Landscape Architecture Tech Module V

Credits: 2

Advanced application of technological skills and support of concurrent landscape architecture studios and courses. Emphasis is on CAD and 3-D modeling, thematic mapping, and geoprocessing.

Requisites:
Prerequisite: LAR 540.

Typically Offered
Fall

LAR 560 - Landscape Architecture Tech Module VI

Credits: 1

Advanced project specific applications in data collection and management, CAD modeling, thematic mapping, and GIS, and presentation graphics.

Requisites:
Corequisite: LAR 705.

Typically Offered
Spring

LAR 580 - Planning and Design Intro to GIS

Credits: 2

This course will provide students with the essential background in geospatial analysis and information systems for the design and planning fields. Students will learn basics about data models and management, vector and raster analysis and cartography. Students will learn how to use these skills to develop suitability analyses to evaluate the performance of plans and designs or to identify which location would be best for a particular purpose.

Typically Offered
Fall, Spring, Summer

LAR 635 - Golf Course Planning and Design

Credits: 1-4

Fundamentals of golf course planning and design, including: history, management, design, facilities, aesthetics, and technical development.

Typically Offered
Fall, Spring, Summer

LAR 645 - Professional Internship Report

Credits: 1

Confirmed employment with a landscape architecture, architecture, planning, or engineering sponsor.

Requisites:
Prerequisite: LAR 655.

Typically Offered
Fall

LAR 646 - Community Engagement Studio

Credits: 5

Engagement with communities and stakeholders through service learning projects. Focus on engagement methods and visualization, representation and communication to general audiences. Utilizes planning and design technqiues and knowledge gained in previous semesters.

Requisites:
Prerequisite: LAR 442. Corequisite: LAR 050.

Typically Offered
Spring

LAR 647 - Design Implementation III

Credits: 5

Continuation of LAR 439 to include large scale site design, road alignment, large area grading, soils and excavation methods, storm drainage, and utilities routing.

Requisites:
Prerequisite: LAR 439.

Typically Offered
Fall

LAR 650 - Landscape Architecture Seminar II

Credits: 2

Literature review and discussion of current issues and trends in community planning and design. Readings and discussion in preparation for field trip.

Typically Offered
Summer

LAR 655 - Landscape Architecture Professional Internship

Credits: 7-9

Twenty-eight week internship with an approved landscape architecture, architecture, planning or engineering sponsor subject to the approval of the departmental faculty.

Requisites:
Prerequisite: LAR 444.

Typically Offered
Spring

LAR 700 - Project Programming

Credits: 3

Research and the development of a program directed toward the advancement of a capstone project for LAR 705 Master's Project and Report.

Requisites:
Prerequisite: LAR 725, LAR 648, LAR 750 or corequisite LAR 750.

Typically Offered
Fall

LAR 703 - Landscape Architecture Off-Campus Studio

Credits: 5

Off campus design studies fulfilled in an approved professional design office or in an approved international studies program.

Requisites:
Prerequisite: LAR 648 and LAR 647.

Typically Offered
Spring

LAR 704 - Environmental Landscape Planning and Design

Credits: 3

Introduction to and understanding of environmental planning, design and management of natural and social landscape systems beyond site scale. The course focuses on theories, techniques and processes for designing sustainable landscapes and urban environments. Students will develop a final project starting with the conceptualization, through inventory, analysis and simulation, in order to develop a final design proposal.

Requisites:
Prerequisite: LAR 580, or GEOG 508 or equivalent, or instructor permission.

Typically Offered
Fall, Spring

LAR 705 - Master's Project Studio 1

Credits: 5

In-depth exploration of a specific landscape architecture topic through research and design supervised by a major professor in accordance with Graduate School guidelines.

Requisites:
Prerequisite: LAR 648, LAR 725, LAR 750
Corequisite: LAR 897.

Typically Offered
Fall

LAR 710 - Master's Project Studio 2

Credits: 3

In-depth exploration of a specific landscape architecture topic through research and design supervised by a major professor in accordance with Graduate School guidelines.

Requisites:
Prerequisite: LAR 705

Corequisite: LAR 898

Typically Offered
Spring

LAR 720 - Public Lands and Natural Resources Law

Credits: 3

Legal aspects of land use and natural resource management on the federal public lands. A brief history of the acquisition and disposition of the public domain and a review of legal authority on the public lands are followed by an examination of key legal issues concerning the resources of water, minerals, timber, range, wildlife, recreation and wilderness.

Requisites:
Prerequisite: Advanced standing.

Typically Offered
Fall, Spring

LAR 725 - Research Methods

Credits: 3

Development of the research design process. Students will learn to employ appropriate methods and strategies to answer research questions, and to effectively and clearly communicate research-based information to peers and the public.

Typically Offered
Fall, Spring

Crosslisted:
PLAN 803

LAR 734 - Rivers: Processes & Forms

Credits: 3

This course addresses key aspects of hydrology such as precipitation and movement of water from uplands to channels. This movement, generally referred to as "runoff processes," is responsible for shaping the watershed. It then focuses upon fluvial geomorphology, the science of riverscapes, to examine processes and resultant landforms. This course teaches field observation skills and field survey procedures that allow the classification of natural rivers and streams. Finally, it previews methods of prediction and monitoring of river channel stability parameters.

Typically Offered
Fall

LAR 735 - Advanced Golf Course Planning and Design

Credits: 1-4

Advanced methods and strategies of golf course and resort planning and design.

Requisites:
Prerequisite: LAR 635.

Typically Offered
Fall, Spring, Summer

LAR 740 - Advanced Studio

Credits: 5

In-depth exploration of a specific landscape architecture topic.

Requisites:
Prerequisite: LAR 354, LAR 439, LAR 444, LAR 646.
Corequisite: LAR 750.

Typically Offered
Fall

LAR 741 - Problems in Landscape Architecture

Credits: 1-18

Specific problems and/or reports in the area of landscape architecture.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

LAR 742 - Topics in Italian Landscape Architecture

Credits: 3

Investigation of Italian culture, landscape and communities through analytical readings and/or drawings.

Typically Offered
Spring

LAR 744 - Community Planning and Design

Credits: 4

Study of the relationships between planning and design in the growth and development of cities and towns.

Note:
Two hours lecture and six hours studio a week.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Fall

LAR 745 - Professional Practice

Credits: 3

Studies of conventional and newly developing methods of professional design practice. Instruction in the relationships of architects, landscape architects, interior architects, and other professionals to users, clients, construction industry, society, government, and one another.

Typically Offered
Fall

LAR 746 - Urban Design Studio I

Credits: 4

An interdisciplinary design studio involving large-scale design; projects with extensive time implementation sequence; responses to socioeconomic, cultural, environmental, and technical needs; and implementation strategies. Design methods are applied to selected urban areas of the Midwest.

Requisites:
Prerequisite: PLAN 315 or equivalent; and concurrent enrollment in PLAN 745.

Typically Offered
Fall

LAR 750 - Advanced Seminar

Credits: 2

Studies and discussion of topics related to specialization studio.

Typically Offered
Fall

LAR 753 - Professional Practice: Professional Responsibility

Credits: 1

Interdisciplinary course addresses the connections between allied design professions and the larger community. It helps students to understand and appreciate their professional legal and ethical responsibilities.

Requisites:
Prerequisite: LAR 442.

Typically Offered
Fall, Spring

LAR 754 - Professional Practice: Office Practices

Credits: 1

Interdisciplinary course addresses practice-based issues concerning professional relationships in the design and delivery process, management of projects, communication practices, and fiscal concerns.

Requisites:
Prerequisite: LAR 442.

Typically Offered
Fall, Spring

LAR 755 - Professional Practice: Discipline-Specific Topics

Credits: 1

Covers discipline-specific concerns, focusing on issues specific to architecture, interior architecture and product design, landscape architecture or regional and community planning.

Requisites:
Prerequisite: LAR 442.

Typically Offered
Fall, Spring

LAR 756 - Design of Parks and Recreation Areas

Credits: 3

Site planning of national, state, municipal, and private parks, and specialized recreation areas.

Typically Offered
Fall

LAR 757 - Design for Special Populations

Credits: 3

Design of exterior environment to accommodate the handicapped and disadvantaged individual.

Requisites:
Prerequisite: Advanced undergraduate or graduate standing.

Typically Offered
Spring

LAR 759 - Landscape Resource Evaluation

Credits: 3

The determination of the impact of physical project design upon the natural and manmade environment. Studies of existing site conditions and projections of the effect of such projects upon the site and vicinity.

Requisites:
Prerequisite: Senior or graduate standing.

Typically Offered
Spring

LAR 806 - Portfolio Design

Credits: 3

The Portfolio Design course guides students in development of a professional portfolio of work, with the goal of producing a product that can be used for internship application, job search, or career advancement. Students explore visual thinking and visual communication with a culminating goal of producing a final portfolio.

Requisites:
Prerequisite: Graduate student standing and familiarity with Adobe Creative Suite or Creative Cloud software.

Typically Offered
Fall, Spring, Summer

LAR 811 - Unlocking Creativity

Credits: 3

Do you want to become creative? Good news, you already are! For students in all majors, this course is designed to help you access your creative potential and become more imaginative, innovative, and courageous. Learning outcomes include overcoming blocks, refining your creative process, practicing activities to enhance creativity, and effectively communicating ideas.

Typically Offered
Fall, Spring

LAR 860 - Advanced Planting Design

Credits: 1-4

Special studies in advanced planting design.

Typically Offered
Fall, Spring, Summer

LAR 870 - Advanced Landscape Architecture

Credits: 3

Special studies and design in advanced landscape architecture.

Typically Offered
Fall, Spring, Summer

LAR 880 - Advanced Landscape Architecture Construction

Credits: 1-4

Specialized study of large-scale landscape planning involving landscape construction and grading.

Requisites:
Prerequisite: LAR 439.

Typically Offered
Fall, Spring, Summer

LAR 897 - Proposal Writing

Credits: 2

Development of a master's project and report proposal.

Requisites:
Prerequisite: LAR 648, LAR 725, LAR 750.

Typically Offered
Fall, Spring

Crosslisted:
PLAN 897

LAR 898 - Master's Report

Credits: 2

Comprehensive application of research and design study through individual studies approved by the department faculty.

Requisites:
Prerequisite: LAR 700.
Corequisite: LAR 705.

Typically Offered
Spring

LAR 899 - Research in Landscape Architecture

Credits: 1-18

Investigations in landscape architecture and related areas, of such caliber as to form the basis for a graduate thesis.

Requisites:
Prerequisite: Graduate standing in landscape architecture.

Typically Offered
Fall, Spring, Summer

LEAD 502 - Independent Study in Leadership Studies

Credits: 0-3

Selected topics in leadership studies.

Requisites:
Prerequisite: Consent of department chair.

Typically Offered
Fall, Spring, Summer

LEAD 801 - Foundations of Leadership

Credits: 3

Study of the key issues in the theory, research, and application of leadership in organizations. This includes defining leadership, understanding situational characteristics that facilitate / hinder effective leadership, understanding effective / dysfunctional leadership, and gaining greater insight into one's own leadership style and functioning.

Typically Offered
Fall, Spring

LEAD 814 - Graduate Studies in Leadership Communication

Credits: 3

This course examines the intersections of community-engaged scholarship and leadership through practices of relationship, story, strategy, and action. Students are introduced to resources and opportunities for pursuing public engagement, community-engaged scholarship, and

successful program completion.

Typically Offered
Fall, Spring

Crosslisted:
AGCOM 814, COMM 814

LEAD 815 - Seminar in Leadership Communication

Credits: 1

This seminar provides doctoral students opportunities for collaboration and mentorship with peers, faculty, and visiting scholars, and exploration of career pathways in public engagement.

Typically Offered
Fall, Spring, Summer

Crosslisted:
AGCOM 815, COMM 815

LEAD 820 - Contemporary Perspectives on Leadership Theory and Practice

Credits: 3

This course is designed to build students' capacity to engage with leadership theory as critical learners. Students will explore ideas, philosophical assumptions, and practices associated with the term "leadership" as a concept through theories that have developed over time. We will also examine how the practice of leading in contemporary contexts can be understood through theories.

Typically Offered
Fall

LEAD 845 - Approaches to Public/Community Engagement

Credits: 3

The course will provide students a survey of key concepts and theoretical frameworks associated with deliberative democracy and public engagement. A specific focus will be given to how forms of community-engaged scholarship intersect course content in both theory and practice.

Typically Offered
Fall, Spring

Crosslisted:
AGCOM 845, COMM 845

LEAD 886 - Seminar in Leadership Studies

Credits: 1-3

Seminar in Leadership Studies.

Typically Offered
Fall, Spring, Summer

Crosslisted:
AGCOM 886, COMM 886

LEAD 945 - Social Science Research for Public Problem Solving

Credits: 3

The study of how social science research and social sector evaluation can be applied to address public problems, including the identification of public problems and the critique of current evaluation methods, and applying concepts by developing an evaluation including quantitative and qualitative analysis in partnership with social sector partners.

Typically Offered
Fall, Spring

Crosslisted:
AGCOM 945, COMM 945

LEAD 999 - Research in Leadership Communication

Credits: 1-15

Doctoral research demonstrates the candidate's ability to conduct significant original research related to leadership and communication, to analyze the information obtained from the research, and to present the results in a dissertation format appropriate to the field.

Typically Offered
Fall, Spring, Summer

Crosslisted:
AGCOM 999, COMM 999

LG 601 - General Phonetics

Credits: 3

Description and classification of speech sounds according to point and manner of articulation. Transcription in the International Phonetic Association alphabet. Includes sounds of English, French, Spanish, German, and others.

Typically Offered
Other

Crosslisted:
ENGL 601, LING 601

LG 602 - Historical Linguistics

Credits: 3

Internal and comparative reconstruction of earlier forms of languages. Genetic relationships in language families, and various typological considerations. Includes French, Spanish, and others.

Typically Offered
Other

Crosslisted:
ENGL 602, LING 602

LG 603 - Topics in Linguistics

Credits: 1-3

Seminar on a special topic in linguistics: decipherment of ancient writing systems, linguistics applied to the teaching of English or other languages, discourse analysis (especially of spoken texts), etc. Topic to be announced for semester in which offered.

Repeat for Credit
Repeatable. Repeatable for credit on a different topic.

Typically Offered
Other

Crosslisted:
ENGL 603, LING 603

LSHD 700 - Problems in Life Span Human Development

Credits: 1-6

Relevant topics in life span human development will be explored in a small group setting.

Typically Offered
On sufficient demand

LSHD 810 - Child Development

Credits: 3

Behavioral characteristics and developmental processes in childhood and adolescence. Analysis of developmental trends and issues in terms of research evidence and theoretical expectations.

Requisites:
Prerequisite: FSHS 310; and 3 additional hours in FSHS or child psychology.

Typically Offered
Fall, Spring

LSHD 815 - Infant Behavior and Development

Credits: 3

Study of the infant as a developing individual within the family; examination of the theories and research relevant to development from conception through the second year.

Requisites:
Prerequisite: FSHS 310, FSHS 810; and BIOL 198.

Typically Offered
Other

LSHD 820 - Theories of Human Development

Credits: 3

Theories of development relating to physical, social, and psychological patterns of individuals' growth and interaction with the family and the community.

Requisites:
Prerequisite: FSHS 310; and three additional hours in FSHS or child psychology.

Typically Offered
Fall

LSHD 822 - Transition to Adulthood

Credits: 3

Advanced study of theory, research and practice issues related to the transition period from adolescence to adulthood.

Typically Offered
Summer

LSHD 845 - Adult Development and Aging

Credits: 3

Developmental aging research as related to individual, social, and family functioning throughout adulthood.

Requisites:
Prerequisite: Twelve hours social science.

Typically Offered
Spring

LSHD 892 - Practicum in Human Development Research

Credits: 1-18

Observation, modification, and reporting of behavior.

Requisites:
Prerequisite: FSHS 890; course in methods of research; 9 other graduate hours in family studies and human services; consent of instructor.

Typically Offered
Fall, Spring, Summer

LSHD 894 - Readings in Life Span Human Development

Credits: 1-6

Implications of research findings in preparation for professional work and research in life span human development.

Requisites:
Prerequisites: Twelve hours in social-behavioral science; and consent of instructor

Typically Offered
Fall, Spring, Summer

LSHD 899 - MS Research in Life Span Human Development

Credits: 1-6

Individual research problems which may form the basis for the master's thesis or report.

Repeat for Credit
Repeatable for a maximum of 8 hours.

Requisites:
Prerequisite: Consent of major professor

Typically Offered
Fall, Spring, Summer

LSHD 930 - Human Development Seminar

Credits: 3

Analysis of the continuous and systematic changes in the development of individuals as they interact with their physical and social environments.

Repeat for Credit
Repeatable for a maximum of 12 credit hours.

Requisites:
Prerequisite: LSHD 810, LSHD 820, and LSHD 845.

MANGT 520 - Organizational Behavior

Credits: 3

An examination of human behavior in organizations to prepare individuals for their managerial careers. The course provides a framework for students to diagnose and manage issues associated with personality and individual differences, perceptions, motivation, diversity and inclusion, fairness and equity, decision making, group functioning, conflict management, culture, and leadership in organizations.

Requisites:
Prerequisite: MANGT 420 or Junior Standing.

Typically Offered
Fall, Spring

MANGT 521 - Managerial Decision Analytics

Credits: 3

Managerial decision analytics uses descriptive, predictive, and prescriptive data analytics to improve organizational decision-making processes.

Requisites:
Prerequisite: MANGT 420, MATH 205, and STAT 350.

Typically Offered
Fall, Spring

MANGT 522 - Operations Planning and Control

Credits: 3

Development of concepts and understanding of planning and control systems for allocating resources and scheduling activities in business firms. To guide and coordinate the flow of materials, labor inputs, and goods and services through physical productive systems. Topics include: aggregate planning, master production scheduling, production activity planning and control, operations information systems, inventory control, material requirements planning, and total quality control.

Requisites:
Prerequisite: MANGT 421.

Typically Offered
On sufficient demand

MANGT 530 - Labor Relations and Negotiations

Credits: 3

Provides broad coverage of the goals and operations of labor unions as well as the interactions of labor and management. In addition, this course, this course introduces students to the bargaining and negotiation process within organizations. Effective negotiation strategies are taught and individual negotiation skills are enhanced through opportunities to participate in negotiation simulations. Basic course in industrial and labor relations. Broad coverage of the institution of collective bargaining and its environment, the goals and operation of labor unions, the impact of unions on management, and labor relations law.

Requisites:
Prerequisite: MANGT 420 or Junior standing.

Typically Offered
Fall, Spring

MANGT 531 - Human Resources Management

Credits: 3

This course provides an overview of the human resource systems and processes needed to achieve organizational effectiveness and strategic success. All key functional areas including human resource planning, staffing, performance management, employee development, and compensation are addressed.

Requisites:
Prerequisite: MANGT 420.

Typically Offered
Fall, Spring

MANGT 535 - Employment Law

Credits: 3

A survey course designed to acquaint students with the broad and controlling aspects of prominent laws which affect human resource management. Topics include ADA, ADEA, OSHA, Title VII, etc.

Requisites:
Prerequisite: MANGT 531.

Typically Offered
Fall, Spring

MANGT 541 - Management of Quality

Credits: 3

Coverage of quality as a management philosophy through the study of ideas from contemporary quality philosophies on continuous improvement, employee empowerment, statistical process control charting, and other applicable organizational topics.

Requisites:
Prerequisite: MANGT 421

Typically Offered
Fall, Spring

MANGT 550 - Organizational Training and Development

Credits: 3

The process of training and developing the human resources in organizations, which includes organizational diagnosis, needs assessment, program design, program implementation, and the evaluation of program effectiveness. Current trends in the content and process of training and development activities are also examined.

Requisites:
Prerequisite: MANGT 420 or Junior Standing.

Typically Offered
On sufficient demand

MANGT 553 - Business Project Management

Credits: 3

Provides in-depth coverage of project management concepts and methodologies required for service and manufacturing operations. Topics to be covered include, but are not limited to: project selection and evaluation, project organization, management or project organization, project scheduling, project budgeting, project monitoring, and control and project closure.

Requisites:
Prerequisite: MANGT 420, MANGT 421.

Typically Offered
Fall, Spring

MANGT 560 - Managing for Diversity and Inclusion in the Workplace

Credits: 3

Provides a framework for understanding how diversity and a culture of inclusion interfaces with all aspects of an organization. Topics include the business case for diversity and inclusion (D&I), related demographic, technological, and social changes, current events and their associated impact in the workplace, diversity recruitment and retention, and theories and strategies for creating inclusion. On an individual level, students will develop their ability to communicate across differences. On an organizational level, students will gain skills to develop and present a strategic plan for diversity and inclusion.

Requisites:
Prerequisite: MANGT 420 or junior standing.

Typically Offered
Fall, Spring

MANGT 561 - Logistics and Warehouse Management

Credits: 3

Examines current issues and strategies in logistics and warehouse management. Topics include carrier management problems and opportunities, carrier selection, transportation costing, the economic characteristics of various transportation modes, location problems, and material handling.

Requisites:
Prerequisite: MANGT 421

Typically Offered
Spring

MANGT 566 - Computer Systems for Finance and Investment Management

Credits: 3

An integrated course examining the interrelationship between finance/investment management and information technology taught using a mixture of theory/concepts and hands-on activities. Topics include spreadsheet design and use in finance and investments, decision support systems and artificial intelligence used in risk analysis, financial database design, and information technologies used to transmit financial and investment information.

Requisites:
Prerequisite: MANGT 366 and FINAN 450.

Typically Offered
On sufficient demand

MANGT 580 - K-State MIS: Health Info Sys Portfolio I

Credits: 9

This course serves a mechanism to indicate students have completed a series of Health Information Systems courses at Johnson County Community College in the process of completing their Associate's Degree. It is used solely for transfer credit tracking and fulfills the thematic sequence requirement in the College of Business. Students cannot enroll in this class nor can this course be transferred into programs other than Management Information Systems in the College of Business Administration.

Requisites:
Prerequisite: Associates Degree in Health Information Systems from JCCC.

Typically Offered
Fall, Spring, Summer

MANGT 581 - K-State MIS: Health Info Sys Portfolio II

Credits: 15

This course serves a mechanism to indicate students have completed a series of Health Information Systems courses at Johnson County Community College in the process of completing their Associate's Degree. It is used solely for transfer credit tracking and fulfills the unrestricted electives requirement in the College of Business. Students cannot enroll in this class nor can this course be transferred into programs other than Management Information Systems in the College of Business Administration.

Requisites:
Prerequisite: Associates Degree in Health Information Systems from JCCC.

Typically Offered
Fall, Spring, Summer

MANGT 590 - International Management

Credits: 3

Analysis of the political, legal, economic, and sociocultural environments and how they influence international management decisions such as timing and place of foreign market entry, mode of entry, and formulation and implementation of international strategies. Development of knowledge and skills necessary for managing international operations including cross-cultural communication, negotiation, ethics, leadership, staffing, and workforce motivation.

Requisites:
Prerequisite: MANGT 420 or Junior Standing

Typically Offered
Fall, Spring

MANGT 595 - Business Strategy

Credits: 3

Analysis of the strategic management process firms use to attain competitiveness in a global business environment. Students develop the knowledge and skills required to diagnose strategic issues, make strategic decisions, and evaluate their consequences. Capstone course that requires integration of knowledge gained in prior functional coursework along with application of strategic management concepts to formulate and implement value-creating solutions to business challenges.

Note:
Open only to students with 75 credit hours or non-business graduate students.

Requisites:
Prerequisite: FINAN 450 and MANGT 420 and MKTG 400 and 75 credit hours and admitted in a College of Business Administration major (ACCTG, ENTRP, FINAN, GENBA, MANGT, MIS, MKTG, PSS).

Typically Offered
Fall, Spring, Summer

MANGT 596 - Business Ethics and Corporate Citizenship

Credits: 3

Delivers a managerial perspective on how corporations can fulfill their economic, legal, ethical, and philanthropic responsibilities to a broad array of business stakeholders.

Requisites:
Prerequisite: FINAN 450(may be taken concurrently), MANGT 420, MKTG 400, and senior level students admitted in a College of Business Administration degree track (major).

Typically Offered
Fall, Spring, Summer

MANGT 623 - Compensation and Performance Management

Credits: 3

An in-depth analysis of compensation system design and performance management strategies needed to attract, retain, develop and motivate the human capital required for organizational effectiveness and strategic success.

Requisites:
Prerequisite or concurrent enrollment: MANGT 531.

Typically Offered
Fall, Spring

MANGT 630 - Sports Management

Credits: 3

An exploration into management issues associated with professional and amateur sports. Major topics include strategic planning, operational planning, human resource management, team management, leadership, communication, and diversity all in the context of sports.

Requisites:
Prerequisite: MANGT 420 or MKTG 400 or Junior standing.

Typically Offered
Fall, Spring

MANGT 633 - Advanced Human Resource Management

Credits: 3

An in-depth analysis of selected topics in human resource management including study of current research and literature.

Requisites:
Prerequisite: MANGT 531.

Typically Offered
On sufficient demand

MANGT 643 - Organizational Staffing

Credits: 3

Focuses on recruitment, selection, and retention issues, including an in-depth consideration of legal and practical issues involved in the acquisition and retention of human resources. Detailed coverage of job analysis, criterion development, recruitment strategies, and techniques and procedures for ensuring valid and effective selection of employees.

Requisites:
Prerequisite or concurrent enrollment: MANGT 531.

Typically Offered
Fall, Spring

MANGT 652 - Constraint Management and Continuous Improvement

Credits: 3

The intent of this course is to provide an overview of the application of Theory of Constraints (TOC). TOC suggests that every process or system has at least one constraint that prevents the operation from being more efficient. TOC offers methodologies that are specifically developed to identify and manage constraints to enable the operation to achieve its goals. Students will be taught the skills required for the identification and management of constraints within an operation system.

Requisites:
Prerequisite: MANGT 420, MANGT 421, MANGT 521.

Typically Offered
On Sufficient Demand

MANGT 660 - Supply Chain Planning and Control

Credits: 3

Provides a framework of how the demand side of the supply chain should interface with supply side in the context of global manufacturing and service. Topics include: layout/process design and control, capacity planning, master scheduling, materials requirement, coordination, and revenue management.

Requisites:
Prerequisite: MANGT 421 or graduate school status

Typically Offered
Fall

MANGT 662 - Procurement, Logistics and Supply Chain Design

Credits: 3

Addresses the interrelationship between operations and other functions required to deliver value to the end customer of a supply chain. Topics include: strategic procurement and purchasing operations and process, sourcing decisions, location strategies, distribution network design, global supply chain network design, and supply chain risk management.

Requisites:
Prerequisite: MANGT 421, or graduate school status

Typically Offered
Fall

MANGT 663 - Supply Chain Analytics

Credits: 3

The objective of this course is to introduce models and tools to effectively manage a supply chain that purchase, produce, and distribute products. Topics include: forecasting, production and logistics, and inventory management. We illustrate the effectiveness of these models and tools using real-life cases and examples drawn from diverse industries.

Requisites:
Prerequisite: MANGT 421, or graduate school status

Typically Offered
On sufficient demand

MANGT 810 - Operations and Supply Chain Management

Credits: 3

The study of the role of operations systems in the provision of value for the customer. Operations systems design, capacity determination, resource requirements planning and control, theory of constraints, supply chain management, quality management and control and project management are discussed and analyzed.

Requisites:
Prerequisite: STAT 351 or STAT 702.

Typically Offered
Spring

MANGT 820 - Managing Organizational Behavior

Credits: 3

An in-depth analysis of the development of the behavioral bases of individual and group behavior in business, governmental, educational, and other organizations with emphasis on current research literature and applications.

Requisites:
Prerequisite: Open only to students in graduate business degree or certificate programs or with permission of the instructor.

Typically Offered
Fall, Summer

MANGT 825 - Advanced Business Law

Credits: 3

A study of civil law as it affects commercial transactions, including corporations, partnerships, property, commercial paper, and secured transactions.

Requisites:
Prerequisite: Graduate student standing.

Typically Offered
Spring

MANGT 830 - Information Technology Strategy and Application

Credits: 3

A practical exposure to information technology as it applies to business. Emphasis will be placed on problem-solving using spreadsheets, databases, and HTML based information systems.

Requisites:
Prerequisite: Graduate student standing.

Typically Offered
Fall

MANGT 840 - Advanced Entrepreneurship

Credits: 3

An in-depth examination of the nature of entrepreneurship including success factors, the requirements of successful new venture planning and implementation, and researching the current literature in the field. The study of new product identification, the assessment of commercial potential, and the elements of an effective business plan will be examined in detail, culminating in the preparation of a comprehensive plan for the development and marketing of a new product or service.

Requisites:
Prerequisite: FINAN 815, MANGT 820, and MKTG 890.

Typically Offered
On sufficient demand

MANGT 845 - Technology Entrepreneurship and Strategy

Credits: 3

In this course the student will learn how to recognize and screen technology opportunities in diverse areas such as telecommunications to biotechnology; learn the intricacies of intellectual property creation, protection and acquisition; effectively implement the commercialization process. A major objective of the course is to help students realize that technology may be the most under-utilized asset in either the private or public sector yet, in the form of licenses or rights to use, can be sold repeated with a relatively low cost of goods sold, resulting in a continual stream of income.

Typically Offered
On sufficient demand

MANGT 853 - Business Project Management

Credits: 3

Provides an in-depth coverage of project management concepts and methodolgogies required for service and manufacturing operations. Topics to be covered include, but are not limited to: project selection and evaluation, project dynamics, motivation and evaluation of project team members, project scheduling, project budgeting, and project closure.

Note:
This course is restricted to students in graduate business degree. Students from other programs must receive permission from the College of Business Graduate Program Coordinator.

Requisites:
Prerequisites: Open only to students in graduate business degree.

Typically Offered
Fall, Spring

MANGT 860 - Managing the Triple Bottom Line Business

Credits: 3

Students will examine how business firms can deliver social, environmental, and economic benefits to a plurality of stakeholders. Topics include best practices for sustainability, corporate social responsibility, business ethics, crisis management, and triple bottom line reporting protocols.

Requisites:
Prerequisite: ACCTG 810, FINAN 815, MKTG 810, MANGT 810, MANGT 820, MANGT 830, ECON 815 and STAT 702.

Typically Offered
Spring

MANGT 867 - Enterprise Information Systems Management

Credits: 3

Concepts and information resource management techniques are integrated into a conceptual framework of enterprise information systems. The impact of current issues and new technologies on business is emphasized through discussion and application.

Typically Offered
Spring

MANGT 870 - Managing Animal Health Organizations

Credits: 3

Relevant theoretical concepts will be drawn from strategic management, management of change, human resource management, and the management of innovation to provide and intellectual grounding for understanding industry

dynamics and the analysis of contemporary managerial challenges and issues for organizations in the animal health industry. Special emphasis will be given to proposing strategic solutions to solve major problems that companies face in the animal health corridor.

MANGT 880 - Business Strategy

Credits: 3

Advanced analysis of the strategic management process firms use to attain competitiveness in a global business environment. Students develop the knowledge and skills required to diagnose strategic issues, make strategic decisions, and evaluate their consequences. Graduate-level capstone course that requires integration of knowledge gained in prior functional coursework along with application of strategic management concepts to formulate and implement value-creating solutions to business challenges.

Requisites:
Prerequisite: ACCTG 810, FINAN 815, MKTG 810, MANGT 810, MANGT 820, MANGT 830, ECON 815, and STAT 703.

Typically Offered
Fall

MANGT 890 - International Management

Credits: 3

Analysis of the political, legal, economic, and sociocultural environments and how they influence international management decisions such as timing and place of foreign market entry, mode of entry, and formulation and implementation of international strategies. Development of knowledge and skills necessary for managing international operations including cross-cultural communication, negotiation, ethics, leadership, staffing, and workforce motivation.

Requisites:
Prerequisite: MANGT 820

Typically Offered
Spring

MANGT 892 - International Operations Management

Credits: 3

Explores the global market context and the environment for multinational operations. Examines important tools, concepts, theories, models, and structures as defined and applied to manufacturing and service operations in other countries. Emphasis is placed on Japanese technology and practices. It draws upon those aspects of manufacturing and service operations that can help U.S. firms become increasingly competitive worldwide.

Requisites:
Prerequisite: MANGT 690 and MANGT 810.

Typically Offered
On sufficient demand

MANGT 893 - Management Science

Credits: 3

The application of management science methods to business problems to provide a basis for rational decision making. Includes mathematical programming, inventory theory, simulation, model building, and heuristics.

Requisites:
Prerequisite: MATH 205, STAT 351 or STAT 702 or concurrent enrollment.

Typically Offered
On sufficient demand

MANGT 897 - Topics in Management Contemporary Issues in Management

Credits: 3

Discussion and analysis of contemporary issues in management, including applications, development and study of relevant literature and research findings.

Requisites:
Prerequisite: MANGT 820, MANGT 810 and MANGT 830.

Typically Offered
Spring

MANGT 898 - Special Problems in Management

Credits: 1-18

As scheduled. An in-depth study of specified topics.

Requisites:
Prerequisite: Twelve hours of management and consent of the instructor and department head.

MATH 500 - Mathematical Theory of Interest

Credits: 3

Extensive introduction to the mathematical theory of interest with applications to the field of actuarial science. Prepares students to take the second professional examination administered by the Society of Actuaries and the Casualty Actuarial Society.

Requisites:
Prerequisite: MATH 221.

Typically Offered
Fall

MATH 501 - Mathematical Foundations of Actuarial Science

Credits: 3

Introduction to calculus-based applications and models with an emphasis on applications to insurance. Prepares students to take the first professional examination administered by the Society of Actuaries and Casualty Actuarial Society.

Requisites:
Prerequisite: MATH 222 and STAT 510 or concurrent enrollment in STAT 510.

Typically Offered
Spring

MATH 506 - Introduction to Number Theory

Credits: 3

Divisibility properties of integers, prime numbers, congruences, multiplicative functions.

Requisites:
Prerequisite: MATH 221.

Typically Offered
Spring

MATH 510 - Discrete Mathematics

Credits: 3

Combinatorics and graph theory. Topics selected from counting principles, permutations and combinations, the inclusion-exclusion principle, recurrence relations, trees, graph coloring, Eulerian and Hamiltonian circuits, block designs, and Ramsey Theory.

Requisites:
Prerequisite: Sophomore standing and MATH 221.

Typically Offered
Fall, Spring, Summer

MATH 511 - Introduction to Algebraic Systems

Credits: 3

Properties of groups, rings, domains and fields. Examples selected from subsystems of the complex numbers, elementary number theory, and solving equations.

Requisites:
Prerequisite: MATH 222.

Typically Offered
Fall, Spring

MATH 512 - Introduction to Modern Algebra

Credits: 3

Introduction to the basic algebraic systems, viz., groups, rings, integral domains, and fields, often drawing from elementary number theory. Special emphasis will be given to methods of theorem proving.

Requisites:
Prerequisite: MATH 222.

Typically Offered
Fall

MATH 515 - Introduction to Linear Algebra

Credits: 3

Finite-dimensional vector spaces, linear transformations and their matrix representations, dual spaces, invariant subspaces, Euclidean and unitary spaces, solution spaces for systems of linear equations.

Requisites:
Prerequisite: MATH 222.

Typically Offered
Spring

MATH 520 - Foundations of Analysis

Credits: 3

A study of sets and sequences, neighborhoods, limit points, convergence, open and closed sets in the real line and in the plane, the concept of a continuous function.

Requisites:
Prerequisite: MATH 222.

Typically Offered
Spring

MATH 521 - The Real Number System

Credits: 3

An extensive development of number systems, with emphasis upon structure. Includes systems of natural numbers, integers, rational numbers, and real numbers.

Requisites:
Prerequisite: MATH 221.

MATH 540 - Advanced Ordinary Differential Equations

Credits: 3

First-order scalar equations: geometry of integral curves, symmetries and exactly soluble equations; existence, uniqueness and dependence on parameters with examples. Systems of first-order equations, Hamilton's equations and classical mechanics, completely integrable systems. Higher-order equations. Initial value problems for second order linear equations, series solutions and special functions. Boundary value problems with applications. Introduction to perturbation theory and stability.

Requisites:
Prerequisite: MATH 340.

Typically Offered
Spring

MATH 551 - Applied Matrix Theory

Credits: 3

Matrix algebra, solutions to systems of linear equations, determinants, vector spaces, linear transformations, eigenvalues, linear programming, approximation techniques.

Requisites:
Prerequisite: MATH 205 or MATH 220.

Typically Offered
Fall, Spring

MATH 560 - Introduction to Topology

Credits: 3

An introduction to the basic topological concepts. Topological spaces, metric spaces, closure, interior, and frontier operators, subspaces, separation and countability properties, bases, subbases, convergence, continuity, homeomorphisms, compactness, connectedness, quotients and products. The course will include a brief introduction to proof techniques and set theory. Other topics in topology also may be included.

Requisites:
Prerequisite: MATH 222.

Typically Offered
Spring

MATH 570 - History of Mathematics

Credits: 3

A survey of the development of mathematics from ancient to modern times.

Requisites:
Prerequisite: MATH 220.

Typically Offered
Spring

MATH 572 - Foundations of Geometry

Credits: 3

Euclidean, non-Euclidean, and finite geometries; role of axioms; practice proving theorems in a formal system; synthetic, metric, and transformation approaches to Euclidean geometry.

Requisites:
Prerequisite: MATH 221.

MATH 591 - Topics in Mathematics for Teachers

Credits: 1-3

Topics of importance for teachers of mathematics.

Repeat for Credit
Repeatable. May be repeated for credit.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

MATH 599 - Topics in Mathematics

Credits: 1-3

Courses on special topics.

Typically Offered
On sufficient demand

MATH 615 - Introduction to Digital Image Processing

Credits: 3

The basic ideas and techniques in digital image processing stem from mathematics, engineering, and computer science. This course focuses on ideas and techniques such as spatial filtering, frequency filtering (Fast Fourier Transform), scale filtering (Fast Wavelet Transform), and their applications to image compression standards and image recognition. This course will place equal emphasis on the mathematical ideas and their applications.

Requisites:
Prerequisite: MATH 220.

Typically Offered
Spring

MATH 620 - Convex Optimization for Data Science

Credits: 3

Convex optimization is an essential tool in data science and underlies many machine learning algorithms. This course provides students with the necessary tools, skills, vocabulary, and techniques, that will allow them to become life-long users of convex optimization in the context of data analysis.

Requisites:
Prerequisite: Math 222

Typically Offered
On sufficient demand

MATH 630 - Introduction to Complex Analysis

Credits: 3

Complex analytic functions and power series, complex integrals. Taylor and Laurent expansions, residues, Laplace transformations, and the inversion integral.

Requisites:
Prerequisite: MATH 340.

Typically Offered
Fall

MATH 632 - Elementary Partial Differential Equations

Credits: 3

Orthogonal functions, Fourier series, boundary value problems in partial differential equations.

Requisites:
Prerequisite: MATH 340.

Typically Offered
Spring

MATH 633 - Advanced Calculus I

Credits: 3

Functions of one variable; limits, continuity, differentiability, Riemann-Stieltjes integral, sequences, series, power series, improper integrals.

Requisites:
Prerequisite: MATH 222.

Typically Offered
Fall

MATH 634 - Advanced Calculus II

Credits: 3

Functions of several variables; partial differentiation and implicit function theorems, curvilinear coordinates, differential geometry of curves and surfaces, vectors and vector fields, line and surface integrals, double and triple integrals, Green's Theorem, Stokes' Theorem, and Divergence Theorem.

Requisites:
Prerequisite: MATH 633.

Typically Offered
Spring

MATH 635 - Dynamics, Chaos, and Fractals

Credits: 3

An introduction to one dimensional real and complex dynamics: attracting and repelling cycles, iterations of quadratic polynomials, bifurcation theory, chaos, Hausdorff measures and Hausdorff dimension, fractals, Julia and Fatou sets, and Mandelbrot sets.

Requisites:
Prerequisite: MATH 221.

Typically Offered
Fall

MATH 655 - Elementary Numerical Analysis I

Credits: 3

Error analysis, root finding, interpolation, approximation of functions, numerical integration and differentiation, systems of linear equations.

Requisites:
Prerequisite: MATH 221, a computer language, and either MATH 515 or MATH 551.

Typically Offered
Fall, Spring

MATH 656 - Elementary Numerical Analysis II

Credits: 3

A continuation of MATH 655. Linear programming, numerical solutions of differential equations, and the use of standard packages for the solutions of applied problems.

Requisites:
Prerequisite: MATH 340 and MATH 655.

Typically Offered
Spring

MATH 670 - Mathematical Modeling

Credits: 3

Introduction of modeling procedures. Case studies in mathematical modeling projects from physical, biological, and social sciences.

Requisites:
Prerequisite: Four mathematics courses numbered 500 or above.

MATH 700 - Set Theory and Logic

Credits: 3

An introduction to logic, mathematical proof, and elementary set theory. Topics include elementary logic, relations, partitions, functions, cartesian products, disjoint unions, orders, construction of the natural numbers, ordinal and cardinal numbers, the Axiom of Choice, and transfinite induction. Special emphasis will be given to proving theorems.

MATH 704 - Introduction to the Theory of Groups

Credits: 3

Introduction to abstract group theory, permutation groups, homomorphisms, direct products, Abelian groups. Jordan-Holder and Sylow theorems.

Requisites:
Prerequisite: MATH 512.

MATH 705 - Computational Math

Credits: 3

Topics from complex analysis, vector calculus, higher-dimensional calculus, ordinary differential equations, linear algebra, and geometry of curves.

Requisites:
Prerequisite: MATH 222.

Typically Offered
Fall

MATH 706 - Theory of Numbers

Credits: 3

Divisibility, congruences, multiplicative functions, number theory from an algebraic viewpoint, quadratic reciprocity, Diophantine equations, prime numbers.

Requisites:
Prerequisite: MATH 221 and either MATH 511 or MATH 512.

Typically Offered
Fall

MATH 707 - Theory of Numbers II

Credits: 3

Continuation of MATH 706, including p-adic numbers, basic analytic number theory, geometry of numbers, and diophantine approximation.

Typically Offered
Spring

MATH 710 - Introduction to Category Theory

Credits: 3

Categories, duality, special morphisms, functors, natural transformations, limits and colimits, adjoint situations, and applications.

Requisites:
Prerequisite: MATH 730 and MATH 770.

MATH 711 - Category Theory

Credits: 3

Set-valued functors and concrete categories, factorization structures, algebraic and topological functors, categorical completions, Abelian categories.

Requisites:
Prerequisite: MATH 710.

MATH 713 - Advanced Applied Matrix Theory

Credits: 3

A development of the oncepts of eigenvalues by considering applications in differential equations, quadratic forms and estimation problems. Supporting topics include the Jordan canonical form, functions of matrices, vector and matrix norms, convex sets, with selected topics from the theory and application of the simplex algorithm, Markov chains, Leslie population models, Leontieff input-output model.

Requisites:
Prerequisite: MATH 551 or MATH 630.

Typically Offered
Summer

MATH 715 - Applied Mathematics I

Credits: 3

Analysis of numerical methods for linear algebra. Perturbation theory and error analysis, matrix factorizations, solutions to linear systems, least-squares problems, techniques for special matrix structures, symmetric and nonsymmetric eigenvalue problems, iterative and direct methods.

Note:
Three hours recitation.

Requisites:
Prerequisite: MATH 515 or MATH 551 or equivalent.

Typically Offered
Fall

MATH 716 - Applied Mathematics II

Credits: 3

Linear operator theory applied to matrix, integral and differential equations. Spectral theory, the Fredholm Alternative, least-squares and pseudo-inverses, Banach and Hilbert space techniques, Fourier series and wavelets, theory of distributions, Green's functions.

Note:
Three hours recitation.

Requisites:
Prerequisite: MATH 340 and MATH 515 or MATH 551; or equivalent.

Typically Offered
Spring

MATH 721 - Introduction to Real Analysis

Credits: 3

Limits, continuity, uniform convergence, completeness, differentiation, Riemann integration.

Requisites:
Prerequisite: MATH 634 or graduate standing.

Typically Offered
Fall

MATH 722 - Introduction to Functions of Several Variables

Credits: 3

Analysis of functions of several variables, including differentiability, partial differentiability, maxima and minima, inverse function theorem, implicit function theorem, integration, Fubini's theorem.

Requisites:
Prerequisite: MATH 634 or graduate standing.

Typically Offered
Spring

MATH 723 - Complex Functions

Credits: 3

Introduction to the theory of analytic functions, designed to prepare students for the qualifying exams. Holomorphic functions, contour integrals, residue theory, conformal mapping and other topics.

Note:
3 hours lecture each week.

Requisites:
Prerequisite: MATH 721 is recommended.

Typically Offered
Spring

MATH 725 - The Mathematics of Data and Networks I

Credits: 3

Develops the mathematical tools necessary for studying and handling large datasets and networks. Includes matrix, graph, and probability theory, dimensionality reduction, clustering, maximum likelihood, Bayesian networks, sparsification, modularity, information theory, hidden Markov chains, branching processes, electrical networks, internet mathematics, random walks, random graphs, random matrices, and search algorithms.

Requisites:
Recommended prerequisite: Math 551, MATH 222.

Typically Offered
Fall

MATH 726 - The Mathematics of Data and Networks II

Credits: 3

II. Continuation of MATH 725. Develops the mathematical tools necessary for studying and handling large data-sets and networks. Includes matrix, graph, and probability theory, dimensionality reduction, clustering,maximum likelihood, Bayesian networks, sparsification, modularity,information theory, hidden Markov chains,

branching processes, electrical networks, internet mathematics, random walks, random graphs, random matrices, and search algorithms.

Requisites:
Recommended prerequisite: MATH 551, MATH 222.

Typically Offered
Spring

MATH 730 - Abstract Algebra I

Credits: 3

Groups, rings, fields, vector spaces and their homomorphisms. Elementary Galois theory and decomposition theorems for linear transformations on a finite dimensional vector space.

Requisites:
Prerequisite: MATH 512 or consent of instructor.

MATH 731 - Abstract Algebra II

Credits: 3

Continuation of MATH 730.

Requisites:
Prerequisite: MATH 730 or consent of instructor.

Typically Offered
Spring

MATH 740 - Calculus of Variation

Credits: 3

Necessary conditions and the Euler-Lagrange equations. Hamilton-Jacobi theory, Noether's theorems, direct methods, applications to geometry and physics.

Requisites:
Prerequisite: MATH 722 or equivalent.

Typically Offered
On sufficient demand

MATH 745 - Ordinary Differential Equations

Credits: 3

First-order equations and applications, second-order equations and oscillation theorems, series solutions and special functions, Sturm Liouville problems, linear systems, autonomous systems and phase plane analysis, stability, Liapunov's method, periodic solutions, perturbation and asymptotic methods, existence and uniqueness theorems.

Requisites:
Prerequisite: MATH 340.

Typically Offered
Fall

MATH 755 - Dynamic Modeling Processes

Credits: 3

Topics to include equilibrium and stability, limit circles, reaction-diffusion, and shock phenomena, Hopf bifurcation and cusp catastrophes, chaos and strange attractors, bang-bang principle. Applications from physical and biological sciences and engineering.

Requisites:
Prerequisite: MATH 340 and MATH 551.

MATH 757 - Mathematical Control Theory

Credits: 3

Mathematical analysis of dynamical systems governed by differential equations and their optimal processes, feedback, and filtering. Topics include: dynamical systems with controls, axioms of control systems, input-output behaviours, stability and instability, reachability and controllability, dynamic feedback and stabilization, optimal control processes, piecewise constant control and bang-bang principle, Pontryagin maximum principle, tracking, and filtering.

Requisites:
Prerequisite: MATH 560 and MATH 615.

MATH 760 - Introduction to Probability Theory

Credits: 3

An introduction to the mathematical theory of probability. Material covered includes combinatorial probability, random variables, independence, expectations, limit theorems. Markov chains, random walks, and martingales.

Requisites:
Prerequisite: MATH 633 and STAT 510.

Typically Offered
On sufficient demand

MATH 770 - Introduction to Topology/Geometry I

Credits: 3

This is the first course of a two course sequence including definitions and examples of topological spaces, simplicial complexes, topological and smooth manifolds, quotient spaces, CW complexes, projective spaces and knots. Topological properties including elementary separation, compactness, connectedness. Homotopy, the fundamental group, Covering spaces, Euler characteristics, classification of closed surfaces, differential forms, integration, Stokes' theorem, de Rham cohomology.

Requisites:
Prerequisite: MATH 633.

Typically Offered
Fall

MATH 771 - Introduction to Topology/ Geometry II

Credits: 3

The second course in a two class introduction to topology at a graduate level. Second term topics include: covering spaces, Euler characteristic, classification of closed surfaces, differential forms, integration, Stokes' theorem, and de Rham cohomology.

Requisites:
Prerequisite: MATH 770.

Typically Offered
Spring

MATH 772 - Elementary Differential Geometry

Credits: 3

Curves and surfaces in Euclidean spaces, differential forms and exterior differentiation, differential invariants and frame fields, uniqueness theorems for curves and surfaces, geodesics, introduction to Riemannian geometry, some global theorems, minimal surfaces.

Requisites:
Prerequisite: MATH 340.

MATH 789 - Combinatorial Analysis

Credits: 3

Permutations, combinations, inversion formulas, generating functions, partitions, finite geometries, difference sets, and other topics.

Requisites:
Prerequisite: MATH 512.

Typically Offered
Other

MATH 791 - Topics in Mathematics for Secondary School Teachers

Credits: 3

Topics of importance in the preparation of secondary school teachers to teach modern mathematics.

Repeat for Credit
Repeatable. May be repeated for credit.

MATH 799 - Topics in Mathematics

Credits: .5-3

Courses on special topics to be taught on sufficient demand.

Repeat for Credit
Repeatable

Typically Offered
On sufficient demand

MATH 801 - Numerical Solution of Differential Equations I

Credits: 3

Single and multistep methods for initial-value problems for ordinary differential equations; discretization and round-off error; consistency, convergence, and stability of these

methods; stiff equations and implicit methods; two-point boundary value problems; initial and boundary-value problems for partial differential equations; finite difference methods; marching schemes for parabolic and hyperbolic problems; consistency, stability, convergence, and the Lax equivalence theorem; treatment of boundary conditions; boundary-value problems for elliptic equations; relaxation, alternating direction, and strongly-implicit iterative methods; nonlinear problems; finite element method.

Requisites:
Prerequisite: MATH 655 and knowledge of a programming language.

Typically Offered
Fall

MATH 802 - Numerical Solution of Differential Equations II

Credits: 3

Continuation of MATH 801.

Requisites:
Prerequisite: MATH 801.

Typically Offered
Spring

MATH 810 - Higher Algebra I

Credits: 3

Theory of groups, theory of rings and ideals, polynomial domains, theory of fields and their extensions.

Requisites:
Prerequisite: MATH 731.

Typically Offered
Fall

MATH 811 - Higher Algebra II

Credits: 3

Continuation of MATH 810.

Requisites:
Prerequisite: MATH 810.

Typically Offered
Spring

MATH 812 - Homological Algebra I

Credits: 3

Introduction to the basics of homological and cohomological delta functors with applications to specific categories. Topics include Abelian categories, functors, exactness, chain complexes and maps, cochain complexes and maps, projective and injective resolutions, left and right derived functors, homological dimension, double complexes, spectral sequences, Tor and Ext functors, cohomology of groups, Lie algebras, and Hochschild homology.

Requisites:
Prerequisite: MATH 811.

Typically Offered
Fall

MATH 813 - Homological Algebra II

Credits: 3

Introduction to special homology and cohomology theories. Topics include Galois cohomology, cyclic homology, local cohomology theories, localization, derived categories, and the calculus of fractions in Abelian categories.

Requisites:
Prerequisite: MATH 812.

Typically Offered
Spring

MATH 814 - Lie Algebras and Representations I

Credits: 3

Introduction to Lie algebras. Topics include ideals, homomorphisms, nilpotent and solvable algebras, radicals, killing forms, Cartan subalgebras, semisimple Lie algebras and root systems, classification of semisimple Lie algebras, conjugacy theorems, enveloping algebras and PBW theorems, Serre relations, and constructions of semisimple Lie algebras and their enveloping algebras.

Requisites:
Prerequisite: MATH 811.

Typically Offered
Fall-Odd Years

MATH 815 - Lie Algebras and Representations II

Credits: 3

Introduction to Kac-Moody algebras and their representations, Verma modules and BGG categories, and the Kac-Weyl character formula. In addition, special topics include quantum groups and their representations.

Requisites:
Prerequisite: MATH 814.

Typically Offered
Spring-Odd Years

MATH 816 - Algebraic Geometry I

Credits: 3

Introduction to affine algebraic varieties over algebraically closed fields. Topics include Hilbert Nullstellensatz, Zarski topology, morphisms, differentials, smoothness, separability, and normality, algebraic and projective varieties, sheaf theory, sheaf cohomology, and vector bundles.

Requisites:
Prerequisite: MATH 811.

Typically Offered
Fall

MATH 817 - Algebraic Geometry II

Credits: 3

Introduction to schemes. Topics include categories, representable functors, prime spectra, algebraic schemes, separable schemes, normal schemes, proper schemes, schemes with bases, completions, formal schemes, Zariski's Theorem, Frobenius morphisms, and etale morphisms.

Requisites:
Prerequisite: MATH 816.

Typically Offered
Spring

MATH 818 - Introduction to Algebraic Groups I

Credits: 3

Introduction to algebraic groups. Topics include a review of algebraic geometry on varieties and morphisms, Lie algebras of algebraic groups, actions of algebraic groups over algebraic varieties, Jordan-Chevalley decompositions, solvable and unipotent algebraic groups, radicals and unipotent radicals, Borel subgroups, and parabolic subgroups.

Requisites:
Prerequisite: MATH 811.

Typically Offered
Fall-Even Years

MATH 819 - Introduction to Algebraic Groups II

Credits: 3

Introduction to reductive and semisimple algebraic groups, Bruhat decompositions, flag varieties, cohomology groups of line bundles over flag manifolds, Chevalley groups and their representations, Weyl modules and classification of irreducible modules, group functors and schemes, Hopf algebras and their representations.

Requisites:
Prerequisite: MATH 818.

Typically Offered
Spring-Even Years

MATH 821 - Real Analysis

Credits: 3

Measure theory and integration, Lebesgue integration, L_p-spaces, Hilbert spaces, integration on product spaces, Fubini's theorem.

Requisites:
Prerequisite: MATH 721 and MATH 722.

Typically Offered
Fall

MATH 822 - Complex Analysis

Credits: 3

Analytic functions, the Cauchy integral theorem, power series, principle of the argument, conformal mapping.

Requisites:
Prerequisite: MATH 821.

Typically Offered
Spring

MATH 823 - Geometric Function and Measure Theory I

Credits: 3

Topics include general measure theory, covering theorems, Hausdorff measure, area and coarea formulas, distributions, Sobolev spaces, Poincare' inequalities, embeddings theorem, changes of variables, extentions, and capacity. Applications include quasiconformal and quasiregular maps in IR^{IN} and analysis on fractals.

Requisites:
Prerequisite: MATH 821.

Typically Offered
Fall

MATH 824 - Geometric Function and Measure Theory II

Credits: 3

Continuation of Geometric Function and Measure Theory I.

Requisites:
Prerequisite: MATH 823.

Typically Offered
Spring

MATH 825 - Complex Analysis I

Credits: 3

Holomorphic functions, harmonic functions, the Cauchy integral theorem, normal families and the Riemann mapping theorem, and the Mittag-Leffler theorem.

Requisites:
Prerequisite: MATH 822 or consent of department.

Typically Offered
Fall

MATH 826 - Complex Analysis II

Credits: 3

Analytic continuation, the Picard theorem, Hp-spaces, elementary theory of Banach algebra, the theory of Fourier transforms, and the Paley-Wiener theorems.

Requisites:
Prerequisite: MATH 825.

Typically Offered
Spring

MATH 827 - Classical and Modern Fourier Analysis I

Credits: 3

Topics include Fourier analysis on the circle, singular integrals of convolution type, Littlewood-Paley theory and multipliers, BMO and Carleson Measures, and boundedness and convergence of Fourier integrals (or singular integrals of nonconvolution type).

Requisites:
Prerequisite: MATH 821.

Typically Offered
Fall

MATH 828 - Classical and Modern Fourier Analysis II

Credits: 3

Continuation of Classical and Modern Fourier Analysis I.

Requisites:
Prerequisite: MATH 827.

Typically Offered
Spring

MATH 830 - Algebraic Number Theory

Credits: 3

Topics include lattice theory, geometry of numbers, algebraic number fields, Dedekind domains, discrete valuation rings, ideal class group, group units, cyclotomic fields, Galois extensions.

Requisites:
Prerequisite: MATH 706, MATH 730.
Corequisite: MATH 731.

Typically Offered
Spring

MATH 831 - Analytic Number Theory

Credits: 3

Potential topics include; prime number theorem characters, L-functions, Diophantine problems, exponential sums, p-adic analysis, Diophantine approximations, Sieve Methods, Circle method.

Requisites:
Prerequisite: MATH 630, MATH 633, MATH 706.

Typically Offered
Spring

MATH 840 - Differential Equations I

Credits: 3

Basic ordinary and partial differential equations. First-order ordinary differential equations: symmetries and solutions in quadratures; existence, uniqueness and dependence on parameters, systems of first order equations, analysis of equilibria. Second order equations: series solutions and special functions, initial- and boundary-value problems for second-order equations. Elements of integral equations. First-order partial differential equations. Basic second-order partial differential equations: wave equations, heat equations, Poisson equation, Schrodinger equation.

Requisites:
Prerequisite: MATH 634 or MATH 745 or consent of instructor.

Typically Offered
Fall

MATH 841 - Differential Equations II

Credits: 3

Where PDEs come from. Initial and boundary-value problems. A crash course in distribution theory: different spaces of distributions, Fourier and Laplace transformations of distributions, Sobolev spaces. The Poisson equation in bounded and in exterior domains; properties of solutions of elliptic equations. The classical evolution equations revisited. Energy estimates, existence and uniqueness theorems, regularity and other properties of solutions. Simple examples of nonlinear PDEs.

Requisites:
Prerequisite: MATH 840.

Typically Offered
Spring

MATH 842 - Differential Equations III

Credits: 3

Continuation of MATH 841.

Requisites:
Prerequisite: MATH 841.

Typically Offered
Spring

MATH 843 - Advanced Probability I

Credits: 3

Review of measure theory notions specific to probability, including classical limit theorems, constructions of Brownian motion, Stochastic integration, the martingale representation theorem and martingale-based function spaces.

Requisites:
Prerequisite: STAT 510 and MATH 821.

Typically Offered
Fall

MATH 844 - Advanced Probability II

Credits: 3

Topics may include stochastic processes, random matrix theory, free probability, random fractals and random analytic maps.

Requisites:

Prerequisite: MATH 843.

Typically Offered
Spring

MATH 852 - Functional Analysis I

Credits: 3

Topological vector spaces; locally convex spaces (Hahn-Banach Theorem, weak topology, dual pairs, Krein-Milman Theorem, theory of distributions); Banach spaces (Uniform Boundedness Principle, Open Mapping Theorem and applications, Alaoglu's Theorem, analytic vector-valued functions, Krein-Smulian Theorem); C(X) as a Banach space (Stone-Weierstrass Theorem, Riesz Theorem); Lp spaces.

Requisites:
Prerequisite: MATH 821.

Typically Offered
Other

MATH 853 - Functional Analysis II

Credits: 3

Banach Algebras (spectrum, Gelfand Fourier transform, holomorphic functional calculus); Hilbert spaces (geometric properties, Riesz's Theorem, projections, the adjoint); functional calculus for normal operators; compact operators (spectral properties, Min-Max Theorem, Schatten-vol Neumann classes); Fredholm operators; other operator topologies on B(H); unbounded self-adjoint operators. Other topics.

Requisites:
Prerequisite: MATH 852.

Typically Offered
Other

MATH 855 - Methods of Applied Mathematics I

Credits: 3

An introduction to the mathematical techniques of problem solving in the sciences and engineering. Construction of mathematical models; problem formulation, dimensional analysis and scaling; solution methods for differential equations and difference equations; methods for obtaining approximate solutions; regular and singular perturbations methods, asymptotic series, applications to specific equations and scientific problems.

Requisites:
Prerequisite: MATH 630, MATH 633 and MATH 551.

Typically Offered
Fall

MATH 856 - Methods of Applied Mathematics II

Credits: 3

A continuation of MATH 855. Asymptotic expansion of integrals; the methods of stationary phase and steepest descent; summations of series, the Shanks transformation and the Pade fractions; boundary layer theory; the WKB and Langer approximations; the method of averaging and the method of multiple scales.

Requisites:
Prerequisite: MATH 855.

Typically Offered
Spring

MATH 857 - Nonlinear Analysis I

Credits: 3

The course deals with studies of nonlinear operator equations, existence of their solutions, uniqueness of the solutions, numerical methods for finding solutions. Fixed point theorems, topological principles, nonlinear elliptic equations and evolution equations, ill-posed and inverse problems are discussed.

Requisites:
Prerequisite: MATH 821, MATH 822, MATH 852, MATH 853 and MATH 840 is recommended.

Typically Offered
Fall

MATH 858 - Nonlinear Analysis II

Credits: 3

Continuation of Nonlinear Analysis I.

Requisites:

Prerequisite: MATH 857.

Typically Offered
Spring

MATH 861 - Numerical Analysis I

Credits: 3

Topics covered may include elementary functional analysis relevant to numerical analysis; numerical solution of differential or integral equations; analysis of stability and convergence; numerical linear algebra including large-scale systems; approximation theory.

Requisites:
Prerequisite: MATH 634 and MATH 655.

Typically Offered
Fall

MATH 862 - Numerical Analysis II

Credits: 3

Continuation of MATH 861.

Requisites:
Prerequisite: MATH 861.

Typically Offered
Spring

MATH 864 - Theory of Ordinary Differential Equations I

Credits: 3

The modern theory of ordinary differential equations including general theory and the theory of linear differential equations.

Requisites:
Prerequisite: MATH 641, MATH 722 and MATH 731.

Typically Offered
Fall

MATH 865 - Theory of Ordinary Differential Equations II

Credits: 3

Continuation of MATH 864 to include nonlinear equations and differential equations in Banach spaces.

Requisites:
Prerequisite: MATH 864.

Typically Offered
Spring

MATH 875 - Algebraic Topology I

Credits: 3

Homology and cohomology; simplicial, singular, cellular, and axiomatic theories; cup products; universal coefficient and Kunneth theorems; Hurewicz theorem in dimension one; orientation of manifolds; degree of maps spectral sequences, Whitehead's theorem.

Requisites:
Prerequisite: MATH 771, MATH 731.

Typically Offered
Fall-Even Years

MATH 876 - Algebraic Topology II

Credits: 3

Continuation of MATH 875. Fibrations, cofibrations, higher homotopy groups, characteristic classes, sheaves, rational homotopy theory, simplicial objects, spectra, K-theory.

Requisites:
Prerequisite: MATH 875.

Typically Offered
Spring-Odd Years

MATH 877 - Classical and Quantum General Relativity

Credits: 3

A self contained introduction to general Relativity, followed by a mathematical introduction to quantum

mechanics and quantum field theory. Course culminates in review of current approaches to quantizing general Relativity.

Typically Offered
Fall

MATH 881 - Differential Topology

Credits: 3

Tangent spaces and tensor bundles; derivatives; inverse function theorem, Sard's theorem and applications; vector fields and flows; Morse functions; handle decompositions; embedding theorems; orientations and orientability via tangent bundles; intersection theory; cobordism theory.

Requisites:
Prerequisite: MATH 771, MATH 722.

Typically Offered
Fall-Odd Years

MATH 882 - Differential Geometry

Credits: 3

Riemannian metrics, covariant derivatives, Gauss curvature, Riemann curvature; Gauss-Bonnet theorem; Exponential map and normal coordinates; The Hopf-Rinow Theorem; Jacobi fields; The Cartan-Hadamard Theorem; Ricci curvature and Myers' and Bonnet's Theorems; selected topics and Kähler geometry; symplectic topology; gauge theory.

Requisites:
Prerequisite: MATH 881.

Typically Offered
Other

MATH 890 - Riemann Surfaces

Credits: 3

Introduction to Riemann Surfaces. Topics will include complex charts, complex structures, holomorphic and meromorphic maps (and functions), order of poles and zeros, covering spaces, monodromy of holomorphic maps, differential forms, DeRham cohomology groups, integration on Riemann surfaces, Cech cohomology of sheaves, compact Riemann surfaces, finite theorems, divisors and sheaves of meromorphic forms, and the Riemann Roch Theorem.

Requisites:
Prerequisite: MATH 702, MATH 811, and MATH 822.

Typically Offered
Spring

MATH 896 - Topics in Mathematics

Credits: .5-18

Requisites:
Prerequisite: Background of courses needed for topic undertaken and consent of instructor.

Typically Offered
Fall, Spring, Summer

MATH 897 - Seminar in Mathematics Education

Credits: 1-3

Typically Offered
Spring, Summer

MATH 898 - Master's Research

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

MATH 899 - Thesis Topics

Credits: 1-18

Typically Offered
Fall, Spring, Summer

MATH 920 - Theory of Groups

Credits: 3

Group representations and group characters, transfer, signalizer functors, theory of pushing-up, groups of Lie type, (B, N)-pairs, chamber systems and buildings, sporadic simple groups, amalgam methods, Bass-Serre theory.

Requisites:
Prerequisite: MATH 811.

Typically Offered
Fall

MATH 924 - Several Complex Variables

Credits: 3

An introduction to the theory and analytic functions of several variables, domains of homomorphy and pseudoconvexity, the Levi problem, delta bar equations, Cousin problems, zeros of analytic functions, integral formulas, holomorphic mappings.

Requisites:
Prerequisite: MATH 826.

MATH 925 - Group Representations and Character Theory I

Credits: 3

The basic topics in representation theory are covered: Schur's Lemma, irreducibility, class functions, characters, orthogonality relations, Frobenius-Schur theorem, induced characters and Frobenius reciprocity, Mackey's theorem, Clifford's theorem, exceptional characters and applications to group orders, generalized characters and Brauer's characterizations of characters.

Requisites:
Prerequisite: MATH 811.

Typically Offered
Fall

MATH 926 - Group Representations and Character Theory II

Credits: 3

Depending on the interests of the students, topics may be chosen from the following: modular representations, Brauer's theory of blocks, characters of the linear groups, homologically induced representations, representations of complex Lie algebras.

Requisites:
Prerequisite: MATH 925.

MATH 991 - Topics in Algebra

Credits: 3

Selected topics in modern algebra.

Repeat for Credit
Repeatable. May be repeated for credit.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

MATH 992 - Topics in Analysis

Credits: 3

Selected topics in modern analysis.

Repeat for Credit
Repeatable. May be repeated for credit.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

MATH 993 - Topics in Harmonic Analysis

Credits: 3

Selected topics in harmonic analysis.

Repeat for Credit
Repeatable. May be repeated for credit.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

MATH 994 - Topics in Applied Mathematics

Credits: 3

Selected topics in applied mathematics.

Repeat for Credit

Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

MATH 995 - Topics in Geometry

Credits: 3

Selected topics in geometry.

Repeat for Credit
Repeatable. May be repeated for credit.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

MATH 996 - Topics in Topology

Credits: 3

Selected topics in topology.

Repeat for Credit
Repeatable. May be repeated for credit.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

MATH 997 - Topics in Number Theory

Credits: 3

Selected topics in number theory.

Note:
Automorphic Forms and L-Functions.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
On sufficient demand

MATH 999 - Research in Mathematics

Credits: 1-18

Requisites:
Prerequisite: Sufficient training to carry on the line or research undertaken and consent of instructor.

Typically Offered
Fall, Spring, Summer

MC 502 - Strategic Communications Case Studies

Credits: 3

Study of historic and contemporary strategic communications strategies and tactics using a case-method approach.

Requisites:
Prerequisite: MC 180 with a grade of C or better or instructor consent.

Typically Offered
Fall, Spring

MC 506 - Social Media News Strategies

Credits: 3

Social media is an ever-changing and important part of journalism today. Learn strategies, tips and techniques to be job-ready for to maximize social media strategies, from both sides of the communcations pathway, journalism and strategic communications.

Typically Offered
Intersession

MC 541 - Media Audiences

Credits: 3

Explores the meaning of the term "audience" and how it has undergone significant historical shifts, evolving from simply viewers to now consumers, producers, participants and performers. Topics covered include audience history and theory, audience measurement, media fandom and

audience subcultures.

Note:
Retake rules apply when student reenrolls.

Typically Offered
Spring

MC 550 - Health Communication

Credits: 3

Developing strategy and messages in health communication campaigns.

Requisites:
Recommended Prerequisite: Sophomore standing or consent of instructor.

Typically Offered
Fall, Spring, Summer

MC 557 - Advertising Portfolio

Credits: 3

Emphasis on individual enhancement of creative concept development, advanced technical skills, and portfolio development. Self-directed projects allow in-depth knowledge, understanding and practice of advertising production methods.

Requisites:
Prerequisite: MC 480 with grade B or better.

Typically Offered
Fall

MC 564 - History of Mass Communication

Credits: 3

Growth and development of media and media technology in the United States and their economic, political and social significance.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring

MC 572 - Global Mass Communication

Credits: 3

Comparative study of world media systems and the role of mass communication in national development.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring

MC 573 - Ethics in Mass Communication

Credits: 3

Making ethical decisions in mass media fields and the principles on which those decisions are based.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring

MC 574 - Military Strategic Communications

Credits: 3

An examination of the U.S. military in terms of operational and communication issues and its overall relationship with the media.

Requisites:
Recommended Prerequisite: MC 380 or instructor consent.

Typically Offered
Fall, Spring, Summer

MC 576 - Mass Communications and Political Campaigns

Credits: 3

The roles of journalism, advertising and public relations in political campaigns. Examines campaign communication strategies, staffing, and the role of political consultants. Analyzes how voter decision making is affected by mass communications and how voters develop attitudes about candidates and issues.

Requisites:
Prerequisite: MC 110 and either MC 200, MC 211, MC 221, or MC 280.

Typically Offered
Other

MC 577 - Travel and Tourism Strategic Communications

Credits: 3

The role and function of advertising and public relations in travel and tourism, focusing on the development of communication strategies and tactics.

Requisites:
Pre-requisites: MC 120 or MC 180, or instructor consent.(recommended)

Typically Offered
Fall, Spring, Summer

MC 580 - Storytelling Across Platforms

Credits: 3

Reporting, writing, and production across multiple platforms. Critical analysis of media and engagement strategies for reporting in a digital world.

Requisites:
Prerequisite: MC 403, MC 406, MC 416, or MC 426 and senior standing

Typically Offered
Fall, Spring

MC 581 - Strategic Communication Campaigns

Credits: 3

This capstone course focuses on students demonstrating all of the knowledge and skills learned in developing a client campaign.

Requisites:
MC 380, and MC 396 with a grade of C or better, senior standing

Typically Offered
Fall, Spring, Summer

MC 585 - Media Management

Credits: 3

Issues, ethics and practices in managing media companies, with special emphasis on problems and practices in converged media operations.

Note:
100% Lecture

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall

MC 589 - Issues in Mass Communication

Credits: 1-3

Advanced topics in mass communication practices and principles.

Repeat for Credit
Repeatable. May be repeated for credit when topic varies.

Typically Offered
Fall, Spring

MC 600 - Economics of Mass Communication

Credits: 3

Study of the various economic models applicable to the media industries and application of basic economic concepts and analytical tools to explain media industry behaviors, evaluate business strategies of media firms and assess the merits of public policies toward the media industries.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Fall, Spring

MC 605 - Supervision of School Publications

Credits: 3

A methods course for those planning to teach secondary or community college journalism courses and advise high school or community college publications.

Typically Offered
Summer

MC 612 - Gender, Class, Race, and the Media

Credits: 3

Historic and current roles media play in creating awareness of gender, racial, and class issues in society, including bias and stereotyping.

Requisites:
Prerequisite: Junior Standing and one course in MC or Gender, Women, and Sexuality Studies.

Typically Offered
Fall

MC 623 - Communicating in Global Markets

Credits: 3

Issues associated with advertising in a global environment, including cultural impact, international media, regulation, ethics and digital media technologies.

Requisites:
Prerequisite: MC 120 with a grade of C or better.

Typically Offered
Fall, Spring

MC 625 - Media Relations

Credits: 3

Examines management skills necessary for establishing, maintaining and evaluating a media relations program. Discussion includes working with journalists, conducting media events, preparing spokespersons and developing crisis communications.

Requisites:
Prerequisite: MC 280 with a grade of C or better

Typically Offered
Other

MC 662 - International and Intercultural Public Relations

Credits: 3

Global diversity in business, governmental, and charitable organizations and the demographic changes within countries and across communities that affect the role and practice of public relations worldwide.

Requisites:
Prerequisite: MC 280 with grade of C or better.

Typically Offered
Other

MC 665 - Managing Integrated Strategic Communications

Credits: 3

Investigation of managerial decision making in advertising and public relation programs. Emphasizes strategic and logical thinking in the decision making process. Theories and practices from media managment, social/cognitive psychology and integrated communication.

Requisites:
Prerequisite: MC 120 or MC 180 with grade of C or better.

Typically Offered
Spring

MC 680 - Readings in Mass Communications

Credits: 1-3

Investigation of the literature of mass communications.

Note:
Three significant books per credit hour with written analysis and oral presentation.

Requisites:
Prerequisite: Minimum of nine hours of completed course work in MC and consent of supervisory instructor.

MC 682 - Seminar in Public Relations

Credits: 3

Contemporary topics in public relations practice, theory,

and research.

Requisites:
Prerequisite: MC 280, MC 380, MC 382 with grades of C or better.

Typically Offered
Other

MC 683 - Reputation Management

Credits: 3

Managing the public perception of organizations from the standpoint of preparing for issues and unforeseen emergencies that can potentially disrupt the relationship between organizations and the publics they serve.

Requisites:
Recommended Prerequisites: MC 380.

Typically Offered
Fall, Spring, Summer

MC 690 - Problems in Mass Communications

Credits: 1-4

Requisites:
Prerequisite: Background of courses needed for problem undertaken.

MC 701 - Proseminar in Mass Communication

Credits: 1

Introduction to advanced study in mass communication with special emphasis on requirements for obtaining the master of science degree.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall

MC 710 - History of Mass Communications

Credits: 3

Growth and development of the news media and mass communication media and systems in the United States and their economic, political, and social significance.

Requisites:
Prerequisite: Graduate standing, or instructor permission with a 2.5 GPA and completion of a U.S. History course.

MC 712 - Environmental Communications

Credits: 3

Combines theoretical discussions with practical experience regarding communications about environmental issues and provides introduction to natural and applied science topics related to the communications plan.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: Senior standing.

Typically Offered
Spring-Even Years

Crosslisted:
AGCOM 712

MC 720 - Ethics in Mass Communications

Credits: 3

Moral analysis, argument, and decision making by the mass communicator.

Requisites:
Prerequisite: Graduate standing, or instructor permission with a 2.5 GPA and completion of a philosophy course.

Typically Offered
Fall, Spring

MC 725 - International Communications

Credits: 3

Comparative study of world media systems and the role of mass communications in national development.

Requisites:
Prerequisite: Graduate standing, or instructor permission with a 2.5 GPA.

Typically Offered
Fall

MC 730 - Seminar in Issues of the Media

Credits: 3

A study of philosophical and technological advances in mass communications with emphasis on projected patterns of future growth and development.

Requisites:
Prerequisite: Graduate standing, or instructor permission with a 2.5 GPA.

MC 740 - Colloquium in Mass Communications

Credits: 1-3

Discussion of selected topics in mass communications research and practice.

Repeat for Credit
Repeatable. May be repeated once for credit when topic varies.

Requisites:
Prerequisite: Graduate standing or instructor permission.

MC 745 - Seminar in Mass Communication Law

Credits: 3

Analysis of mass communication freedoms and limitations in such areas as defamation, privacy, copyright, censorship, obscenity, and advertising and electronic media regulation.

Requisites:
Prerequisite: Graduate standing.

MC 750 - Strategic Health Communication

Credits: 3

The role of effective communication through mass media and other communication strategies in health promotion and behavior change. Includes the theories and strategies used to promote public health messages, services or products for multicultural audiences, with a focus on human, environment and animal health. Legal, ethical issues and gender issues in health communication will be given special attention.

Requisites:
Prerequisite: Graduate standing, or instructor permission with a 2.5 GPA.

Typically Offered
Spring

MC 760 - Issues, Risk, and Reputation

Credits: 3

Promotes understanding of strategic communication and media as tools to prepare for, respond to, and recover from threats to organizational and brand reputation.

Requisites:
Prerequisite: Graduate standing, or instructor permission.

Typically Offered
Fall

MC 765 - Communication Theory

Credits: 3

An examination of major communication theories as they relate to mass communications.

Requisites:
Prerequisite: Graduate standing, or instructor permission with 2.5 GPA.

Typically Offered
Fall

MC 770 - Mass Communication Practicum

Credits: 1-4

Supervised practical work in professional mass communications settings, including laboratory investigation, field work, internships, and applied workplace research.

Note:
For graduate students.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor consent required.

Typically Offered
Fall, Spring, Summer

MC 780 - Research Methods in Mass Communications

Credits: 3

Survey of research methods used in the study of the mass media.

MC 782 - Strategic Communications Management

Credits: 3

Study of various forms of communication management and strategies that further the objectives of an organization, including organizational communication, marketing communication, and public relations.

Typically Offered
Fall

MC 785 - Issues in Media Management

Credits: 3

Seminar in the analysis of issues in media management and media economics research and practices. Issues include leadership in converged media organizations, market research in media organizations, motivational behaviors in media organizations and developments in new technology as they relate to managing media organizations.

Requisites:
Prerequisite: Graduate standing or instructor permission.

Typically Offered
Fall

MC 799 - Independent Study in Mass Communication

Credits: 1-3

Supervised independent study in mass communication. Requires contractual agreement between student and professor, specifying content, meeting times, and credits to be awarded.

Requisites:
Prerequisite: Graduate standing, instructor consent.

Typically Offered
Fall, Spring, Summer

MC 801 - Advanced Research Methods: Qualitative

Credits: 3

Introduction to qualitative methods, analysis, interpretation, and writing in media-related fields, and how qualitative inquiry contributes to theory construction in mass communication.

Requisites:
Prerequisite: Graduate Standing.

Typically Offered
Fall

MC 820 - Digital Media Audiences and Analytics

Credits: 3

Theories and concepts related to digital audiences in mass communication, content strategies, and how media audiences are formed, analyzed, and measured in the digital age.

Typically Offered
Spring

MC 830 - Media and Community Engagement

Credits: 3

Explores the role of media in increasing civic engagement and public participation, enabling the exchange of useful information, and fostering social connectivity to strengthen citizen agency and the overall democratic process.

Typically Offered
Spring

MC 850 - Applied Research in Mass Media

Credits: 3

Study and application of mass media research, its literature, and methodology.

Requisites:
Prerequisite: MC 780.

MC 899 - Research in Mass Communications

Credits: 1-18

Note:
Thesis/report credit.

Requisites:
Prerequisite: Sufficient training to carry on the line of research undertaken.

ME 512 - Dynamics

Credits: 3

Vector treatment of kinematics, Newton's Laws, work and energy, impulse and momentum, with applications to problems of particle and rigid body motion.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 333. Prerequisite or concurrent enrollment: MATH 340.

Typically Offered
Fall, Spring, Summer

ME 513 - Thermodynamics I

Credits: 3

Properties of the pure substance. The first and second laws of thermodynamics. Gas mixtures and psychrometry.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: PHYS 213; MATH 222.

Typically Offered
Fall, Spring, Summer

ME 519 - Electrical Circuits for Mechanical and Nuclear Engineering

Credits: 4

Analysis, design, construction, and application of electric and electronic circuits using analytic tools, fundamentals of common components, instrumentation, and computer-based tools. 3 lectures and 3 hours of lab per week.

Requisites:
Prerequisites: PHYS 214, MATH 340, and MATH 551
Corequisite: ME 512

Typically Offered
Fall, Spring

ME 523 - Thermodynamics II

Credits: 3

Continuation of Thermodynamics I. Energy analysis, thermodynamic cycles, generalized thermodynamic relations, and reactive systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 513.

Typically Offered
Fall, Spring

ME 533 - Machine Design I

Credits: 3

Introduction to the design and analysis of machine elements. Emphasis on materials, loads, stress, strain, deflection, failure theories, and finite element analysis. Applications include design and analysis of shafts, gears, and fasteners, weldments, springs, bearings.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: CE 533, ME 212, and ME 512.

Typically Offered
Fall, Spring

ME 535 - Measurement and Instrumentation Laboratory

Credits: 3

Theory and application of mechanical engineering measurements, instrumentation, and computer-based data acquisition.

Note:
One hour recitation and six hours lab a week.

Requisites:
Prerequisite: ME 513 and ECE 519.

Typically Offered
Fall, Spring

ME 563 - Machine Design II

Credits: 3

Design and analysis of machine elements. Applications include design and analysis of bearings, gears, shafts, clutches, brakes, belt and chain drives, and hydraulic fluid power.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 533.

Typically Offered
Fall, Spring

ME 570 - Control of Mechanical Systems I

Credits: 4

Introduction to modeling and control of dynamic systems encountered by Mechanical Engineers. Topics include basic linear systems modeling and analysis; feedback control; time response and stability of dynamic systems; introduction to root locus and frequency response design.

Note:
Three hours lecture and three hours lab a week.

Requisites:
Prerequisite: MATH 340, ME 400, and ME 512.
Prerequisite or concurrent enrollment: ME 535 or NE 612.

Typically Offered
Fall, Spring

ME 571 - Fluid Mechanics

Credits: 3

Physical properties; fluid statics; dynamics of ideal and real fluids (for incompressible and compressible flow); impulse and momentum; laws of similitude; dimensional analysis; flow in pipes; flow in open channels; flow about immersed objects.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 512 or CE 530. Prerequisite or concurrent enrollment: ME 513.

Typically Offered
Fall, Spring, Summer

ME 573 - Heat Transfer

Credits: 3

Fundamentals of conduction, convection, and radiation; principles of heat exchanger design and dimensional analysis.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 400, ME 571, MATH 340.

Typically Offered
Fall, Spring

ME 574 - Interdisciplinary Industrial Design Projects I

Credits: 3

Introduction to design theory, project management, team dynamics and socio-economic context of design, etc.; Application of design principles, engineering analysis and experimental methods to an industrial interdisciplinary design project involving design, analysis, fabrication and testing. Discussion of career planning, graduate school, ethics, technical/professional societies, and engineering licensing.

Requisites:
Prerequisite: ME 535 or NE 612, ME 533, ME 571. Prerequisite or concurrent enrollment: ENGL 415, or instructor approval.

Typically Offered
Fall, Spring

ME 575 - Interdisciplinary Industrial Design Projects II

Credits: 3

In-depth application of design principles, engineering analyses and experimental methods to an industrial interdisciplinary design project addressing design, analysis, constraints, standards, fabrication, and testing.

Requisites:
Prerequisite/Corequisite: ME 574 or instructor permission.

Typically Offered
Fall, Spring

ME 610 - Finite Element Applications in Mechanical Engineering

Credits: 3

The application of the finite element method to the solution of engineering problems. Topics include introductions to the methods, linear elastic stress analysis, thermal analysis, and modeling limitations and errors. Commercial computer codes are used in the applications.

Requisites:
Prerequisite: CE 533.

Typically Offered
Fall, Spring

ME 615 - Applications in Mechatronics

Credits: 3

Application of Mechanical and Electronic engineering to design. Microcontrollers; sensors; analog-to-digital signal conversion; DC motor operation and pulse width modulation; drive train configuration; embedded C programming; competition at Engineering Open House.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: ME 400 or ECE 431. Corequisite: ME 535 (not required if ECE 431 is taken).

Typically Offered
Spring

ME 620 - Internal Combustion Engines

Credits: 3

Application of principles of thermodynamics, fluid mechanics, chemistry, kinematics, and heat transfer to internal combustion engine processes. Performance and design characteristics of internal combustion engines.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 523.

Typically Offered
Fall

ME 622 - Indoor Environmental Engineering

Credits: 3

Ventilation, heating and cooling system design for buildings. Application of thermodynamic, heat transfer, and fluid mechanics principles for determination of building heating and cooling loads. Determination of ventilation requirements. Sizing, design and integration of environmental control systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 571.

Typically Offered
Spring

ME 628 - Aerodynamics

Credits: 3

A general introduction to aerodynamics including the

analysis of lift, drag, thrust, and performance for subsonic aircraft, and the application of aerodynamic principles to design.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 571, MATH 340.

Typically Offered
Fall

ME 631 - Aircraft Propulsion

Credits: 3

Mechanics and thermodynamics of aircraft propulsion systems; gas turbine aircraft engines; applied compressible flow; performance and design of propulsion systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 523, ME 571, MATH 340.

Typically Offered
Spring

ME 633 - Thermodynamics of Modern Power Production

Credits: 3

The first and second law analysis of modern stationary power systems using fossil, nuclear, and renewable energy sources. Component and system design, such as cycle design, load factor, and auxiliaries are considered in conjuction with their costs.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 523.

Typically Offered
Fall

ME 640 - Control of Mechanical Systems II

Credits: 3

Design and analysis of control systems. Topics include linear and nonlinear systems modeling; parameter estimation/system identification; steady state errors; advanced root locus and frequency response design; controller implementation.

Note:
Two hours lecture and three hours lab a week.

Requisites:
Prerequisite: ME 570 and MATH 551.

Typically Offered
Fall

ME 651 - Introduction to Composites

Credits: 3

Design, fabrication and testing of various composite materials. Analyses of mechanical properties of laminated composites.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: CE 533, Senior standing in engineering.

Typically Offered
Fall

ME 656 - Mechanical Vibrations

Credits: 3

A general consideration for the formation and analysis of free and forced vibration of mechanical systems of single and multiple degrees of freedom.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 512 and MATH 340.

Typically Offered
Spring

ME 699 - Problems in Mechanical Engineering

Credits: 0-18

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Approval of department head.

Typically Offered
Fall, Spring, Summer

ME 701 - Development of Computer Applications In Mechanical Engineering

Credits: 3

Nature of design, graphical user interface development to support computer-aided design, algorithms and computer graphics in computer applications, feature-based design, applications to design problems.

Requisites:
Prerequisite: ME 400.

Typically Offered
Fall

ME 716 - Intermediate Dynamics

Credits: 3

General vector principles of the dynamics of particles and rigid bodies; applications to orbital calculations, gyrodynamics, and rocket performance; introduction to the energy methods of advanced dynamics.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 512, MATH 340.

Typically Offered
Spring

ME 720 - Intermediate Fluid Mechanics

Credits: 3

A continuation of ME 571 in the study of general topics in fluid mechanics. Conservation of mass and momentum principles with particular emphasis on analysis of inviscid (potential) flows, compressible flows, and more advanced viscous flows including boundary layers. Numerous applications utilizing numerical methods.

Requisites:
Prerequisite: ME 571, MATH 340.

Typically Offered
Fall

ME 721 - Thermal Systems Design

Credits: 3

Thermal systems design including economics, simulation, and optimization. Includes heating, ventilating and air conditioning design and control.

Requisites:
Prerequisite: ME 573.

Typically Offered
Fall

ME 722 - Human Thermal Engineering

Credits: 3

Application of thermodynamic, heat transfer, and fluid mechanics principles of the thermal analysis of the human body. Mathematical analysis and computer modeling of human response to the thermal environment. Evaluation of heat stress and cold stress. Protection from heat and cold. Requirements for thermal comfort and impact on human performance.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 573.

Typically Offered
Fall-Odd Years

ME 728 - Computer Control of Electro Mechanical Systems

Credits: 3

Discrete modeling and analysis of dynamic physical systems in Mechanical Engineering. Sampling and data conversion and reconstruction. Real time implementation of control on a computer. Digital controller design and

implementation. Laboratory exercises in control applications and design.

Note:
Two hours of recitation and three hours of laboratory per week.

Requisites:
Prerequisite: ME 570.

Typically Offered
Spring

ME 730 - Control Systems Analysis and Design

Credits: 3

Use of classical analysis techniques for control system compensation. State space-control theory fundamentals are presented in addition to an introductory treatment of several major systems areas.

Requisites:
Prerequisite: ECE 530 or ME 640.

Typically Offered
Spring

Crosslisted:
ECE 730

ME 738 - Experimental Stress Analysis

Credits: 3

Experimental methods of investigating stress distributions. Photoelastic models, photoelastic coatings, brittle coatings, and resistance strain gauges applied to static and dynamic problems.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite or concurrent enrollment: CE 533.

Typically Offered
Fall-Even Years

ME 760 - Engineering Analysis I

Credits: 3

Methods of analysis employed in the solution of problems selected from various branches of engineering. Emphasis is on discrete systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: MATH 340 and senior standing.

Typically Offered
Fall

ME 773 - Intermediate Heat Transfer

Credits: 3

Conduction, convection and radiation, mass transfer, phase change, heat exchangers, introductory numerical methods.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 573.

Typically Offered
Spring

ME 777 - Monte Carlo Methods

Credits: 3

The objective of this course is to explore various methods of Monte Carlo for solving direct and inverse problems in engineering. The course covers probability distributions; laws of large numbers and Central Limit Theorem; pseudorandom number generation; sampling, scoring, and precision; variance reduction procedures; Markov chain Monte Carlo; inverse Monte Carlo; solution of linear operator equations; particle transport simulation.

Requisites:
Prerequisite: Math 340 or equivalent and knowledge of a programming language.

Typically Offered
Spring-Even Years

ME 800 - MNE Graduate Seminar/Research Paper

Credits: 0-18

Presentation(oral and written) and discussion of progress in research. Credit hours can be earned by preparing and/or presenting publication quality papers. Topics may be drawn from any current research area in mechanical and nuclear engineering.

Repeat for Credit
Repeatable. May be repeated with change in subject matter.

Requisites:
Prerequisite: Graduate standing in mechanical and nuclear engineering.

Typically Offered
Fall, Spring

ME 802 - Advanced Mechanics of Materials and Applied Elasticity

Credits: 3

Two- and three-dimensional deformation analysis, equilibrium, and elastic constitutive laws. Stress-strain transformations between coordinate systems. Governing equations of elasticity. Advanced topics in bending, shearing, torsion and combined loads, with applications to engineering problems.

Note:
Three hous recitation a week.

Requisites:
Prerequisite: CE 533.

Typically Offered
Fall-Even Years

Crosslisted:
CE 802

ME 811 - Thermodynamic Analysis

Credits: 3

Basic considerations of the three laws of equilibrium thermodynamics. Availability analysis with applications including multicomponent systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 523, ME 571, MATH 240.

Typically Offered
Spring-Even Years

ME 820 - Interm Topics in Thermal and Fluid Mechanics - Heat Pipes

Credits: 3

Introduction of several heat pipe concepts, design rules, and analysis tools. Student will investigate operation principles of vapor chambers and oscillating heat pipes.

Requisites:
Prerequisite: ME 720 or ME 773.

Typically Offered
On sufficient demand

ME 824 - Computational Fluid Dynamics

Credits: 3

The course introduces basic theories and algorithms for numerical simulations, and uses them to solve both model problems and classical fluid mechanics problems computationally.

Requisites:
Prerequisite: ME 720

Typically Offered
Spring

ME 830 - Intermediate Topics in Automatic Controls

Credits: 1-18

Topics may include analysis and design of nonlinear, adaptive, optimal, digitals or stochastic control systems and the applications of intermediate control and stability theory.

Requisites:
Prerequisite: ME 730 or ECE 730 or consent of instructor.

Typically Offered
On sufficient demand

ME 831 - Boundary Layer Theory

Credits: 3

The development and solution of various laminar boundary layer problems involving momentum, heat, and mass transfer for a compressible viscous fluid.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 573.

Typically Offered
Fall-Even Years

ME 836 - Introduction to Fracture Mechanics

Credits: 3

This course provides an introduction to fracture mechanics concepts and applications. Topics include the asymptotic solution for stress at a crack tip, energy balance and crack propagation, computing stress intensity factors, fatigue crack growth, fracture of concrete, applications and current topics.

Requisites:
Prerequisite: ME 802 or CE 802.

Typically Offered
Fall-Odd Years

ME 840 - Intermediate Topics in Solid Mechanics and Machine Design

Credits: 1-18

Topics may include intermediate elasticity, plasticity, tribology, probabilistic machine design, robotics, computational dynamics and nonlinear mechanics.

Requisites:
Prerequisite: ME 716 or ME 802 or CE 802.

Typically Offered
On sufficient demand

ME 846 - Vibrations of Continuous Media

Credits: 3

Basic mathematical and physical descriptions for wave phenomena in continuous media, with emphasis on propagations of mechanical disturbance in linearly elastic solids. Other selected topics in wave dynamics, including acoustics, water waves, nonlinear phenomena, will be discussed depending on students' interest.

Note:
Three hours of recitation a week.

Requisites:
Prerequisite: ME 802 or CE 802.

Typically Offered
Fall-Odd Years

ME 860 - Engineering Analysis II

Credits: 3

Continuation of Engineering Analysis I. Emphasis placed on continuous systems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 760 or consent of instructor.

Typically Offered
Spring

ME 862 - Finite Elements

Credits: 3

The foundations of the finite element method using weighted residuals and variational methods. Element formulation, assembly and solution are covered in detail. Formulation for dynamic and nonlinear problems. Discussion of advanced topics. The student will develop a complete finite element program.

Requisites:
Prerequisite: ME 760. Prerequisite or concurrent enrollment: ME 802 or CE 802.

Typically Offered
Spring

ME 871 - Mechanics of Composite Materials

Credits: 3

Topics include classification of composite materials,

elasticity theory for anisotropic and in homogeneous materials, basic model for characterization of composite properties, laminated plate theory, textile composites, strength and criteria for composite failure, and fracture modes in composites.

Requisites:
Prerequisite: ME 802 or CE 802.

Typically Offered
Spring-Odd Years

ME 898 - Master's Report

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

ME 899 - Master's Thesis

Credits: 1-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

ME 902 - Theory of Plasticity

Credits: 3

Foundations of plasticity. Vectorial and sensorial analysis. Coverage of pressure-dependent and pressure-independent materials. Hyper elasticity-Green elasticity. Deformation theory of plasticity. Flow theory of plasticity. Plastic work rate-equivalent strain. Classical yield criteria. Closed form solution of simple cases. Numerical solutions of more complex cases.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 802 or CE 802.

Typically Offered
Spring-Even Years

ME 910 - Computational Methods in Design

Credits: 0-18

Selected topics from optimal design, geometric modeling, and multi-physics finite element methods.

Typically Offered
Spring-Even Years

ME 920 - Advanced Topics in Thermal and Fluid Mechanics - Boltzmann Transport

Credits: 3

Non-Fourier heat transfer models used for microscale transport phenomena. Boltzmann integral methods for determining ion/neutron effects on metal material temperature.

Requisites:
Prerequisite: ME 720 or ME 773.

Typically Offered
On sufficient demand

ME 921 - Thermal System Analysis

Credits: 3

Advanced study of steady-state and dynamic simulation of thermal systems; thermal systems optimization. Thermodynamic availability and probabilistics in thermal system design.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 721.

Typically Offered
Spring-Odd Years

ME 930 - Advanced Topics in Automatic Controls

Credits: 1-18

Topics may include analysis and design of nonlinear, adaptive, optimal, digital, or stochastic control systems and the application of advanced control and stability theory.

Requisites:
Prerequisite: ME 640.

Typically Offered
Fall, Spring

ME 935 - Heat Conduction in Solids

Credits: 3

General differential equation of heat conduction and methods of solution for steady-state and transient heat conduction, periodic heat flow, and internal heat sources.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 573.

Typically Offered
Fall-Odd Years

ME 940 - Advanced Topics in Solid Mechanics and Machine Design

Credits: 1-18

Topics may include advanced elasticity, plasticity, tribology, probabilistic machine design, robotics, advanced and computational dynamics and nonlinear mechanics.

Requisites:
Prerequisite: ME 802 or CE 802 or ME 716 or ME 846.

Typically Offered
On sufficient demand

ME 942 - Convection Heat Transfer

Credits: 3

Energy and momentum equations in convective heat transfer, laminar and turbulent thermal boundary layers, steady and nonsteady convection problems.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 573.

Typically Offered
Spring-Odd Years

ME 943 - Radiation Heat Transfer

Credits: 3

Basic theories of thermal radiation, shape factors; exact and approximate solutions of integral equations of radiation heat transfer between solid surfaces with absorbing or nonabsorbing medium.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 573.

Typically Offered
Fall-Even Years

ME 947 - Boiling Heat Transfer

Credits: 3

Principles of boiling heat transfer and thermal hydraulics of two-phase flow; computational methods; design and analysis applications.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: ME 942

Typically Offered
Fall-Odd Years

ME 999 - Dissertation Research in Mechanical Engineering PhD Level

Credits: 1-18

Requisites:
Prerequisite: Approval of department head and major professor.

Typically Offered
Fall, Spring, Summer

MFT 805 - Brief Solution-Focused Therapy

Credits: 1

Overview of Brief Solution-Focused Therapy which is a core model of therapy that can be used when students begin practicum the following semester. Students practice this therapeutic approach in role-play settings.

Typically Offered
Spring

MIS 555 - Studio 5: Business Programming Applications II

Credits: 3

Advanced application of business-related object-oriented programming fundamentals. This course focuses on the utilization of web programming languages and mobile software development for creating solutions to business problems.

Note:
Management Information Systems (MIS) Majors only or consent of department head.

Requisites:
Prerequisite: MIS 411 and either MIS 422 or MIS 667.

Typically Offered
Fall

MIS 566 - Studio 6: Systems Analysis and Design

Credits: 3

An in-depth study of systems analysis and design techniques viewing information systems as an integral component of organizational strategic planning. Emphasis on systems planning, use of CASE tools, process and data modeling, quality and systems reengineering.

Note:
Management Information Systems (MIS) Majors only or consent of department head.

Requisites:
Prerequisite: MIS 433 and either MIS 444 or MIS 667.

Typically Offered
Fall

MIS 656 - Systems Analysis & Design

Credits: 3

An in-depth study of systems analysis & design techniques viewing information systems as an integral component of organizational strategic planning. Emphasis on systems planning, use of CASE tools, process and data modeling, and creating design specification for business applications.

Requisites:
Prerequisite: MIS 411 or permission of instructor.

Typically Offered
On sufficient demand

MIS 665 - Business Analytics and Data Mining

Credits: 3

In-depth study of a broad range of topics and techniques in business intelligence (BI), data mining, and database marketing (DM). Emphasis on fundamentals of relational database management, data warehousing as a business practice, customer relationship management (CRM), customer segmentation, various data mining techniques, data visualization, business performance management, use of scorecard/dashboard, and advanced BI and data mining software tools.

Requisites:
Prerequisite: MANGT 366 or MIS 366 or an equivalent introductory computing course.

Typically Offered
Fall, Spring

MIS 667 - Applications of Data Models in Business

Credits: 3

Examination of database theory, design, implementation and the value of data to an organization. Study of data query languages including the definition and creation of database objects, manipulation of data stores including entry, modification, removal and extraction, and database programming fundamentals.

Note:
This class will be an online version of database to help manage overflow and off campus Management Information Systems (MIS) students.

Requisites:
Prerequisite: MIS 444 or permission of instructor.

Typically Offered
On Sufficient Demand

MIS 670 - Social Media Analytics and Web Mining

Credits: 3

This course is an in-depth study of a broad range of topics and techniques in the areas of social media analytics, web mining and social network analysis. Emphasis is on fundamentals of data acquisition from the web and social media platforms, transformation of these unstructured data into structured format, advanced data processing techniques for analysis, business intelligence through web crawling, analysis of web and social media data using classification, clustering, and association techniques, sentiment analysis (or opinion mining) for business decisions, visualization of unstructured data, and social network analysis.

Requisites:
Prerequisite: MANGT 366 or an equivalent introductory computing course.

Typically Offered
On sufficient demand

MIS 677 - Studio 7: Senior MIS Project

Credits: 3

Senior project. Students must demonstrate proficiency in the analysis, design and implementation of a business application by creating a working prototype of a business application. The prototype must include a graphical user interface with operable connections to a remote database.

Note:
Management Information Systems (MIS) Majors only or consent of department head.

Requisites:
Prerequisite: MIS 555 and MIS 566.

Typically Offered
Spring

MKTG 541 - Retailing

Credits: 3

Designed to introduce the student to the role retailing performs in the distribution of consumer goods and services. The course will survey the retailing environment and incorporate strategic planning from the management point of view; study retail policies and organizations; merchandise control; personnel management; retail accounting and expense control.

Requisites:
Prerequisite: MKTG 400.

Typically Offered
On sufficient demand

MKTG 543 - Integrated Marketing Communications

Credits: 3

Focuses on the management of promotional programs which include elements of advertising, personal selling, sales promotion, and public relations. Includes a review of concepts from economics, behavioral sciences, and mathematics which play a role in creating, executing, and evaluating promotional programs.

Requisites:
Prerequisite: MKTG 400.

Typically Offered
Fall or Spring

MKTG 544 - International Marketing

Credits: 3

This course deals with the problems and perspectives of marketing across national boundaries. It also focuses on the tools and practices for structuring and controlling marketing programs related to overseas business. Emphasis is on the management of marketing functions in a global context. Topics include international trade organizations, international economic factors, foreign business customs, and the international marketing mix.

Requisites:
Prerequisite: MKTG 400.

Typically Offered
Fall, Spring

MKTG 545 - Marketing Channels

Credits: 3

Study of the quantitative and qualitative factors involved in selecting, developing, managing, and controlling marketing channels of distribution. Includes decision models from industrial marketers through purchasing units.

Requisites:
Prerequisite: MKTG 400.

Typically Offered
On sufficient demand

MKTG 546 - Services Marketing

Credits: 3

An analysis of the unique marketing challenges faced by service organizations. Major topics include the unique characteristics of services, creating and positioning a service in the marketplace, distributing, promoting and pricing services. An evaluation of marketing strategies from the perspective of a service firm.

Requisites:
Prerequisite: MKTG 400.

Typically Offered
Fall or Spring

MKTG 547 - International Business

Credits: 3

This course provides students with an appreciation of the opportunities and unique challenges in international business, an understanding of the strategic and operational options available to an international firm, and managerial decision making abilities required to be successful abroad. The course examines strategic and operational issues involved in international business activity and how to best manage these issues.

Requisites:
Prerequisite: MKTG 400, MANGT 420.

Typically Offered
On sufficient demand

MKTG 548 - Marketing Field Study

Credits: 3

This course is designed to provide students with an opportunity to observe international business and marketing perspectives by participating in a field trip outside the United States. This experiential course may involve a combination of business visits, cultural experiences, internship activities, or other learning activities while abroad.

Requisites:
Prerequisite: MKTG 400 or SALES 542.

Typically Offered
On sufficient demand

MKTG 550 - Business to Business Marketing

Credits: 3

A study of the nature of the industrial marketplace, concentrating on those aspects that differentiate it from the consumer markets. The major topics are analysis of market needs, market segments, organizational buying behavior, purchasing agent functions and activities, marketing strategy and mix for institutional customers, not-for-profit and services marketing, and buyer/seller relationships.

Requisites:
Prerequisite: MKTG 400.

Typically Offered
Fall, Spring

MKTG 580 - Marketing Analytics Fundamentals

Credits: 3

Business intelligence is a systematic approach to harnessing customer data and competitive information to drive strategic business decision making. This course deals with how to collect and analyze business data to enhance quality of decision making in modern enterprises. This course will be largely based on regression techniques (deductive approach). The course will be based on lectures, case analysis, and hands-on exercises to make students comfortable with powerful computing tools used for data analysis. The cases and exercises will be bundled with data which will be used to apply concepts learned in class to real business situations.

Requisites:

Prerequisite: STAT 350 or equivalent.

Typically Offered
Fall or Spring

MKTG 581 - Applications of Marketing Analytics

Credits: 3

Marketing analytics focuses on applications of quantitative analysis to understand dynamic marketing phenomena. This course is a mixture of lectures on essential marketing concepts/econometrics/text mining, instructions on software program (Stata and R), and discussions of marketing cases to facilitate students' critical thinking and decision making leveraged by analytical ability. To facilitate learning statistical software programs, students will practice hands-on projects in the computer lab.

Learning outcomes are that students will be able to do the following:

- Choose correct quantitative analysis methodologies
- Learn data analysis software programs (Stata and R)
- Make strategic decisions based on data analysis and communicate marketing strategies

Requisites:
Prerequisite: STAT 350 Business and Economic Statistics I or equivalent.

Typically Offered
Fall or Spring

MKTG 625 - Entertainment Marketing

Credits: 3

Examines the entertainment industry using strategic marketing approaches to assess market opportunities, develop marketing strategies, and design implementation tactics.

Requisites:
Prerequisite: MKTG 400

Typically Offered
Spring

MKTG 630 - Sports Marketing

Credits: 3

This course provides students with the opportunity to study the nature and scope of marketing a sports franchise as well as marketing traditional products or services with the assistance of sports figures. Topics include sports franchise promotion, sports identification, consumer loyalty to a team and consumer loyalty to participation sports.

Requisites:
Prerequisite: MKTG 400.

Typically Offered
Fall

MKTG 635 - Digital Marketing

Credits: 3

This course is designed to provide students with the awareness and understanding of how internet and web-based technologies can be utilized to create effective marketing programs. Major topics will include new product development, brand building, promotion, pricing, and distribution in an electronic commerce context.

Requisites:
Prerequisite: MKTG 400.

Typically Offered
Fall, Spring

MKTG 642 - Marketing Research

Credits: 3

Marketing research is designed to acquaint the students with concepts, methods, and applications of research regarding the market environment. Topics include business problem identification, qualitative & quantitative research design formulation, primary & secondary data collection methods, advanced data analysis approaches, and communicating the value of findings from analysis. This capstone course on the marketing analytics track helps the students integrate marketing knowledge and analytical skills by conducting business case analyses and comprehensive data analysis projects so that they can make insightful decisions based on empirical evidence.

Requisites:
Prerequisite: MANGT 366 or MIS 366.

Typically Offered
Fall, Spring

MKTG 690 - Marketing Strategy

Credits: 3

Analysis of marketing situations which lead to appropriate management of the marketing program's objectives. Capstone course integrates knowledge of marketing and other business management principles into marketing strategy, development, implementation, and control.

Note:
Undergraduates must be business students admitted in a College Business Administration degree track (major).

Requisites:
Prerequisite: MKTG 450, SALES 542, and senior standing.

Typically Offered
Fall, Spring

MKTG 699 - Corporate Marketing Practicum

Credits: 3

For high GPA marketing students to gain additional marketing insight by working with a company in applying marketing concepts.

Repeat for Credit
Not repeatable.

Requisites:
Prerequisites: Consent of Instructor. Junior standing.

Typically Offered
Fall, Spring

MKTG 810 - Marketing Concepts and Research

Credits: 3

Presents marketing concepts and marketing research concepts at the graduate level. Emphasis is directed toward managerial strategy development using marketing theories and applied marketing research techniques.

Requisites:
Prerequisite: Three hours of economics, three hours of statistics, and MATH 205 or MATH 220.

Typically Offered
Fall

MKTG 842 - Advanced Marketing Research

Credits: 3

Application of advanced research methods to help solve marketing problems. Intensive examination of experimental and survey designs, data collection methods, and selected multivariate analysis techniques are covered.

Requisites:
Prerequisite: STAT 351, MKTG 640, and MKTG 642.

Typically Offered
On sufficient demand

MKTG 844 - Advanced International Marketing

Credits: 3

This course is designed to develop the students' managerial decision making ability in international marketing. The course will focus on the internationalization process of firms, the unique issues in international marketing, and international marketing strategy. The course will integrate short lectures, class discussions, and case analysis to achieve its objectives.

Requisites:
Prerequisite: MKTG 810.

Typically Offered
On sufficient demand

MKTG 860 - Advanced International Business

Credits: 3

This course is designed to introduce the student to the nature and scope of fundamental business skills requisite for a career in international business. A unified survey of the international aspects of accounting, finance, management, marketing and related subjects will be made that is useful to a manager in a global business enterprise. Emphasis will be placed on the identification, articulation and implementation of successful global strategies.

Requisites:

Prerequisite: ACCTG 810, ECON 815, FINAN 815, MANGT 820, MANGT 810, MANGT 830, MKTG 810, and STAT 702 or enrollment in the MAcc program.

Typically Offered
On sufficient demand

MKTG 880 - Applied Marketing Analytics

Credits: 3

Business Intelligence is a systematic approach to harnessing customer data and competitive information to drive strategic business decision making. This course deals with how to collect and analyze business data to enhance quality of decision making in modern enterprises. Unlike courses based on data mining (inductive approach), this course will be largely based on regression techniques (deductive approach). The course will be based on lectures, case analysis, and hands on exercises to make students comfortable with powerful computing tools used for data analysis. The cases and exercises will be bundled with data which will be used to apply concepts learned in class to real business situations.

Requisites:
Prerequisite: Graduate student standing.

Typically Offered
Spring

MKTG 881 - Advanced Marketing Analytics

Credits: 3

Students will gain an understanding of econometric and statistical methods of analysis and their application to business problems. Through lectures and exercises, student will use software tools often used in business for data analysis. Students will also learn how to interpret and apply the results from the software in data analyses. Emphasis will be placed on the application of econometric and statistical methods of data analyses. Topics will include customer choice analysis, customer segmentation and targeting, customer lifetime value calculation, and forecasting.

Requisites:
Prerequisite: Graduate student standing.

Typically Offered
Fall

MKTG 891 - Special Topics in Marketing

Credits: 3

Investigation and discussion of a selected topic in marketing. One of the following five topics will be chosen for intensive study: (1) industrial marketing management, (2) advanced consumer behavior, (3) product policy, (4) financial aspects of marketing management, (5) marketing in the service sector.

Requisites:
Prerequisite: MKTG 810 or 6 hours of marketing.

Typically Offered
On sufficient demand

MLANG 507 - European Literature in Translation

Credits: 3

Selected readings in English from the major authors of Europe and the Spanish-speaking world.

Note:
Courses taught in English.

MLANG 600 - Principles of Linguistics: Language Structure and Language Use

Credits: 3

Introduction to the fundamentals of linguistic analysis, including the sound system (phonetics and phonology), word formation (morphology), sentence formation (syntax), meaning (semantics and pragmatics). Formal and functional (usagebased) perspectives. Application of linguistics to language acquisition theory and to pedagogy.

Requisites:
Prerequisite: For ML majors & minors: GRMN 523 or GRMN 527, or FREN 513 or FREN 518 or one 700-level class, or SPAN 410 or SPAN 420 or SPAN 510; For other majors: ENGL 200.

Typically Offered
Fall

MLANG 710 - Foreign Language Pedagogy

Credits: 3

Second and foreign language pedagogical theory is combined with the examination of practical concerns in the teaching of languages, in order to provide future and current instructors with the necessary background for making informed decisions concerning classroom practices. Taught in English.

Requisites:
Prerequisite: Instructor approval required.

Typically Offered
Fall

MLANG 720 - Introduction to Literary Theory and Research Methodology

Credits: 3

An overview of theoretical approaches and classical texts that inform current trends in literary research in the modern languages.

Typically Offered
On sufficient demand

MLANG 770 - Theories of 2nd Language Acquisition

Credits: 3

Introduction to the major theoretical frameworks of second language acquisition (SLA). Reading, discussion, and analysis of SLA research on a variety of linguistic and learning issues. Of interest to students of both language acquisition and literature. Taught in English.

Requisites:
Prerequisite: Instructor approval required.

Typically Offered
Spring

MLANG 779 - Seminar in Modern Languages

Credits: 3

Variable topics.

Typically Offered
Fall

MLANG 800 - Colloquium in Modern Languages

Credits: 2

A graduate colloquium for M. A. candidates in French, German, and Spanish. Variable topics in literary and cultural fields appropriate to study in common by students in these languages.

MLANG 803 - Practicum in Adult TESL/TEFL: Oral Communication

Credits: 3

Provides both on an overview of current issues and methodology in TESL/TEFL and provides a foundation for further exploration of techniques used in skill specific areas of oral communication.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring, Summer

MLANG 804 - Practicum in Adult TESL/TEFL: Written Communication

Credits: 3

Provides both on an overview of current issues and methodology in TESL/TEFL and provides a foundation for further exploration of techniques used in skill specific areas of written communication.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring, Summer

MLANG 805 - Second Language Assessment

Credits: 3

Explores the basic concepts, principles, and methodology of second language assessment.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall, Spring, Summer

MLANG 899 - Research in Modern Languages

Credits: 1-18

Typically Offered
Fall

MLAS 500 - Reinforcement Learning in Autonomous Systems

Credits: 3

This course will guide students through the development and operationalization of reinforcement learning frameworks. Reinforcement learning architectures such as Markov decision processes, Q-Learning, artificial neural networks, recurrent neural networks, and generative adversarial networks will be explored. This course is a guide to the complexities of reinforcement learning, their respective architectures and implementations within an autonomous system.

Requisites:
Prerequisite: STAT 325 and MLAS 350 or CC 315

Typically Offered
Fall

MLAS 501 - Artificial Intelligence Studio

Credits: 3-6

Students are expected to develop and operationalize an artificially intelligent framework using applied statistical methods, techniques in probabilistic programming, and principles of artificial intelligence. Students will be required to document underlying AI theories and demonstrate an operationalized AI framework.

Repeat for Credit
Repeatable for up to 6 credit hours.

Requisites:
Corequisites: MLAS 390 or MLAS 400 or MLAS 500

Typically Offered
Fall, Spring, Summer

MLAS 502 - Autonomous Systems Senior Capstone

Credits: 6

Students are expected to develop and operationalize an autonomous system using cybernetic principles of learning, computational frameworks, quantitative methods, and principles of engineering. Students will develop project documentation as needed to describe their autonomous systems project. Lastly, students will be required to successfully defend their project via a final oral presentation to associated faculty members. Whenever feasible, real-world projects are solicited from businesses.

Requisites:
Prerequisites: MLAS 390, MLAS 400, and MLAS 500

Typically Offered
Spring

MPH 701 - Fundamental Methods of Biostatistics

Credits: 3

A course emphasizing concepts and practice of statistical data analysis for the health sciences. Basic techniques of descriptive and inferential statistical methods applied to health related surveys and designed experiments. Populations and samples, parameters and statistics; sampling distributions for hypothesis testing and confidence intervals for means and proportions involving one sample, paired samples and multiple independent samples; odds ratios, risk ratios, simple linear regression. Use of statistical software to facilitate the collection, manipulation, analysis and interpretation of health related data.

Typically Offered
Fall, Spring, Summer

Crosslisted:
STAT 701

MPH 708 - Veterinary Epidemiology

Credits: 2

Introduction to the principles and methods of veterinary epidemiology: emphasizing how diseases affect populations (and associated implications for individuals), and application to disease diagnosis, treatment, prevention,

and control.

Typically Offered
Spring

Crosslisted:
DMP 708

MPH 720 - Administration of Health Care Organizations

Credits: 3

Comprehensive review of current health care institutions and their response to the economic, social/ethical, political/legal, technological, and ecological environments.

Note:
Three hours lecture

Typically Offered
Spring

Crosslisted:
FNDH 720

MPH 754 - Introduction to Epidemiology

Credits: 3

The purpose of this course is to introduce students to the basic principles and methods of epidemiology in order to recognize and understand how disease affects populations (and the associated implications for individuals). This course will prepare students to use epidemiologic methods to solve current and future challenges to diagnose, treat, prevent, and control disease during their professional training and throughout their career.

Typically Offered
Fall

Crosslisted:
DMP 754

MPH 802 - Environmental Health

Credits: 3

This is a three-credit graduate-level course consisting of a 3-hour meeting per week. Students will be exposed to professional practice of environmental sciences, epidemiology, toxicology, occupational health and industrial hygiene, and consumer health and safety. Topics include the methods for defining environmental contamination; identifying contaminants, pathogens and toxins; assessing risks and causality; determining health impact; ameliorating hazards; and protecting the population through waste management, regulatory programs, environmental inspections, food and product safety, and environmental policy. Includes interaction with professionals in public health practice. There will be 3 one hour lectures each week. Participation is required.

Typically Offered
Fall

Crosslisted:
DMP - 802 Environmental Health

MPH 806 - Environmental Toxicology

Credits: 2

An advanced toxicology course concerned with the occurrence, biological effect, detection, and control of foreign chemicals in the environment.

Requisites:
Prerequisite: Consent of staff.

Typically Offered
Spring

Crosslisted:
DMP 806

MPH 818 - Social and Behavioral Bases of Public Health

Credits: 3

The role of behavioral, social, psychological, economic, environmental, and social structural factors in both the occurrence of health problems in groups and populations, and in the development of the risk factors that contribute to these problems. Principles of health behavior change and the application of these principles to a variety of health issues as well as an emphasis on how social structural factors impact health are examined to better understand health behavior and health inequities in contemporary society.

Requisites:
Prerequisite: Graduate status in public health or kinesiology program.

Typically Offered
Fall

Crosslisted:
KIN 818

MPH 840 - Public Health Practice

Credits: 3-6

Supervised field experience in an international, state, local, or district health agency or other appropriate health agency.

Repeat for Credit
Repeatable. Only 6 hours may be applied toward the MPH degree/program of study.

Requisites:
Prerequisite: Consent of instructor. FDSCI 840, DMP 840, FNDH 840, and KIN 840.

Typically Offered
Fall, Spring, Summer

Crosslisted:
FDSCI 840, DMP 840, FNDH 840, KIN 840

MPH 854 - Intermediate Epidemiology

Credits: 3

Epidemiologic principles of disease with a focus on measures of disease occurrence, association and impact, determinants of disease diagnostic test evaluation, study design and critical literature evaluation.

Requisites:
Prerequisite: DMP 708 or DMP 754 or equivalent AND STAT 701 or STAT 703 or DMP 830 or equivalent.

Typically Offered
Spring

Crosslisted:
DMP 854

MUSIC 500 - Applied Recital

Credits: 0

Public performance; vocal or instrumental with a suggested performing time of 25 minutes. Intended for performances in addition to required recital performances (MUSIC 502 and/or 501).

Requisites:
Prerequisite: MUSIC 255

Corequisite: MUSIC 255 or MUSIC 455

Typically Offered
Fall, Spring

MUSIC 501 - Half Recital

Credits: 0

Public performance; vocal or instrumental with suggested performing time of 25 minutes.

Typically Offered
Fall, Spring, Summer

MUSIC 502 - Full Recital

Credits: 0

Public performance; vocal or instrumental with suggested performing time of 50 minutes.

Typically Offered
Fall, Spring, Summer

MUSIC 510 - A Survey of Music Therapy

Credits: 3

This course will provide students with an overview of music therapy: its history, theoretical bases, training requirements, common settings for its use, and general techniques employed. Upon completion of this course, students will have a basic understanding of the music therapy profession, and have knowledge of music therapy as a viable career option.

Requisites:
Prerequisite: Junior standing or consent of instructor.

Typically Offered
Fall, Spring, Summer

MUSIC 511 - Music in the Schools, K-6

Credits: 3

The study of the musical characteristics of children and development of appropriate curriculum, instructional materials and techniques, and related technology for teaching musical understanding, literacy, multi-cultural connections, and creative improvisation in grades K-6 instrumental, vocal, and general music.

Note:
This course includes supervised field experiences.

Requisites:
Prerequisite: concurrent enrollment in EDCEP 315, EDCI 320, EDSP 323.

Typically Offered
Spring

MUSIC 512 - Music Program in Junior/Senior High Schools

Credits: 3

Organization and administration of the comprehensive music program in junior and senior high schools; including the study of vocal and instrumental ensemble development, as well as techniques and materials for other types of music classes.

Note:
This course includes a supervised field experience.

Requisites:
Prerequisite: concurrent enrollment in EDCEP 315, EDCI 320, EDSP 323.

Typically Offered
Fall

MUSIC 513 - Teaching Beginning Band and Jazz Techniques

Credits: 1

Students will learn and employ techniques and strategies for teaching beginning band and beginning through intermediate jazz ensemble.

Typically Offered
Spring

MUSIC 517 - Choral Conducting

Credits: 1

Continued mastery of the skills in Conducting I while emphasizing essential techniques and interpretation for choral ensembles.

Requisites:
Prerequisite: MUSIC 322, MUSIC 360, MUSIC 361, MUSIC 417.

Typically Offered
Spring

MUSIC 518 - Instrumental Conducting

Credits: 1

Continued mastery of the skills in Conducting I while emphasizing essential techniques and interpretation for instrumental ensembles.

Requisites:
Prerequisite: MUSIC 322, MUSIC 360, MUSIC 361, MUSIC 417.

Typically Offered
Spring

MUSIC 523 - Upper-Division Composition

Credits: 0-18

Composition instruction through individual lessons and group seminar instruction. Emphasis on meeting professional standards of composition adn score/part preparation and creation of a varied portfolio of works.

Requisites:
Prerequisite: Submission of a portfolio of pieces for faculty review and approval.

Typically Offered
Fall, Spring, Summer

MUSIC 525 - Instrumentation and Arranging

Credits: 2

Study of writing and arranging for the strings, woodwinds, brass and percussion as well as choral ensembles. Functional ranges and practical applications through score study and projects.

Requisites:
Prerequisite: MUSIC 322, MUSIC 360, MUSIC 361.

Typically Offered
Fall

MUSIC 530 - Music History I: Ancient Greece through 1700

Credits: 3

An overview of stylistic trends, major composers, repertoire of ancient Greece, the Middle Ages, Renaissance and early Baroque periods.

Requisites:
Prerequisite: Grade of C or higher in MUSIC 320.

Typically Offered
Fall

MUSIC 531 - Music History II: 1700 to 1850

Credits: 3

An overview of stylistic trends, major composers, repertoire of the late Baroque, Classical and early Romantic periods.

Requisites:
Prerequisite: Grade of C or higher in MUSIC 320.

Typically Offered
Spring

MUSIC 532 - Music History III: 1850 to the Present

Credits: 3

An overview of the development of stylistic and cultural trends, major composers, and repertoire of the late Romantic period through the present.

Requisites:
Prerequisite: Grade of C or higher in Music 320.

Typically Offered
Fall

MUSIC 570 - Musical Comedy

Credits: 3

The history of operetta and music comedy from Offenbach to the present.

Typically Offered
On sufficient demand

MUSIC 599 - Special Studies in Music

Credits: 1-3

Requisites:
Prerequisite: Background of courses needed for studies undertaken.

Typically Offered
Fall, Spring, Summer

MUSIC 603 - Percussion Pedagogy

Credits: 2-3

Advanced study of percussion instruments and related performance techniques, teaching methods and responsibilities, organization, and literature.

Typically Offered
Other

MUSIC 604 - Upper String Pedagogy

Credits: 2-3

Study of violin technique and related teaching methods, also applicable to other bowed string instruments.

Note:
The three credit-hour option includes additional assignments.

Typically Offered
Summer

MUSIC 605 - Lower String Pedagogy

Credits: 2

Study of low string technique and related teaching methods. Intended for teachers of string, concert/jazz bands and vocal music if they use a bass with accompaniment combos for pit orchestras or swing choirs.

Typically Offered
Summer

MUSIC 614 - Graduate Theory Review

Credits: 2

For graduate students in music for whom additional work in the harmonic and formal aspects of tonal and chromatic music is needed.

Note:
This course does not fulfill degree requirements.

Typically Offered
Fall, Summer

MUSIC 615 - 18th Century Counterpoint

Credits: 2

Contrapuntal compositional techniques from the late Baroque to Classical periods, including compositional procedures for the canon and fugue.

Requisites:
Prerequisite: MUSIC 322, MUSIC 360, MUSIC 361, or consent of instructor

Typically Offered
Fall, Summer

MUSIC 616 - Theories of Contemporary Music

Credits: 2

Introduction to analytical and compositional techniques applicable to the predominately non-tonal music of the 20th and 21st centuries.

Requisites:
Prerequisite: MUSIC 322, MUSIC 360, MUSIC 361, or consent of instructor.

Typically Offered
Spring, Summer

MUSIC 618 - Graduate History Review

Credits: 2

For graduate students in music for whom additional work in music history is needed based on thier performance on the Graduate Music History Entrance Exam. This course does not fulfill graduate degree requirements. A grade of an A or B is required to enroll in graduate level music history courses.

Typically Offered
Fall, Summer

MUSIC 631 - Technology of the Electronic Music Studio

Credits: 2

Instrumentation and systematic procedures as applied to the construction of electronic music. Principles of voltage-controlled systems, synchronous tape machines, and audio mixing. Individual and team projects.

Requisites:
Prerequisite: MUSIC 521, consent of instructor.

Typically Offered
Fall, Summer

MUSIC 632 - Digital Sound Synthesis

Credits: 2

Exploration of real-time interactive systems. Theory and application pertaining to the creation of instruments and scores using additive and FM techniques. Team projects.

Requisites:
Prerequisite: MUSIC 631.

Typically Offered
On sufficient demand

MUSIC 636 - Advanced Woodwind Techniques

Credits: 2

Advanced techniques in the teaching of all woodwind instruments for music teachers.

Typically Offered
Other

MUSIC 637 - Advanced Brass Techniques

Credits: 2

Advanced techniques in the teaching of all brass instruments for music teachers.

Typically Offered
Other

MUSIC 638 - Concert and Ethnic Percussion Techniques

Credits: 2-3

Advanced study of percussion performance techniques commonly associated with concert band and percussion ensemble, as well as percussion techniques associated with music of other cultures.

Note:
The three credit-hour option includes additional assignments.

Typically Offered
Other

MUSIC 639 - Jazz and Marching Percussion Techniques

Credits: 2-3

Advanced study of percussion performance techniques commonly associated with marching percussion and jazz idioms.

Note:
The three credit-hour option includes additional assignments.

Typically Offered
Other

MUSIC 641 - Secondary Performance Area

Credits: 1-3

For graduate students who wish to study an instrument (or voice) other than the major performance area. Pedagogical methods and fundamentals are stressed.

Typically Offered
Fall, Spring, Summer

MUSIC 650 - History of the Opera

Credits: 3

A study of selected masterpieces of musical drama, with emphasis on the relationship of music and drama, and on the unique qualities of opera as a collective artwork.

Requisites:
Prerequisite: MUSIC 201 or MUSIC 250.

Typically Offered
Other

MUSIC 660 - Marching Band Techniques

Credits: 2

Philosophical and practical purposes of the marching band, and the skills necessary to design, organize, instruct, and evaluate a marching band show.

Requisites:
Prerequisite: MUSIC 512.

Typically Offered
Fall-Odd Years

MUSIC 661 - Choral Ensemble Techniques

Credits: 2

Philosophical and practical study of the choral ensemble, and the skills necessary to design, organize, instruct and evaluate the choral program.

Typically Offered
Other

MUSIC 662 - Introduction to Historical Performance Practice

Credits: 3

Studies the changing performance styles in music from the Middle Ages to the 18th century. Examines problems in the field of historical performance practices. Interpretation of musical performances (ornamentation, articulation, tuning, temperament, rhythmic elements, and tempo) based

on contemporaneous sources. Students will perform short selections and prepare musical editions based on their findings.

Requisites:
Prerequisite: MUSIC 360

Typically Offered
Spring

MUSIC 665 - Jazz Techniques

Credits: 2

Basic practices found in jazz education, including literature, teaching techniques, and resource materials.

Typically Offered
Spring, Summer

MUSIC 670 - Advanced Studies in Music Education

Credits: 2

Advanced instructional methods and technologies related to the teaching of music in grades pre-K-12 implemented through investigation of current trends in the field, advanced unit design, and field experience.

Requisites:
Prerequisite: EDCEP 315, EDCI 320, EDSP 323, and prerequisite or concurrent enrollment in MUSIC 511, MUSIC 512.

Typically Offered
Fall, Spring

MUSIC 675 - Arranging for Bands

Credits: 2

Assessing, evaluating, and applying the basic issues, techniques, and possibilities inherent in scoring and arranging for various windband media. Primary attention will be given to concert and marching bands, but students will also spend time learning about various jazz ensembles and other possible combinations of wind and percussion instruments.

Requisites:
Prerequisite: MUSIC 525.

Typically Offered
Spring-Odd Years

MUSIC 676 - Arranging Choral Music

Credits: 2

Application of basic compositional issues, techniques, and possibilities inherent in scoring and arranging for various choral ensembles.

Typically Offered
Other

MUSIC 680 - Advanced Instrumental Rehearsal Techniques

Credits: 2

Explore, evaluate, and develop the musical understanding and skills necessary in leading instrumental ensembles toward significant musical expression through effective rehearsal techniques.

Typically Offered
Other

MUSIC 681 - Advanced Choral Rehearsal Techniques

Credits: 2

Explore, evaluate, and develop the musical understanding and skills necessary in leading choral ensembles toward significant musical expression through effective rehearsal techniques.

Typically Offered
Other

MUSIC 685 - Organization and Administration of School Music Programs

Credits: 2

Provides models and ideas on organizing program/teaching to enable the teacher and students to succeed and enjoy the music making process. Present strategies and philosophies on dealing with administrators, parents, peers, and students will be discussed, as well as motivation of self and student.

Typically Offered
Fall-Odd Years

MUSIC 690 - Survey of Vocal Solos for Adolescents

Credits: 3

An in-depth study of appropriate solo literature for adolescent singers.

Typically Offered
Summer

MUSIC 696 - Jazz Theory I

Credits: 1

Basic fundamentals of jazz theory to develop critical thinking and performing skills.

Requisites:
Prerequisite: MUSIC 230 with grade of C or better.

Typically Offered
Fall

MUSIC 697 - Jazz Theory II

Credits: 1

Intermediate level fundamentals of jazz theory to develop critical thinking and performing skills.

Requisites:
Prerequisite: MUSIC 696, MUSIC 298.

Typically Offered
Fall

MUSIC 698 - Jazz Improvisation I

Credits: 1

Develop skills in the area of jazz improvisation in a performance lab setting.

Requisites:
Prerequisite: MUSIC 696.

Typically Offered
Fall

MUSIC 699 - Jazz Improvisation II

Credits: 1

Continued development of jazz improvisational skills in a performance lab setting.

Requisites:
Prerequisite: MUSIC 697 or consent of instructor.

Typically Offered
Fall

MUSIC 700 - Literature Analysis

Credits: 3

Explore, evaluate, and analyze the masterworks of the wind, choral, and orchestral genres. This course will alternated annually between Instrumental and Choral literature.

Typically Offered
Summer

MUSIC 702 - Style Analysis

Credits: 3

Training in a comprehensive, systematic analytical approach to all style periods, and in verbalizing analytical perceptions.

Typically Offered
Fall, Summer

MUSIC 704 - Symphonic Literature

Credits: 3

The development of orchestral music from the late Baroque to the present, with emphasis on selected symphonies of the late eighteenth and nineteenth centuries.

Typically Offered
Other

MUSIC 705 - Chamber Music Literature

Credits: 3

A selected survey of masterpieces of small ensemble music

from 1750 to the present. Special emphasis on the string quartet.

Typically Offered
Other

MUSIC 706 - Song Literature

Credits: 3

Survey, by historical period and national styles, of major solo vocal works.

Typically Offered
Other

MUSIC 707 - History of Wind Bands

Credits: 3

Development of the wind band medium from the Renaissance to the present, with focus on the composers and literature.

Typically Offered
Other

MUSIC 708 - Choral Literature

Credits: 3

A study of standard choral masterpieces in both large and small forms from 1450 to the present.

Typically Offered
Other

MUSIC 709 - History of School Choral Music

Credits: 3

Development of choral music in schools with focus on composers and literature.

Typically Offered
Fall-Even Years

MUSIC 714 - Advanced Orchestration

Credits: 2

The study of orchestra and band scores. Exercises in orchestrating this type of music for different choirs of instruments, as well as scoring for full orchestra and symphonic band.

Requisites:
Prerequisite: MUSIC 525.

Typically Offered
Spring

MUSIC 737 - Organ Literature

Credits: 3

A survey of significant compositions from the Renaissance to the present with emphasis on performance practice.

Typically Offered
Other

MUSIC 738 - Piano Literature

Credits: 3

Selective survey of music for piano from 1750 to the present.

Typically Offered
Other

MUSIC 740 - Studies in Music Literature

Credits: 3

Study of the repertory of a selected musical genre or medium of performance.

MUSIC 759 - Techniques of Music Technology

Credits: 2

Students develop skills of notation, scanning, manipulating, sequencing, and recording necessary to integrate digital technologies into the practice of music making and teaching.

Typically Offered
Summer

MUSIC 766 - Seminar in the Life and Works of an Individual Composer

Credits: 3

Study of the career and achievements of a selected composer of major stature.

Typically Offered
Fall, Summer

MUSIC 767 - Topics in American Music

Credits: 3

Studies of the various genres of American music.

Typically Offered
On sufficient demand

MUSIC 791 - Advanced Vocal Pedagogy

Credits: 2

Advanced study of vocal production, exploring the scientific principles of breathing, resonance, timbre, and other vocal features. Discussion of vocal health and teaching styles.

Typically Offered
Fall-Even Years

MUSIC 799 - Problems in Music

Credits: 1-18

Individual guided work in a selected area.

Note:
No more than three hours of Problems in Music may be applied to the master's degree.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: 6 hours graduate credit in music.

Typically Offered
Fall, Spring, Summer

MUSIC 801 - Introduction to Graduate Study in Music

Credits: 2

Library procedures, bibliography, research methods, and practice in preparing scholarly papers.

Note:
Required of all graduate students in music.

Requisites:
Prerequisite: At least 30 hours of music theory and music history.

Typically Offered
Other

MUSIC 802 - Seminar in Music Theory

Credits: 3

Comparison of major theoretical treatises and historical compositional practices; practical application for the modern musician.

Requisites:
Prerequisite: Twenty hours of music theory.

Typically Offered
Other

MUSIC 803 - Seminar in Music History

Credits: 2

The history of music with emphasis on the correlation of stylistic factors and man's cultural environment.

Typically Offered
Summer

MUSIC 804 - Advanced Analysis

Credits: 3

An in-depth study of works by later Romantic and modern composers: techniques and styles in relation to form.

Requisites:
Prerequisite: Twenty hours music theory.

Typically Offered
Other

MUSIC 805 - Theories of Music Education

Credits: 3

A survey of the history of music teaching in the United States, with emphasis on the relationship of various theories of music, musical perception, and musical cognition to current practices in teaching music at all levels.

Typically Offered
Fall-Even Years

MUSIC 806 - Psychology of Music

Credits: 3

Acquaints students with musical acoustics, perception and cognition of music, music learning, nature and testing of musical aptitude and achievement, affective response to music, musical preference, and the functionality of music.

Typically Offered
Other

MUSIC 807 - History and Philosophy of Music Education

Credits: 3

The study of history and philosophy of music education in the U.S.

Typically Offered
Spring-Even Years

MUSIC 808 - Research in Music Education

Credits: 3

An introduction to historical, descriptive, and experimental research in music education, including a study of techniques for the evaluation of music teaching and learning.

Typically Offered
Fall-Odd Years

MUSIC 809 - Seminar in Music Education

Credits: 3

Advanced studies of various topics related to the music.

Repeat for Credit
Repeatable. May be repeated when topics vary.

Typically Offered
Other

MUSIC 810 - Curriculum Development and Learning Assessment

Credits: 3

MUSIC 810 focuses on development and implementation of comprehensive music education in K-12 public schools. Attention is given to sequential scaffolding of content within and across developmental levels, measuring student outcomes, and options for dissemination. Among factors studied will be evaluation materials, techniques, and design of reliable and valid measures.

Typically Offered
Fall-Odd Years

MUSIC 811 - Symposium in Music

Credits: 1-3

Intensive short-term studies of various topics in music, featuring presentations by nationally known scholars in the field.

Typically Offered
Summer

MUSIC 813 - Improvisation and Composition in Elementary Curriculum

Credits: 3

Development of pedagogical practices in the areas of improvisation and composition as appropriate for the elementary music classroom.

Typically Offered
Other

MUSIC 814 - World Music Pedagogy, Culturally Relevant Pedagogy, and Special Populations in Music Education

Credits: 3

Explores current issues facing music education, including culturally relevant pedagogy, world music pedagogy, special learners in music education, and popular music.

Typically Offered
Summer

MUSIC 815 - The Undergraduate Music Curriculum

Credits: 1

Provides foundational understanding and developing skills in designing, administering, and assessing learning in an undergraduate music education curriculum. Focuses on preparing future music teacher educators for success in their future profession.

Typically Offered
Fall

MUSIC 816 - Field Experiences in an Undergraduate Music Curriculum

Credits: 1

Prepares future music education professors to design, administer, and guide undergraduate music education field experiences.

Typically Offered
Spring

MUSIC 821 - Piano Pedagogy I

Credits: 3

Piano Pedagogy I focuses on how to teach and perform a broad spectrum of intermediate piano repertoire.

Typically Offered
Fall

MUSIC 822 - Piano Pedagogy II

Credits: 3

Piano Pedagogy II teaches students how to teach and perform selected advances-level piano repertoire by notable composers for the instrument.

Typically Offered
Spring

MUSIC 823 - Supervised Teaching in Piano

Credits: 2

Students will be observed by the instructor and classmates teaching lessons and provide feedback and commentary in a masterclass format.

Typically Offered
Fall, Spring

MUSIC 824 - Half Recital in Piano

Credits: 1

Students will present a 30 minute recital demonstrating proficiencies as defined by the instructor.

Typically Offered
Fall, Spring

MUSIC 825 - Lecture Recital in Piano

Credits: 1

Students will present a lecture-recital that will be a musically-illustrated presentation on some aspect if piano pedagogy.

Typically Offered
Fall, Spring

MUSIC 828 - Methods and Materials for the Studio

Credits: 1-3

Methods of teaching fundamental techniques; selection of teaching materials outlining courses of study. For graduate students in performance curricula. Taught in divisions according to the major. Practical application through supervised studio teaching.

Repeat for Credit
Repeatable. May be repeated for a maximum of 3 hours.

Requisites:
Prerequisite: MUSIC 391 or MUSIC 492.

Typically Offered
Fall, Spring, Summer

MUSIC 830 - Seminar in Medieval and Renaissance Music

Credits: 3

In-depth investigation of a selected area or problem in medieval or Renaissance music. Emphasis on individual research.

Typically Offered
Other

MUSIC 832 - Seminar in Baroque Music

Credits: 3

In-depth investigation of a selected area or problem in Baroque music. Emphasis on individual research.

Typically Offered
Other

MUSIC 834 - Seminar in Classical Music

Credits: 3

In-depth investigation of a selected area or problem in classical music. Emphasis on individual research.

Typically Offered
Other

MUSIC 836 - Seminar in Romantic Music

Credits: 3

In-depth investigation of a selected area or problem in Romantic music. Emphasis on individual research.

Typically Offered
Other

MUSIC 837 - Seminar in 20th-Century Music

Credits: 3

In-depth investigation of a selected area or problem in twentieth-century music. Emphasis on individual research.

Requisites:
Prerequisite: MUSIC 601, consent of instructor.

Typically Offered
Other

MUSIC 838 - Opera Theatre

Credits: 0-18

Opera workshop for graduates.

Typically Offered
Fall, Spring

MUSIC 839 - Vocal Ensemble

Credits: 0-1

Performance and study with established University vocal organization or small ensemble.

Typically Offered
Fall, Spring

MUSIC 840 - Instrumental Ensemble

Credits: 0-1

Performance and study with an established University instrumental organization or a small ensemble.

Note:
Students may enroll in more than one instrument simultaneously and may earn 1 to 4 hours per semester in each instrument.

Typically Offered
Fall, Spring

MUSIC 841 - Collegium Musicum Early Music Ensemble

Credits: 0-1

A vocal and instrumental ensemble devoted to the historically-informed performance of music written primarily during the Medieval, Renaissance, and Baroque periods (c. 1100-1750. Instruments of the historical period used when possible.

Typically Offered
Fall, Spring

MUSIC 842 - Concert Choir

Credits: 0-1

Typically Offered
Fall, Spring

MUSIC 843 - Symphony Orchestra

Credits: 0-1

Typically Offered
Fall, Spring

MUSIC 844 - Concert Jazz Ensemble

Credits: 0-1

Typically Offered
Fall, Spring

MUSIC 845 - Symphony Band

Credits: 0-1

Typically Offered
Fall, Spring

MUSIC 855 - Graduate-Level Performance

Credits: 1-18

Instruction is offered every semester in voice and each of the following instruments: baritone, bassoon, clarinet, double bass, early winds, flute, french horn, guitar, harpsichord, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, viola da gamba, violin, and violoncello.

Note:
Students may enroll in more than one instrument simultaneously and may earn 1 to 4 hours per semester in each instrument.

Typically Offered
Fall, Spring, Summer

MUSIC 857 - Advanced Composition

Credits: 1-2

Typically Offered
Fall, Spring, Summer

MUSIC 858 - Advanced Choral Conducting

Credits: 1-2

Exercises and techniques to refine the conducting gesture; techniques of noted choral conductors; and score study.

Typically Offered
Fall, Spring, Summer

MUSIC 859 - Advanced Instrumental Conducting

Credits: 1-2

Advanced Instrumental Conducting

Requisites:
Prerequisite: MUSIC 417 and consent of instructor.

Typically Offered
Fall, Spring, Summer

MUSIC 885 - Advanced Diction

Credits: 1

Concentrated study of Italian, German, and French diction for singing. Materials are related to work in the voice studio, and concurrent registration in MUSIC 855 is required.

Typically Offered
On sufficient demand

MUSIC 898 - Master's Report in Music

Credits: 0-18

Independent directed research leading to master's report.

Requisites:
Prerequisite: sixteen hours graduate credit in music.

Typically Offered
Fall, Spring, Summer

MUSIC 899 - Research in Music

Credits: 1-18

Independent research that may lead to master's thesis.

Requisites:
Prerequisite: sixteen hours graduate credit in music.

Typically Offered
Fall, Spring, Summer

NE 501 - Introduction to Nuclear Engineering

Credits: 3

An overview course to acquaint non-nuclear engineers with introductory aspects of nuclear engineering.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: Junior standing in engineering or physical sciences.

Typically Offered
Fall, Spring

NE 515 - Nuclear Engineering Materials

Credits: 3

An investigation of the nuclear properties, metallurgy, the processing of nuclear materials, and the behavior of fuels and components in a radiation environment.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: NE 505, CHE 350.

Typically Offered
Fall

NE 520 - Neutron and Particle Interactions I

Credits: 2

Neutron interactions and associated cross sections of importance to nuclear reactor theory; fission and its application to reactor design; energetics of multiple neutron scattering and neutron thermalization.

Note:
Two hours recitation a week.

Requisites:
Prerequisite: NE 505.

Typically Offered
Spring

NE 612 - Principles of Radiation Detection

Credits: 3

Operating principles and general properties of devices used in the detection and characterization of ionizing radiation. Fundamental methods of data interpretation and presentation.

Note:
Two hours recitation and three hours lab. a week.

Requisites:
Prerequisite: NE 495.

Typically Offered
Spring

NE 620 - Problems in Nuclear Engineering

Credits: 3

Engage the student in theory, design, characterization, and applications of neutron beams from fission reactors.

Requisites:
Prerequisite: Consult program director.

Typically Offered
Fall, Spring, Summer

NE 630 - Nuclear Reactor Theory

Credits: 3

Theory of neutron diffusion and thermalization with application to steady-state nuclear reactors.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: MATH 340, NE 495.

Typically Offered
Fall

NE 635 - Generation IV Reactor Design

Credits: 3

Introduction to the complex field of nuclear reactor design, with emphasis on Gen IV reactor technology. Discussion topics include nuclear power cycles, the nuclear fuel cycle, the reactor design process, and reactor safety. The conceptual design of an advanced nuclear reactor based on a candidate Generation IV technology.

Note:
3 hours lecture

Requisites:
Prerequisite: NE 630

Typically Offered
Spring

NE 640 - Nuclear Reactor Thermalhydraulics

Credits: 3

Engineering principles underlying the design and operation of nuclear power plant components and systems. Fundamentals of nuclear energy generation, heat transport, and single- and two-phase flows.

Requisites:
Prerequisite: NE 495.
Corequisite: ME 573.

Typically Offered
Spring

NE 648 - Nuclear Reactor Laboratory

Credits: 3

Theory and measurement of nuclear and reactor parameters of fundamental importance to nuclear reactors and their operation.

Note:
Two hour lecture and three hours lab. a week.

Requisites:
Prerequisite: NE 512 and NE 630.

Typically Offered
Spring

NE 690 - Radiation Protection and Shielding

Credits: 3

Basic concepts of radiation protection, doses, associated risks, and exposure limits. Properties of natural and other radiation sources, and evaluation of internal and external doses. Techniques for shield design including ray, point kernel, and transport theories for both neutrons and gamma rays.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: NE 495, PHYS 214, MATH 340.

Typically Offered
Fall

NE 730 - Applied Reactor Physics

Credits: 3

Principles of reactor physics as used in practice. Topics include the fundamentals of nuclear data processing, pin- and lattice-level analysis for generation of multigroup constants, and full-core models of nuclear reactors based on multigroup diffusion theory. Throughout, students will use commercial-grade software, including CASMO 4 and SIMULATE 3, to complete computational laboratory assignments.

Requisites:
Prerequisite: NE 630 and ME 400.

Typically Offered
Spring-Even Years

NE 737 - Intermediate Radiation Measurement Applications

Credits: 3

The course will cover physical principles and mathematical modeling of radiation-based measurement systems used in medical and non-medical applications. Topics include measurement principles and inverse methods, radio-gauging, radio-tracing, quantitative analysis methods, imaging with ionizing radiation, and radiation scanning.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: NE 612, NE 690.

Typically Offered
Spring-Odd Years

NE 740 - Nuclear Systems and Design

Credits: 3

Principles underlying the design and operation of nuclear systems with emphasis on nuclear power reactors. Energy generation and removal in heat transfer fluids, reactor and component control systems and nuclear fuel reloading patterns. Design philosophy of existing, advanced and passively safe nuclear reactors will be covered.

Requisites:
Prerequisite: ME 573.

Typically Offered
Fall

NE 761 - Radiation Measurement Systems

Credits: 3

Principles of systems used to measure radiation. Applications to radiation monitoring, dosimetry, and spectroscopy.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: NE 612.

Typically Offered
Fall-Odd Years

NE 799 - Special Topics in Nuclear Engineering

Credits: 0-18

Topical material of importance in nuclear engineering, such as controlled thermonuclear reactions, numerical analysis, Monte Carlo methods in radiation transport, effects of nuclear explosions, etc.

Requisites:
Prerequisite: Consent of program director.

Typically Offered
On sufficient demand

NE 806 - Neutronics

Credits: 3

Particle transport, theories of diffusion, numerical analysis of diffusion, transient core analysis.

Note:
Three hours recitation a week.

Requisites:
Prerequisite: NE 630.

Typically Offered
Fall

NE 810 - Graduate Problems in Nuclear Engineering

Credits: 1-18

Specific studies in advanced problems in various phases of nuclear engineering.

Requisites:
Prerequisite: Graduate standing and consent of program director.

Typically Offered
Fall, Spring, Summer

NE 851 - Nuclear Engineering Laboratory

Credits: 2

Design of experiments for the TRIGA nuclear reactor.

Note:
Six hours lab a week.

Requisites:
Prerequisite: NE 630 and NE 648.

Typically Offered
On sufficient demand

NE 860 - Advanced Topics in Nuclear Engineering

Credits: 1-18

A presentation of various special topics covering advanced nuclear engineering specialties.

Requisites:
Prerequisite: Graduate standing and consent of program director.

Typically Offered
Fall, Spring, Summer

NE 898 - Master's Report

Credits: 0-18

Topics selected with approval of major professor and department head.

Typically Offered
Fall, Spring, Summer

NE 899 - Master's Thesis

Credits: 1-18

Topics selected with approval of major professor and program director.

Typically Offered
Fall, Spring, Summer

NE 998 - Selected Advanced Topics in Nuclear Engineering

Credits: 0-18

Current topics of interest in nuclear engineering at an advanced level, such as controlled thermonuclear reactions, numerical analysis, Monte Carlo methods in radiation transport, etc.

Requisites:
Prerequisite: Consent of program director.

Typically Offered
Spring

NE 999 - Dissertation Research

Credits: 1-18

Topics selected with approval of major professor and program director.

Typically Offered
Fall, Spring, Summer

PAS 700 - Applied Anatomy & Physiology with Lab

Credits: 5

Intensive study of human anatomy and physiology with clinical application of medical terminology. Designed to develop the PA student's working knowledge and understanding of the general structures and functional principles of the human body. Clinically relevant areas of radiographic imaging, surface anatomy, and clinical case correlations are integrated in course. Students will acquire anatomic knowledge with clinical application through cadaveric laboratory experience to include human and/or virtual dissection. Develops a strong foundation for the study of pathophysiology and disease states.

Requisites:
Prerequisite: Admission to the PA Program

Typically Offered
Spring

PAS 710 - PA Profession

Credits: 1

Explores the history of the Physician Assistant (PA) profession, the role of the PA in today's health care system, and the factors affecting the PA. Designed to aid the student's transition into the medical profession, and serve as an introduction to multiple professional practice issues.

Requisites:
Prerequisite: Admission to the PA Program

Typically Offered
Spring

PAS 720 - Evidence Based Medicine

Credits: 1

Intensive study in evidence based medicine and critical thinking about the information and evidence needed to produce clinical decisions. The student will be prepared to cope with the vast amount of medical literature produced every year. The course is structured to equip the student to effectively evaluate medical literature, and apply the information acquired to clinical decision making in the provision of individualized patient care.

Requisites:
Prerequisite: Admission to the PA Program

Typically Offered
Spring

PAS 721 - Medical Genetics

Credits: 1

Will review the basic principles of medical genetics and its application to clinical practice. Students will learn to obtain a detailed family history, and assess possible modes of inheritance. This involves the ability to understand the medical genetics literature, as well as the clinical application of genetic knowledge in the care of individual patients. Ethical principles related to genetic evaluation, testing, and diagnosis will be discussed. The underlying etiology, clinical presentation, evaluation, diagnosis, prognosis, and treatment options of specific genetic disorders will be reviewed.

Requisites:
Prerequisite: Admission to the PA Program

Typically Offered
Summer

PAS 722 - Clinical Geriatrics

Credits: 2

Designed to provide an overview of the aging population and age-related disorders, and correlates theory and clinical practice in providing care to the geriatric population. The adjustment of older adults to degenerative changes, nursing home placement, and alternatives to placement in long term care facilities are discussed. Concepts relevant to pathophysiology, nutrition, pharmacology, psychosocial development, and ethical/legal responsibilities are emphasized using an evidence-based and functional approach.

Requisites:
Prerequisite: PAS 780 - Clinical Medicine I

Typically Offered
Fall

PAS 731 - Clinical Pediatrics

Credits: 2

Course introduces the PA student to pediatric medicine. Focuses on the physiological and psychological fundamentals of child development, major common pediatric illnesses, various immunizations and medications used in pediatrics, pediatric emergencies, and the management of both healthy and ill infants, children and adolescents.

Requisites:
Prerequisite: PAS 780, Clinical Medicine I

Typically Offered
Summer

PAS 732 - Psychiatry & Behavioral Medicine

Credits: 2

Course will present an introduction to the neurobiological, psychobiological, emotional, social, and cultural influences on mental health and illness of diverse patient populations with acute and chronic conditions across the lifespan, including end-of-life care, and will integrate human physical and psychological development, human sexuality, and responses to stress, injury, illness and death. Also incorporated is the training in substance use, abuse, addiction, and treatment adherence issues. Principles of violence identification and prevention will be examined, and basic counseling skills and instruments for the evaluation and management of psychiatric disorders will be presented.

Requisites:
Prerequisite: PAS 780, Clinical Medicine I

Typically Offered
Fall

PAS 740 - Clinical Procedures I

Credits: 2

Designed to allow students to become competent in a variety of patient care skills. Skills are sequenced to the body systems being covered in the physical diagnosis course. Allows students to safely apply the medical-decision making process, and learn the procedural skills in a simulated environment. Course will utilize simulators, task trainers and standardized patient experiences.

Requisites:
Prerequisite: Admission to the PA Program

Typically Offered
Spring

PAS 741 - Clinical Procedures II

Credits: 2

Designed to allow students to become competent in a variety of patient care skills. Skills are sequenced to the body systems being covered in the physical diagnosis course. Allows students to safely apply the medical-decision making process, and learn the procedural skills in a simulated environment. Course will utilize simulators, task trainers and standardized patient experiences.

Requisites:
Prerequisite: PAS 740, Clinical Procedures I

Typically Offered
Summer

PAS 742 - Clinical Procedures III

Credits: 2

Designed to allow students to become competent in a variety of patient care skills. Skills are sequenced to the body systems being covered in the physical diagnosis course. Allows students to safely apply the medical-decision making process, and learn the procedural skills in a simulated environment. Course will utilize simulators, task trainers and standardized patient experiences.

Requisites:
Prerequisite: PAS 741, Clinical Procedures II

Typically Offered
Fall

PAS 750 - Physical Diagnosis I

Credits: 2

Designed to provide training on the skills and competencies necessary for obtaining a patient's medical history, and performing a physical examination. Includes an approach to patient interviewing, acquiring clinical information, organizing and processing this information, and presenting it in a clear and concise manner. This will be achieved by learning examination techniques through lectures, small group settings, faculty mentoring, practicum examinations, and select body system specialty exams.

Requisites:
Prerequisite: Admission to the PA Program

Typically Offered
Spring

PAS 751 - Physical Diagnosis II

Credits: 2

Designed to provide training on the skills and competencies necessary for obtaining a patient's medical history, and performing a physical examination. Includes an approach to patient interviewing, acquiring clinical information, organizing and processing this information, and presenting it in a clear and concise manner. This will be achieved by learning examination techniques through lectures, small group settings, faculty mentoring, practicum examinations, and select body system specialty exams.

Requisites:
Prerequisite: PAS 750, Physical Diagnosis I

Typically Offered
Summer

PAS 752 - Physical Diagnosis III

Credits: 2

Designed to provide training on the skills and competencies necessary for obtaining a patient's medical history, and performing a physical examination. Includes an approach to patient interviewing, acquiring clinical information,

organizing and processing this information, and presenting it in a clear and concise manner. This will be achieved by learning examination techniques through lectures, small group settings, faculty mentoring, practicum examinations, and select body system specialty exams.

Requisites:
Prerequisite: PAS 751, Physical Diagnosis II

Typically Offered
Fall

PAS 760 - Diagnostics I - Laboratory

Credits: 2

First of a three-part series designed to introduce the student to clinical diagnostics in medicine. Presents a foundation for understanding the appropriate use and interpretation of diagnostic testing. Various diagnostic tests will be reviewed to allow the student to differentiate normal from abnormal values, and provide the basis for selection, utilization, and interpretation of the tests used to evaluate principal functions of body systems, and their correlation to clinical conditions.

Requisites:
Prerequisite: Admission to the PA Program

Typically Offered
Spring

PAS 761 - Diagnostics II - EKG

Credits: 2

Second of a three-part series designed to introduce the student to clinical diagnostics in medicine. Presents a foundation for understanding the appropriate use and interpretation of diagnostic testing. Various diagnostic tests will be reviewed to allow the student to differentiate normal from abnormal values, and provide the basis for selection, utilization, and interpretation of the tests used to evaluate principal functions of body systems, and their correlation to clinical conditions.

Requisites:
Prerequisite: PAS 760, Diagnostics I

Typically Offered
Summer

PAS 762 - Diagnostics III- Radiology

Credits: 2

Third of a three-part series designed to introduce the student to clinical diagnostics in medicine. Presents a foundation for understanding the appropriate use and interpretation of diagnostic testing. Various diagnostic tests will be reviewed to allow the student to differentiate normal from abnormal values, and provide the basis for selection, utilization, and interpretation of the tests used to evaluate principal functions of body systems, and their correlation to clinical conditions.

Requisites:
Prerequisite: Admission to PA program.

Typically Offered
Fall

PAS 770 - Applied Pathophysiology I

Credits: 2

Designed to develop the PA student's working knowledge and comprehensive understanding of the pathophysiological principles of the human body. An intensive study of pathology of the human body, which explores the etiology of organic and systemic disease, providing an insight into the disordered physiological changes resulting from specific disease processes. Provides the necessary linkage between the basic sciences and the clinical presentation of disease states.

Requisites:
Prerequisite: Admission to the PA Program

Typically Offered
Spring

PAS 771 - Applied Pathophysiology II

Credits: 2

Designed to develop the PA student's working knowledge and comprehensive understanding of the pathophysiological principles of the human body. An intensive study of pathology of the human body, which explores the etiology of organic and systemic disease, providing an insight into the disordered physiological changes resulting from specific disease processes. Provides the necessary linkage between the basic sciences and the clinical presentation of disease states.

Requisites:

Prerequisite: PAS 770, Applied Pathophysiology I

Typically Offered
Summer

PAS 772 - Applied Pathophysiology III

Credits: 2

Designed to develop the PA student's working knowledge and comprehensive understanding of the pathophysiological principles of the human body. An intensive study of pathology of the human body, which explores the etiology of organic and systemic disease, providing an insight into the disordered physiological changes resulting from specific disease processes. Provides the necessary linkage between the basic sciences and the clinical presentation of disease states.

Requisites:
Prerequisite: PAS 771, Applied Pathophysiology II

Typically Offered
Fall

PAS 780 - Clinical Medicine I

Credits: 4

Designed to guide the development of problem-solving skills to apply in the medical decision-making process. Will include an in-depth study of diseases/disorders using a body systems approach. Medical knowledge includes the epidemiology, etiology, pathophysiology, clinical manifestations, diagnosis, management, and patient education of diseases/disorders. Emphasis will be on disease processes/disorders common to primary care practices. Instruction includes the provision of care in preventive, emergent, acute, chronic, adolescent, and adult populations as it applies to disease processes. Instruction will include lecture, problem/case based learning and small group work.

Requisites:
Prerequisite: Admission to the PA Program

Typically Offered
Spring

PAS 781 - Clinical Medicine II

Credits: 7

Designed to guide the development of problem-solving skills to apply in the medical decision-making process. Will include an in-depth study of diseases/disorders using a body systems approach. Medical knowledge includes the epidemiology, etiology, pathophysiology, clinical manifestations, diagnosis, management, and patient education of diseases/disorders. Emphasis will be on disease processes/disorders common to primary care practices. Instruction includes the provision of care in preventive, emergent, acute, chronic, adolescent, and adult populations as it applies to disease processes. Instruction will include lecture, problem/case based learning and small group work.

Requisites:
Prerequisite: PAS 780, Clinical Medicine I

Typically Offered
Summer

PAS 782 - Clinical Medicine III

Credits: 7

Designed to guide the development of problem-solving skills to apply in the medical decision-making process. Will include an in-depth study of diseases/disorders using a body systems approach. Medical knowledge includes the epidemiology, etiology, pathophysiology, clinical manifestations, diagnosis, management, and patient education of diseases/disorders. Emphasis will be on disease processes/disorders common to primary care practices. Instruction includes the provision of care in preventive, emergent, acute, chronic, adolescent, and adult populations as it applies to disease processes. Instruction will include lecture, problem/case based learning and small group work.

Requisites:
Prerequisite: PAS 781, Clinical Medicine II

Typically Offered
Fall

PAS 790 - Pharmacology I

Credits: 2

Designed as a survey of pharmacology, course emphasizes the fundamentals of drug absorption, distribution, metabolism, and elimination. Course focuses on the relationship between drugs and receptors, adverse drug reactions, toxicity, and drug indications and

contraindications. Utilizing evidence-based medicine, pharmacotherapeutics with application to patient care is also incorporated.

Requisites:
Prerequisite: Admission to PA program.

Typically Offered
Spring

PAS 791 - Pharmacology II

Credits: 2

Designed as a survey of pharmacology, course emphasizes the fundamentals of drug absorption, distribution, metabolism, and elimination. Course focuses on the relationship between drugs and receptors, adverse drug reactions, toxicity, and drug indications and contraindications. Utilizing evidence-based medicine, pharmacotherapeutics with application to patient care is also incorporated.

Requisites:
Prerequisite: PAS 790, Pharmacology I

Typically Offered
Summer

PAS 792 - Pharmacology III

Credits: 2

Designed as a survey of pharmacology, course emphasizes the fundamentals of drug absorption, distribution, metabolism, and elimination. Course focuses on the relationship between drugs and receptors, adverse drug reactions, toxicity, and drug indications and contraindications. Utilizing evidence-based medicine, pharmacotherapeutics with application to patient care is also incorporated.

Requisites:
Prerequisite: PAS 791, Pharmacology II

Typically Offered
Fall

PAS 800 - Family Medicine I - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision-making process while developing the appropriate knowledge, skills, and abilities to provide care in the ambulatory outpatient family medicine clinic. The course will deliver education on providing comprehensive evidence-based, gender/age specific individualized care, addressing acute and chronic diseases, health promotion and disease prevention in the context of each patient's social, economic, cultural and religious background. Students will engage with the interprofessional team, and behave as a medical professional with patients, families and other members of the medical team.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Spring

PAS 810 - Family Medicine II - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision-making process while developing the appropriate knowledge, skills, and abilities to provide care in the ambulatory outpatient family medicine clinic. The course will deliver education on providing comprehensive evidence-based, gender/age specific individualized care, addressing acute and chronic diseases, health promotion and disease prevention in the context of each patient's social, economic, cultural and religious background. Students will engage with the interprofessional team, and behave as a medical professional with patients, families and other members of the medical team.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Spring

PAS 820 - Internal Medicine - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision making process while developing the appropriate knowledge, skills and abilities to provide care in the

in/outpatient internal medicine practice. Students will encounter a full range of experiences to include, preventative care, acute and chronic illness, and palliative/end of life care in the context of each patient's social, economic, cultural and religious background. Students will have the opportunity to work as part of the primary team while coordinating with subspecialist, and interdisciplinary allied health professionals.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Fall, Spring, Summer

PAS 830 - Emergency Medicine - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision making process while developing the appropriate knowledge, skills and abilities to provide care in the emergency medicine practice. The rotation will take place in emergency departments. This rotation allows students to establish triage skills, learn to recognize and manage conditions that need immediate attention and prioritize care for conditions that are less urgent. Students will engage with the interprofessional team and behave as a medical professional with patients, families and other members of the medical team.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Fall, Spring, Summer

PAS 840 - Pediatric Medicine - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision making process while developing the appropriate knowledge, skills and abilities to provide care in a pediatric medicine practice. The course provides education in comprehensive, evidence-based, gender/age specific individualized care, addressing acute and chronic diseases (sick child), health promotion (well child) and disease prevention in the context of each patient's social, economic, cultural and religious background. Students will engage with the interprofessional team and behave as a medical professional with patients, families and other members of the medical team.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Fall, Spring, Summer

PAS 850 - General Surgery - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision making process while developing the appropriate knowledge, skills and abilities to provide care in the surgical practice. The experiences in this rotation will include pre-operative, intra-operative (assisting) and post-operative surgical care. Students will engage with the interprofessional team and behave as a medical professional with patients, families and other members of the medical team.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Fall, Spring, Summer

PAS 860 - Behavioral Medicine - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision making process while developing appropriate knowledge, skills and abilities to recognize and provide care for various behavioral/mental health problems. In settings such as in/outpatient behavioral/mental health facilities and multiservice centers, students will participate in behavioral/mental health evaluations, observe behavioral/mental therapy/interventions, and discuss management plans. Emphasis is on applying skills learned to treatment of behavioral/mental health issues in primary care. Students will engage with the interprofessional team, and behave as a medical professional with patients, families and other members of the medical team.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Fall, Spring, Summer

PAS 870 - Women's Health - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision making process while developing the appropriate knowledge, skills and abilities to provide care in a women's health medicine practice. Experiences include prenatal care, obstetric/gynecologic health histories, OB/GYN exams, evaluation and management planning. Emphasis is on applying skills learned to the treatment of OB/GYN health issues in primary care in the context of each patient's social, economic, cultural and religious background. Students will engage with the interprofessional team and behave as a medical professional with patients, families and other members of the medical team.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Fall, Spring, Summer

PAS 890 - Geriatric Medicine - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision-making process while developing the appropriate knowledge, skills, and abilities to provide care to the geriatric population. Students will be exposed to a variety of experiences including ambulatory practice, nursing facilities, assisted living centers, and hospice. The course will deliver education on providing comprehensive evidence-based, geriatric specific individualized care, addressing acute and chronic conditions, health promotion and disease prevention in the context of the elderly patient's social, economic, cultural and religious background. Students will engage with the interprofessional team and behave as a medical professional with patients, families and other members of the medical team.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Fall, Spring, Summer

PAS 891 - Orthopedics - SCPE

Credits: 4

A supervised clinical practice experience designed to give students the opportunity to participate in the medical decision-making process while developing the appropriate knowledge, skills, and abilities to provide care in orthopedics. The course will deliver education on providing comprehensive evidence-based, gender/age specific individualized care, addressing acute and chronic musculoskeletal conditions with and without surgical intervention, health promotion and disease prevention in the context of each patient's social, economic, cultural and religious background. Students will engage with the interprofessional team and behave as a medical professional with patients, families and other members of the medical team.

Requisites:
Successful completion of clinical orientation and didactic phase of the PA program (B or better in PAS 700-792).

Typically Offered
Fall, Spring, Summer

PAS 892 - Elective Experience I

Credits: 4

A supervised clinical practice experience selected by the student designed to give students the opportunity to develop appropriate knowledge, skills, and abilities in patient care, medical knowledge, practice based learning, communication, professionalism, interprofessional collaboration, system based practice and/or professional development. Options for students to achieve this include but are not limited to, additional experience in a required rotation; medical discipline of interest not encountered in the previous rotations; public health service; administration; and health policy.

Requisites:
Successful completion of all prior clinical rotations (B or better in PAS 800-891).

Typically Offered
Spring

PAS 895 - Summative

Credits: 2

Designed to prepare students for the final transition from student to medical provider. Didactic and clinical year grades, preceptor evaluations, and assignments specific to the Summative assessment will be reviewed to ascertain the student's ability to function as a successful graduate Physician Assistant. Physician Assistant practice topics will be covered, including certifying examination review, certification process, professional licensure, malpractice, professional career planning, contract negotiations, credentialing process and financial planning. Content will be delivered in lecture, lab and small groups.

Requisites:
Successful completion of Clinical Year Rotations (B or better is PAS 800-892).

Typically Offered
Spring

PFP 579 - Pre-Internship Orientation in Personal Financial Planning

Credits: 1

Consideration and application of professional knowledge and skills necessary for selection and placement in a financial planning firm for a supervised experience.

Typically Offered
Fall

PFP 580 - Internship in Personal Financial Planning

Credits: 3

Internship experience in personal financial planning or an allied field.

Requisites:
Prerequisite: PFP 579

Typically Offered
Summer

PFP 595 - Capstone in Personal Financial Planning

Credits: 3

Examination of professional issues in personal financial planning, including ethical considerations, regulation and certification requirements, communication skills and professional responsibility. Development of skills needed for personal financial planners working with families in meeting their financial needs.

Requisites:
Prerequisite: PFP 305, PFP 460, PFP 462, PFP 466, KSU cumulative GPA of 2.5 or higher.

Co-requisite: PFP 464, PFP 472, PFP 482.

Typically Offered
Spring

PFP 624 - Fundamentals of Family Financial Planning

Credits: 3

This course provides an overview of family financial planning by integrating concepts and issues with planning and counseling applications. Students will be introduced to the key concepts of family financial planning, including: insurance, tax, investments, retirement, and estate planning. The family financial planning process is introduced with an emphasis on the integration and application of concepts in meeting individual and family financial goals and objectives. Other topics presented include an ethics overview, compensation trends within the industry, and regulatory frameworks.

Typically Offered
Fall

PFP 675 - Field Study in Family Economics

Credits: 1-3

Supervised experiences in financial planning, financial counseling, community action, or consumer services.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PFP 702 - Theories and Research in Family Financial Planning I

Credits: 3

Introduction to the social science of family finances, including theories of family economic functions, microeconomic theory of family resource allocation decisions, the family as an economic unit in the macro-economy, and the interaction of the economy and families.

Typically Offered
Spring, Summer

PFP 709 - Public Policy and Family Economic Well-Being

Credits: 3

Analysis of conceptual models for policy choices. Impact of socioeconmic and public policy factors as family economic well-being including the special issues faced by financially disadvantaged and nontraditional households.

Requisites:
Prerequisite: Nine hours in FSHS or other social science.

Typically Offered
Fall

PFP 756 - Financial Counseling

Credits: 3

Theory and research regarding the interactive process between the client and the practitioner, including communication techniques, motivation and esteem building, the counseling environment, ethics, and methods of data intake, verification, and analysis. Other topics include legal issues, compensation, uses of technology to identify resources, information management, and current or emerging issues.

Requisites:
Prerequisite: FSHS 301 and KSU cumulative GPA of 2.5 or higher.

Typically Offered
Fall

PFP 757 - Financial Behavior Assessment Consulting

Credits: 3

Students will learn characteristics, cultural factors, support issues, confidentiality and facilitation of discussions concerning the personal involvement, the family involvement, and the financial professional involvement in financial planning and counseling. The intent is to provide financial planners and counselors a framework for guiding individuals and families in restructuring dysfunctional developmental financial behavior.

Typically Offered
On sufficient demand

PFP 758 - Housing/Real Estate

Credits: 3

An overview of the role of housing and real estate in the family financial planning process from a theoretical perspective. Taxation, legal aspects, mortgages, and financial calculations related to home ownership and real estate investments are included. New and emerging issues in the context of housing and real estate will be emphasized. The role of ethics in family financial planning with housing and real estate will also be included.

Typically Offered
Fall, Summer

PFP 760 - Retirement Planning for Families

Credits: 3

Study of micro and macro considerations for retirement planning. Survey of various types of retirement plans, ethical considerations in providing retirement planning services, assessing and forecasting financial needs in retirement, and integration of retirement plans with government benefits.

Requisites:
Prerequisite: FSHS 405 or FINAN 450 with a grade of "B" or better and KSU cumulative GPA of 2.5 or higher

Typically Offered
Fall

PFP 762 - Investing for the Family's Future I

Credits: 3

An in-depth study of investment options for clients, this

course will include common stocks, fixed income securities, convertible securities, and related choices. Relationships between investment options and employee/employer benefit plan choice will be studied. Current and emerging issues, and ethics will be an integral part of the course.

Requisites:
Prerequisite: FSHS 405 or FINAN 450 with a grade of "B" or better and KSU cumulative GPA of 2.5 or higher

Typically Offered
Fall

PFP 764 - Estate Planning for Families

Credits: 3

Introduction to fundamentals of the estate planning process. Includes property transfer, tax consequences, probate avoidance, powers of appointment, and various tools/techniques used in implementing an effective estate plan.

Requisites:
Prerequisite: FSHS 405 or FINAN 450 with a grade of "B" or better and KSU cumulative GPA of 2.5 or higher

Typically Offered
Spring

PFP 765 - Military Personal Finance

Credits: 3

This course gives an overview of the topics relevant to the financial planning process. The course adapts the topics to address the unique needs, terminology, benefits, and resources that impact military service members and their families. Topics covered are: status of service member; financial readiness; financial management; recordkeeping; cash flow management; risk management; credit and debt management; savings, education planning, and investment management; tax management; retirement management; estate management; and special topics.

Typically Offered
Fall, Spring, Summer

PFP 766 - Insurance Planning for Families

Credits: 3

An in-depth study of risk management concepts, tools, and strategies for individuals and families, including: life insurance; property and casualty insurance; liability insurance; accident, disability, health, and long-term care insurance; and government-subsidized programs. Current and emerging issues, as well as ethical considerations, relative to risk management will be discussed. Case studies will provide experience in selecting insurance products suitable for individuals and families.

Requisites:
Prerequisite: FSHS 405 or FINAN 450 with a grade of "B" or better and KSU cumulative GPA of 2.5 or higher

Typically Offered
Spring

PFP 768 - Introduction to Financial Therapy

Credits: 3

An applied financial psychology course that examines the intersection of financial planning, coaching, and therapy; the psychology of investing; money disorders frequently seen by financial professionals; advanced techniques to establish rapport; helping clients change problematic/destructive money-related behaviors; dealing with client resistance to change; working with couples and families; and integrating financial psychology tools into personal financial planning.

Typically Offered
Spring

PFP 769 - Money and Relationships

Credits: 3

This course will explore the connection between money and couple and family relationships. The objective of the course is to understand the factors that impact how individuals, couples, and families perceive and manage money. Students will gain in-depth knowledge of current literature, research, and theory in this area. Students will gain personal insight into their own relationship with money and how it impacts their relationships in order to enhance their ability to help and work with others to improve financial well-being.

Typically Offered
Spring

PFP 770 - Applied Behavioral Finance

Credits: 3

This course is an applied behavioral finance course that examines the intersection of behavioral finance and financial planning. It reviews the research on behavioral finance, neuroeconomics, and investor psychology, exploring the effects of human emotions and cognitive errors on financial decisions and the financial planning process. This course focuses on the application of behavioral finance theory and research to the practice of personal financial planning to help financial planners improve the financial health of their clients.

Typically Offered
Summer

PFP 771 - Financial Therapy Theory & Research

Credits: 3

Survey of financial therapy and planning literature, conceptual models, and empirical research. Students will be expected to read empirical research related to financial therapy and write a short report on their findings on a weekly basis.

Typically Offered
Fall

PFP 772 - Personal Income Taxation

Credits: 3

This course provides in-depth information of income tax practices and procedures including tax regulations, tax return preparation, the tax audit process, the appeals process, preparation for an administrative or judicial forum, and ethical considerations of taxation. New and emerging issues related to taxation will be covered. Family/individual case studies provide practice in applying and analyzing tax information and recommending appropriate tax strategies.

Requisites:
Prerequisite: KSU cumulative GPA of 2.5 or higher
Corequisite: FSHS 405

Typically Offered
Fall

PFP 782 - Investing for the Family's Future II

Credits: 3

The focus of this course is to develop a better understanding of the available tools and procedures of investment planning for family and individual goal attainment. Lectures, readings, case studies, and problem sets are designed to help students in preparing for the Investment Planning section of the Certified Financial Planner™ examination.

Requisites:
Prerequisite: PFP 762.

Typically Offered
Spring

PFP 802 - Theories and Research in Family Financial Planning II

Credits: 3

Macroeconomic theory as it relates to family resource allocation decisions. Advanced theories of household economic behavior including the life cycle hypothesis, behavioral economics, behavioral finance, theories of behavioral change, and psychological theories of subjective economic well-being. Focus on empirical research investigating household financial decision-making.

Requisites:
Prerequisite: PFP 702

Typically Offered
Fall, Summer

PFP 805 - Statistical Software Applications in Personal Financial Planning

Credits: 3

Exposure to and practice in using statistical software to investigate Personal Financial Planning relevant data sets.

Requisites:
Corequisite: STAT 705.

Typically Offered
Other

PFP 806 - Statistical Methods in Personal Financial Planning I

Credits: 3

The course covers applied regression models that are common in personal financial planning research with focus on categorical outcomes. Regression models covered include binomial, multinomial, and ordinal logit and probit models. Particular emphasis is on applying these models in national datasets (e.g., Survey of Consumer Finances) commonly used in financial planning related research and on the interpretation of results.

Requisites:
Prerequisite: PFP 805

Typically Offered
Fall

PFP 808 - Research Application in Personal Financial Planning

Credits: 3

In-depth applications of personal and family money management principles with emphasis on credit, savings, insurance, and budgeting.

Repeat for Credit
Repeatable for up to 6 credits.

Typically Offered
On sufficient demand

PFP 825 - Survey of Personal Financial Planning Research and Theory

Credits: 3

This course is a survey of current personal finance and family resource management literature designed to provide an overview of current consumer finance research from multiple perspectives. The course also provides an introduction to doctoral studies in Personal Financial Planning at Kansas State University.

Typically Offered
Spring, Summer

PFP 835 - Professional Practice Management in Personal Financial Planning

Credits: 3

Challenges of managing personal financial planning practices including, business valuation, personnel, marketing, client services, ethics and technological applications. Relying both on theoretical and applied approach, students analyze case studies that provide relevant, practical exposure to practice management issues, with a strong emphasis on current research findings.

Typically Offered
Fall

PFP 836 - Financial Planning Case Studies

Credits: 3

This course examines professional issues in financial planning, including ethical considerations, regulation and certification requirements, communication skills, and professional responsibility. Students are expected to utilize skills obtained in other courses and work experiences in the completion of personal finance case studies, the development of a targeted investment policy, and other related financial planning assignments.

Typically Offered
Fall, Spring

PFP 860 - Advanced Retirement Planning Issues

Credits: 3

Advanced study of micro and macro considerations for retirement planning and its inter-relationship with estate planning objectives, comprehensive assessment of peer-reviewed journal resources and models for forecasting retirement needs; survey of and detailed techniques for implementing various types of retirement plans; integration of retirement plans with marital matters, Social Security benefits, and tax aspects.

Requisites:
Prerequisite: PFP 460, PFP 760 or equivalent.

Typically Offered
Spring

PFP 863 - Advanced Personal Income Tax Planning

Credits: 3

Explores the complex issues of personal income tax planning and working with individuals with advanced tax situations in business and family income as well as trusts and estates.

Typically Offered
Fall

PFP 864 - Advanced Estate Planning Issues

Credits: 3

Advanced study of the principles and concepts of estate planning. Topics of discussion will include the advantages, disadvantages, consequences, and risks of lifetime transfers versus transfers at death; minimization of gift and estate taxes through legal means; intergenerational wealth transfers and the impact on families; intrafamily and business succession techniques; planning for nontraditional or special needs clients; and recent case law updates on family limited partnerships and various trusts used in estate planning.

Requisites:
Prerequisite: PFP 464, PFP 764, or equivalent.

Typically Offered
Spring

PFP 888 - Research Methods in Personal Financial Planning I

Credits: 3

Study and application of social science methodology for research in personal financial planning graduate programs and professional careers.

Typically Offered
Fall, Spring

PFP 889 - Theories and Models in Personal Financial Planning

Credits: 3

This course is designed to provide a broad exposure to common theoretical frameworks in the field of personal finance.

Requisites:
Prerequisite: PFP 806, PFP 888, PFP 890, PFP 906 or equivalent graduate level research or statistics courses.

Typically Offered
Fall

PFP 890 - Research Methods in Personal Financial Planning II

Credits: 3

Intermediate research methods course with a focus on the dissertation proposal process.

Requisites:
Prerequisite: PFP 888 and PFP 806

Typically Offered
Spring

PFP 894 - Professional Issues in Personal Financial Planning

Credits: 1

Implications of research findings in preparation for professional work in teaching, research, and practice of personal financial planning.

Repeat for Credit
Repeatable for up to 6 total credits.

Typically Offered
Fall, Spring, Summer

PFP 900 - Research Seminar

Credits: 1-2

In this course, students will attend a research seminar during which a scholar will present current research on topics relevant to Personal Financial Planning. Speakers may include KSU faculty, advanced PFP graduate students, and researchers from other institutions. Students and faculty not only listen to learn from the speaker's expertise but also actively engage with the presentation by asking questions. Asking questions is critical for scientific inquiry and advancement. Questions should be asked to (1) allow the speaker to clarify or expand on material, (2) constructively criticize the methods, research design, or findings, and (3) suggest ways the scholar might improve the analysis.

Repeat for Credit
Repeatable twice.

Typically Offered
Other

PFP 906 - Statistical Methods in Personal Financial Planning II

Credits: 3

Advanced applied statistics course designed for graduate students with a foundation and understanding of basic and multivariable statistics. Examines panel data analyses, such as random-effects and fixed-effects regression, as well as issues involved using these techniques in personal financial planning datasets.

Requisites:
Prerequisite: PFP 806

Typically Offered
Spring

PFP 909 - Topics in Personal Financial Planning

Credits: 0-3

Recent research, theory construction, and program development in personal financial planning, which will focus on selected relevant topics. Designed for doctoral students in personal financial planning.

Typically Offered
On sufficient demand

PFP 956 - Clinical Research and Applications in Financial Counseling and Planning

Credits: 3

An overview of client relationship building strategies and the design and application of clinical research methods. Designed for doctoral students in personal financial planning.

Requisites:
Prerequisite: Doctoral Student in Human Ecology with an emphasis in Personal Financial Planning.

Typically Offered
Summer

PFP 979 - Global Issues in Personal Financial Planning

Credits: 3

This course study will give students the opportunity to examine cross cultural differences in defining and practicing personal financial planning. This course will allow students to gain experiences familiarizing them with different cultural views. Students are expected to present research related to the areas of financial planning and counseling to their international counterparts. Students will have the opportunity to learn from guest lecturers and students as well as to experience local culture through sight visits.

Requisites:
Prerequisite: Completed at least 24 graduate credits.

Typically Offered
Spring-Even Years

PFP 990 - Dissertation Proposal Seminar

Credits: 1

Presentation and discussion of proposals for dissertation research.

Requisites:
Prerequisite: Six hours of statistics, three hours of research design or methods, and consent of major professor.

Typically Offered
Other

PFP 999 - Dissertation Research

Credits: 1-18

Presentation and discussion of final dissertation research.

Requisites:
Prerequisite: Consent of major professor.

Typically Offered
Fall, Spring, Summer

PHILO 501 - Perspectives on Science

Credits: 3

Provides historical, philosophical, and sociological perspectives on science, its methods and products, the social processes by which its methods are deployed and its products used, and the ways in which its results become imbued with cultural meaning.

Typically Offered
Fall, Spring

PHILO 510 - Symbolic Logic II

Credits: 3

An advanced study of logical systems and problems in logical theory.

Requisites:
Prerequisite: PHILO 220 or PHILO 110.

Typically Offered
On sufficient demand

PHILO 525 - Social-Political Philosophy

Credits: 3

Examines key developments in contemporary political philosophy in such areas as liberalism, libertarianism, communitartianism, Marxism, and feminism, and on topics of special interest where these theories are applied.

Requisites:
Prerequisite: PHILO 305, or PHILO 330, or PHILO 335 or consent of instructor.

Typically Offered
Spring

PHILO 535 - Philosophy of Law

Credits: 3

Philosophical issues arising in the legal context, such as the nature of legal reasoning, the nature and scope of constitutional protections, the justification of punishment, affirmative action, and civil disobedience.

Requisites:
Prerequisite: One course in philosophy (PHILO 135, PHILO 160, or PHILO 330 recommended), or consent of instructor.

Typically Offered
Fall

PHILO 550 - Philosophy of Social Sciences

Credits: 3

Epistemic methods and metaphysical presuppositions in the social sciences. Topics selected from: models, measurement, reduction, explanation, theories of function, theories of ideal types, and rational choice theory.

Requisites:
Prerequisite: Two courses in philosophy, one of which must be PHILO 100 or PHILO 320.

Typically Offered
Other

PHILO 570 - Aesthetics

Credits: 3

A study of selected topics in aesthetics and the philosophy of art.

Requisites:
Prerequisite: One course in philosophy or consent of instructor.

Typically Offered
On sufficient demand

PHILO 585 - Ethics

Credits: 3

Examines key developments in moral philosophy. May focus on issues in metaethics, ethical theory, or history of ethics.

Requisites:
Prerequisite: PHILO 330.

Typically Offered
Fall or Spring

PHILO 590 - Topics in Philosophy

Credits: 3

A study of selected topics in applied ethics, applied philosophy, or the continental tradition.

Requisites:
Prerequisite: One course in philosophy.

Typically Offered
On sufficient demand

PHILO 595 - Environmental Ethics

Credits: 3

Ethical issues that arise from the use and exploitation of the environment, such as the value of biodiversity, obligations to future generations, obligations to non-humans, and the ethics of environmental risk management.

Requisites:
Prerequisite: One course in philosophy (PHILO 330 recommended), or consent of instructor.

Typically Offered
Other

PHILO 601 - Advanced Issues in the History of Philosophy

Credits: 3

Particular sets of issues in the history of philosophy or in-depth examination of the thought of a particular philosopher. Emphasis on issues in metaphysics and epistemology.

Requisites:
Prerequisite: two courses in philosophy and consent of instructor. Depending on topic, PHILO 300 or PHILO 301 required.

Typically Offered
Other

PHILO 610 - Special Topics in Logic

Credits: 3

Examination of one or more advanced topics in mathematical or philosophical logic, such as: modal,temporal, and epistemic logics; counterfactuals; intuitionistic and other sub-classical logics; higher-order and other super-classical logics; formal semantics of natural language; or theories of truth.

Requisites:
Prerequisite: PHILO 110 or PHILO 320, or consent of instructor.

Typically Offered
On sufficient demand

PHILO 615 - Philosophy of Religion

Credits: 3

Concepts of religion, including truth and faith, God and atheism, reason and revelation, morality and religion, evil, humanity, sin, salvation, eschatology.

Requisites:
Prerequisite: two courses in philosophy. PHILO 305, PHILO 320, or PHILO 340 recommended.

Typically Offered
Other

PHILO 620 - The Development of Analytical Philosophy

Credits: 3

The history of analytic philosophy from 1870 to 1960, examining the works of most of the following philosophers: Frege, Russell, Wittgenstein, Moore, the logical positivists, and Quine.

Requisites:
Prerequisite: two courses in philosophy, one of which must be PHILO 110 or PHILO 320.

Typically Offered
Other

PHILO 625 - The Philosophy of Language

Credits: 3

Philosophical problems concerning the nature of language and such concepts as meaning and truth.

Requisites:
Prerequisite: two courses in philosophy, one of which must be PHILO 110 or PHILO 320.

Typically Offered
Other

PHILO 635 - Metaphysics

Credits: 3

A critical examination of theories about objects and their qualities, causality, space, and time. Both traditional and contemporary sources may be used, but emphasis will be placed on the latter.

Requisites:
Prerequisite: two courses in philosophy. PHILO 305, PHILO 320, or PHILO 340 recommended.

Typically Offered
Other

PHILO 640 - Epistemology

Credits: 3

Philosophical issues relating to human knowledge. Issues selected from: the difference between knowledge and belief, whether knowledge is really attainable, whether we have epistemic duties and what they might be, what counts as justification for belief. Special topics may include self-knowledge, a priori knowledge, inductive knowledge, and naturalism.

Requisites:
Prerequisite: two courses in philosophy. PHILO 305, PHILO 320, or PHILO 340 recommended.

Typically Offered
Other

PHILO 645 - The Philosophy of Science

Credits: 3

Philosophical problems concerning science, its methods. Topics selected from: qualitative and quantitative confirmation theories and the nature of scientific theories, laws, and explanation in the physical and biological sciences.

Requisites:
Prerequisite: two courses in philosophy, one of which must be PHILO 110 or PHILO 320.

Typically Offered
Other

PHILO 646 - Philosophy of Physics

Credits: 3

This course offers an explotation of the conceptual foundations of modern physics, including topics from relativistic space-time theories, quantum mechanics and gauge theories, and related topics in the philosophy of science, inlcuding the nature of physical laws, reduction, the measurement problem and non-locality.

Requisites:
Prerequisite: Two courses in philospohy.

PHILO 647 - Philosophy of Biology

Credits: 3

This course will introduce a range of topics in the philosophy of biology, including: the conceptual foundations of evolutionary theory, interpretations of fitness and selection, group selection, definitions of species, epistemological problems in phylogenetic inference, design arguments, explanation in biological sciences and reliable modeling in ecology and evolutionary biology.

Requisites:
Prerequisite: two courses in philosophy.

PHILO 648 - Philosphy and the Origins of Ancient Science

Credits: 3

Examination of the development of ancient science, with special attention paid to the interrelationship in antiquity of philosophical and scientific accounts of the world. Topics will include developments in mathematics, optics, astronomy, mechanics, and medicine, among others.

Requisites:
Prerequisite: two courses in philosophy.

PHILO 649 - Philosophy and the Origins of Modern Science

Credits: 3

Examination of the development of modern science from roughly the 16th century, with special attention paid to the interrelationship in early modern philosophical and scientific accounts of the world. Topics will include developments in physics, astronomy, biology, mathematics, and medicine, as well as related areas of metaphysics,

epistemology, and philosophy of religion.

Requisites:
Prerequisite: Two courses in philosophy or 4 natural science courses, with at least two of them in physics.

Typically Offered
Spring-Odd Years

PHILO 650 - Rationality and Action

Credits: 3

Philosophical issues connected with human action and reasons for action, such as the existence of objective reasons to act one way rather than another, the existence of reasons to act that do not stem from desires, the difference between reasoning about how to act and reasoning about what is true, the nature of intention and desire and their specific roles in action.

Requisites:
Prerequisite: two courses in philosophy.

Typically Offered
Other

PHILO 655 - Philosophy of Mind

Credits: 3

A philosophical examination of major theories about the nature of the mind, mental causation, consciousness, intentionality, cognition and psychological explanation.

Requisites:
Prerequisite: two courses in philosophy. PHILO 305, PHILO 320 or PHILO 340 recommended.

Typically Offered
Other

PHILO 660 - Advanced Ethics

Credits: 3

Selected topics in contemporary ethical theory.

Requisites:
Prerequisite: PHILO 330 and one other philosophy course.

Typically Offered
Other

PHILO 665 - Philosophy of Economics

Credits: 3

Moral and conceptual foundations of modern economic systems. Topics selected from: the relations between "economics rationality" and the quality of life, the just distribution of wealth, the nature of property rights, and the value of technology in society.

Requisites:
Prerequisite: two courses in philosophy.

Typically Offered
Other

PHILO 670 - Advanced Social-Political Philosophy

Credits: 3

A study of a single topic in contemporary philosophical literature, with application to current political issues. Topic selected from: multiculturalism, minority rights, nationalism, justification of democracy.

Requisites:
Prerequisite: PHILO 525 and one other philosophy course.

Typically Offered
Other

PHILO 675 - Advanced Philosophy of Law

Credits: 3

A current issue in analytical jurisprudence (such as the nature of law, the relation between law and morality, the proper standards for constitutional interpretation) or normative jurisprudence (such as basis for tort liability, whether and when strict criminal liability is justified, the rights of criminals).

Requisites:
Prerequisite: PHILO 535 and one other philosophy course.

Typically Offered
Other

PHILO 680 - Independent Study in Philosophy

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PHILO 685 - Current Topics in Metaphysics and Epistemology

Credits: 3

Selected philosophical issues of current interest in analytic metaphysics and epistemology.

Requisites:
Prerequisite: PHILO 340 and two additional philosophy courses.

Typically Offered
Other

PHILO 690 - Special Topics in Philosophy

Credits: 3

Selected topics in metaphysics, epistemology, philosophy of science, philosophy of language, or philosophy of mind.

Requisites:
Prerequisite: PHILO 320 and additional background courses required for topic.

Typically Offered
On sufficient demand

PHILO 701 - Topics in Metalogic

Credits: 3

Selected topics in the analysis of first-order theories and the foundations of mathematics.

Requisites:
Prerequisite: PHILO 510 or MATH 511.

Typically Offered
On sufficient demand

PHILO 801 - Topics in Philosophy and Methodology of Science

Credits: 1-3

This course explores philosophical problems concerning sciences and its methods. Topics selected from: conceptual foundations of modern science, qualitative and quantitative confirmation theories, and the nature of theories, laws, and explanation in the sciences.

Requisites:
Prerequisite: Instructor permission.

Typically Offered
On sufficient demand

PHYCH 538 - Cross-Culture Psychology

Credits: 3

Introduction to general theories and methods related to understanding the role of culture in human psychology. Focus is on how human psychology and behaviors both differ and are consistent across cultures, and sometimes within subcultures. Topics may include perception, cognitive processes, development, emotions and nonverbal behavior, personality and gender, social relationships, judgments of morality, and mental illness.

Typically Offered
Fall, Spring, Summer

PHYS 506 - Advanced Physics Laboratory

Credits: 4

The completion of experiments of current and/or historical interest in contemporary physics. Students develop skills in and knowledge of measurement techniques using digital and analog instruments. Various data analysis techniques are used.

Note:
Four class hours per week.

Requisites:
Prerequisite: PHYS 325.

Typically Offered
Spring

PHYS 515 - Physics for Science Teachers

Credits: 1-4

Study of current topics in physics, with laboratory experience and demonstration of the processes or phenomena under consideration. Topics and activities will be directed toward providing teachers with material for demonstrations and student experiments or projects. Examples of topics are: solar power, laser applications, holography, and subnuclear particles, relativity, or the historical development of some physical concept.

Repeat for Credit
Repeatable. May be repeated for a maximum of 6 hours credit.

Requisites:
Prerequisite: One year of college physics.

PHYS 522 - Mechanics

Credits: 4

Principles of statistics and dynamics of systems of particles and rigid bodies. Topics include Newton's laws for one particle, non-inertial reference frames, central forces, system of particles, rigid body statics and motion in a plane and in three dimensions, Lagrangian mechanics and Hamilton's equations, oscillating systems and normal coordinates.

Note:
Three hours of lecture and one hour recitation per week. The recitation will focus on mathematical methods and techniques applied to problem solving.

Requisites:
Prerequisite: PHYS 224.

Typically Offered
Spring

PHYS 532 - Electromagnetic Fields I

Credits: 4

An introduction to electricity and magnetism. The first of a two semester study of Maxwell's equations in both integral and differential forms. Topics include electrostatics with vector calculus; electrostatic potential solutions in rectangular, cylindrical, and spherical coordinates; dielectrics; electrostatic energy and capacitance; magnetostatics with vector calculus; Biot-Savart law; vector and scalar potentials for magnetisml magnetic permeability; Faraday's law in integral and differential form; magnetic energy and inductance; displacement current; lumped oscillations and LCR systems; impedance.

Note:
Three hours of lecture and one hour recitation per week. The recitation will focus on mathematical methods and techniques applied to problem solving.

Requisites:
Prerequisite: PHYS 224 and MATH 240.

Typically Offered
Fall

PHYS 620 - Teaching University Physics

Credits: 3

A discussion of techniques which will aid in the development of understanding the concepts in physics. Emphasis is placed on models of learning and teaching techniques which can be applied to the teaching of contemporary physics to university students. These models and techniques are used to analyze a teaching approach of topics, such as quantum mechanics, which is important to today's physicist.

Note:
Three class hours per week.

Requisites:
Prerequisite: PHYS 325.

Typically Offered
Other

PHYS 633 - Electromagnetic Fields II

Credits: 3

Second of a two semester study of Maxwell's equations in both integral and differential forms. Special relativity; Lorentz transformations; relativistic invariants; transformation properties of electric and magnetic fields and potentials; Lorentz force and electrodynamics; electromagnetic fields of a point charge; electromagnetic waves; solutions to the wave equation in rectangular, cylindrical, and spherical geometries; wave propagation in matter; reflection, refraction, and transmission; wave guides and fiber optics; Fresnel equations; polarization; dipole radiation.

Note:
Three lectures per week.

Requisites:
Prerequisite: PHYS 532.

Typically Offered
Spring

PHYS 636 - Physical Measurements Instrumentation

Credits: 4

A laboratory-oriented course to acquaint students with electrical circuits, their interfacing with measuring instruments, and their use in making physical measurements.

Note:
Four class hours per week.

Requisites:
Prerequisite: PHYS 214 or PHYS 224.

Typically Offered
Spring

PHYS 639 - Computations in Physics

Credits: 3

An introduction to applying computational and numerical techniques to solve problems of interest to physicists. Topics include the application of computational analysis and solution to physical problems in both classical, and quantum physics including particle structure and motion, interaction of particles with fields, and model building for simulation of physical phenomena. A practicum is an integral part of the course. Students will use both personal computers and advanced workstations.

Note:
One hour lecture, two hours of computer lab per week.

Requisites:
Prerequisite: PHYS 532.

Typically Offered
Other

PHYS 642 - Nuclear Physics

Credits: 3

An introduction to the structure of the nucleus, radioactivity, and nuclear energy; the application of quantum mechanics to describe nuclear physics.

Requisites:
Prerequisite: PHYS 562.

Typically Offered
On sufficient demand

PHYS 651 - Introduction to Optics

Credits: 4

Introduction to modern concepts in optics: electromagnetic waves, propagation of light through media, geometrical optics of lenses, mirrors and simple optical instruments, polarization, interference, coherence, and diffractions.

Note:
Taught in a studio format; three hours of lecture and two hours of laboratory per week.

Requisites:
Prerequisite: PHYS 214.

Typically Offered
Other

PHYS 652 - Applied Optics and Optical Measurement

Credits: 3

Topical approach oriented toward measurements including coherence, Fourier Optics, holography, light scattering, interferometry, laser technology.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: PHYS 651.

Typically Offered
Other

PHYS 655 - Physics of Solids

Credits: 3

An introduction to the physics of solids with an emphasis on energy band structures, electrical and optical properties

of solids and solid state devices.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: PHYS 662.

Typically Offered
Other

PHYS 662 - Introduction to Quantum Mechanics

Credits: 4

Concepts and mathematical models of quantum physics. Solutions to the time independent Schrödinger equation, descriptions of one-electron and multi-electron atoms, electron spin and magnetic moments.

Note:
Three hours lecture and one hour reciation per week. The recitation will focus on mathematical methods and techniques applied to problem solving.

Requisites:
Prerequisite: PHYS 325, PHYS 522.

Typically Offered
Spring

PHYS 664 - Thermodynamics and Statistical Physics

Credits: 3

An introduction to thermodynamics developed from the concepts of statistical physics. Applications include the gas laws, concepts of heat and work, phase transitions, and kinetic theory with applications to statistical physics.

Requisites:
Prerequisite: PHYS 522; MATH 240.

Typically Offered
Fall

PHYS 691 - Introduction to Astrophysics

Credits: 3

An introduction to the application of physical principles to understanding astronomical objects. Topics include properties of stars, stellar evolution, galaxies, and cosmology.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: PHYS 325, PHYS 522, PHYS 532.

Typically Offered
Other

PHYS 692 - Introduction to Cosmology

Credits: 3

An introduction to the physics and astrophysics of the hot big bang model to the Universe.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: PHYS 522.

Typically Offered
Spring-Even Years

PHYS 694 - Particle Physics

Credits: 3

An experimental and phenomenological introduction to high energy physics. The course will emphasize understanding the experimental basis of what is known about the subnuclear domain. Students will be asked to design simple conceptual experiments in addition to solving problems.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: PHYS 325.

Typically Offered
Other

PHYS 701 - Cosmology

Credits: 3

A general-relativity-based discussion of the physics of the hot big bang model of the Universe.

Requisites:
Prerequisite: PHYS 692.

Typically Offered
Fall-Even Years

PHYS 707 - Topics in Physics

Credits: 1-18

Special topics courses. Topics and credits announced for the semester in which offered. May be given in conjunction with lecture series by visiting scientists.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Graduate standing or senior standing and consent of instructor.

Typically Offered
Fall, Spring, Summer

PHYS 709 - Applied Quantum Mechanics

Credits: 3

A study of Schrödinger's theory of quantum mechanics and its application to one electron atoms, multielectron atoms, quantum statistics, spectra of molecules and selected topics in quantum excitations of solids, nuclear physics, and elementary particles.

Note:
Three hours of lecture per week.

Requisites:
Prerequisite: PHYS 662.

Typically Offered
Fall

PHYS 741 - The Physics of Lasers

Credits: 3

The theory of lasers including Light-matter interactions, atomic rate equations, threshold and oscillation; resonators and cavity modes; and laser dynamics including Q-switching and mode-locking.

Requisites:
Prerequisite: PHYS 651 and PHYS 652.

Typically Offered
On sufficient demand

PHYS 775 - Biological Physics

Credits: 3

This lecture course introduces basic cellular biology for students lacking a biological background and established connections between molecular and cellular phenomena (such as photosynthesis, cellular foraging, and nerve stimulation) and experimentally verifiable models built from physical (classical, statistical, and quantum mechanical, as well as electromagnetic) considerations.

Requisites:
Prerequisite: PHYS 664.

Typically Offered
On sufficient demand

PHYS 800 - Problems in Physics I

Credits: 1

Independent study of the solution of advanced problems in physics at a level appropriate to the M.S. Degree.

Requisites:
Prerequisite: Graduate standing and consent of instructor.

Typically Offered
Spring

PHYS 801 - Mathematical Methods of Physics

Credits: 3

Mathematical techniques for the solution of physical problems. Mathematical topics employed include vector and tensor analysis, matrices, group theory, complex variable theory, differential equations, Sturm-Liouville theory, orthogonal functions, special functions, Fourier series, integral transforms, and the calculus of variations.

Requisites:

Prerequisite: PHYS 522 and PHYS 532.

Typically Offered
Fall

PHYS 802 - Computational Methods in Physics

Credits: 4

Methods of solving physical problems using digital computers including numerical differentiation and integration, error analysis and curve fitting, interpolation, ordinary and partial differential equations, matrix operations, eigenvalues, special functions of mathematical physics. Monte Carlo simulations, and stability of solutions.

Note:
Two hours lecture each week and a self-paced practicum.

Requisites:
Prerequisite: CIS 580 or MATH 655, PHYS 801, and a working knowledge of FORTRAN, C or C++.

Typically Offered
Spring

PHYS 806 - Journal Club

Credits: 1-18

Seminar in current topics in physics.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Graduate standing in physics.

Typically Offered
Fall

PHYS 807 - Graduate Physics Seminar

Credits: 1

Lecture by faculty and graduate students on topics of current research interest.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Graduate standing in physics.

Typically Offered
Fall, Spring

PHYS 808 - Advanced Problems

Credits: 1-18

Independent study in a special problem in physics at the graduate level chosen with the advice of a faculty mentor.

Requisites:
Prerequisite: Graduate standing and consent of instructor.

Typically Offered
Fall, Spring, Summer

PHYS 811 - Quantum Mechanics I

Credits: 3

Fundamental concepts and general formalisms of quantum theory and its applications to bound states, scattering or few state systems. Introduction to quantum applications of operators and state vectors.

Requisites:
Prerequisite: PHYS 709 and PHYS 801.

Typically Offered
Spring

PHYS 821 - Advanced Dynamics

Credits: 3

Study of Lagrangian and Hamiltonian mechanics. Includes canonical transformations, the Hamilton-Jacobi equation, and elements of classical chaos theory.

Requisites:
Prerequisite: PHYS 801.

Typically Offered
Spring

PHYS 831 - Electrodynamics I

Credits: 3

The interaction of electrical charges with each other and radiation as described by the theory of Maxwell and Lorentz. Topics include Coulomb's law and vector fields, Ampere's law and magnetic fields. Faraday's law and inductive fields, continuity relations and conservation laws.

Requisites:
Prerequisite: PHYS 532 and PHYS 801.

Typically Offered
Fall

PHYS 850 - Theory of Atomic Structure and Atomic Interactions

Credits: 3

The quantum mechanics of atomic structure and spectra: one and two electron atoms, many electron atoms, molecular structure and spectra, atomic collision theory for electron-atom and ion-atom collisions.

Requisites:
Prerequisite: PHYS 662.

Typically Offered
Other

PHYS 860 - Electron and Ion Impact Phenomena

Credits: 3

Atomic collision phenomena; experimental techniques in accelerator-based atomic physics; charged particle and photon spectroscopy; elastic, inelastic, and rearrangement collisions; and applications.

Requisites:
Prerequisite: PHYS 662.

Typically Offered
Other

PHYS 870 - Nonlinear and Quantum Optics

Credits: 3

Theory and applications of nonlinear optics: difference and sum frequency generation; ultrashort pulse characterizations; third order effects; Raman scattering; and higher harmonic generation. Fundamentals of quantum optics including field quantization; coherent state; nonclassical light; and optical tests of quantum mechanics.

Requisites:
Prerequisite: PHYS 633, PHYS 652, and PHYS 709.

Typically Offered
On sufficient demand

PHYS 881 - Introduction to Solid State Physics

Credits: 3

Introduction to the physics of condensed matter: crystal lattices; lattice dynamics; electron energy bands; fermi surfaces; optical, magnetic, and transport properties of insulators, semiconductors, and metals.

Requisites:
Prerequisite: PHYS 662 or concurrent enrollment.

Typically Offered
Other

PHYS 899 - Research in Physics

Credits: 1-18

Master's level research.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PHYS 907 - Advanced Topics in Physics

Credits: 0-18

Critical studies of selected advanced topics.

Requisites:
Prerequisite: Comparison of graduate introductory courses in the field of study or permission of the instructor.

PHYS 910 - Problems in Physics II

Credits: 1

Independent study of the solution of advanced problems in

physics at a level appropriate to the Ph.D. Degree.

Requisites:
Prerequisite: PHYS 800 and consent of instructor.

PHYS 911 - Quantum Mechanics II

Credits: 3

Formalisms and applications of quantum theory, including symmetry in quantum systems, space-time symmetries, the rotation group, many body systems, and an introduction to relativistic quantum mechanics.

Requisites:
Prerequisite: PHYS 811.

Typically Offered
Fall

PHYS 912 - Advanced Quantum Mechanics

Credits: 3

Relativistic quantum mechanics; scattering theory; second quantization and the many-body problem. Introduction to quantum electrodymatics.

Requisites:
Prerequisite: PHYS 911.

Typically Offered
On sufficient demand

PHYS 913 - Advanced Topics in Mathematical Physics

Credits: 3

Critical studies of selected advanced topics.

Repeat for Credit
Repeatable. May be repeated once for credit.

Requisites:
Prerequisite: PHYS 801.

PHYS 914 - Quantum Field Theory

Credits: 3

Topics may include second quantization, quantization of the free scalar and Dirac fields, quantum electodynamics, quantization of the electromagnetic fild, propagators and Feynman rules, or other contemporary topics in quantum field theory.

Requisites:
Prerequisite: PHYS 911.

Typically Offered
On sufficient demand

PHYS 915 - Quantum Field Theory II

Credits: 3

Topics may include: Radiative Corrections of QED; Gauge Theories; Weak Interactions, Gauge Theory of Weak Interactions, Spontaneous Symmetry Breaking, and the Standard Electroweak Theory; Field Theory Methods, and Path Integrals; Quantum Chromodynamics; Regularization; Asymptotic Freedom.

Requisites:
PHYS 914, or the consent of the instructor.

Typically Offered
Fall-Even Years

PHYS 931 - Electrodynamics II

Credits: 3

The interaction of electrical charges with each other and radiation as described by the theory Maxwell and Lorentz. Topics include the propagation and production of radiation, Lorentz transformations and relativistic dynamics.

Requisites:
Prerequisite: PHYS 831.

Typically Offered
Spring

PHYS 953 - Advanced Topics in Atomic Interactions

Credits: 1-18

Critical studies of advanced topics in atomic interactions.

Requisites:
Prerequisite: PHYS 662.

PHYS 971 - Statistical Mechanics

Credits: 3

The study of equilibrium states of physical systems involving many particles. Introduces basic concepts of statistical ensembles and presents applications to non-interacting systems for both classical and quantum-mechanical particles. Discusses aspects of interacting classical systems, including a brief introduction to phase transitions and critical phenomena.

Requisites:
Prerequisite: PHYS 662, PHYS 664, PHYS 821.

Typically Offered
Fall

PHYS 981 - Solid State Physics

Credits: 3

Quantized lattice vibrations, methods of band structure calculations, effective mass formulations, applications to optical absorption, excitons, magnetism, and superconductivity.

Note:
Continuation of PHYS 881.

Requisites:
Prerequisite: PHYS 811, PHYS 662.

Typically Offered
Other

PHYS 982 - Advanced Topics in Solid State Physics

Credits: 3

Critical studies of selected advanced topics.

Repeat for Credit
Repeatable. May be repeated once for credit.

Requisites:
Prerequisite: PHYS 881.

PHYS 999 - Research in Physics

Credits: 1-18

Doctoral level research.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PLAN 010 - Planning Field Trip 1

Credits: 0

Multi-day field trip experience in a location of planning significance. Students will learn about professional planning practice in location to develop planning knowledge base and apply findings to other courses.

Typically Offered
Spring

PLAN 020 - Planning Field Trip 2

Credits: 0

Multi-day field trip experience in a location of planning significance. Students will learn about professional planning practice in location to develop planning knowledge base and apply findings to other courses.

Typically Offered
Spring

PLAN 215 - World Cities

Credits: 3

This course introduces undergraduates from a variety of disciplines to some of the major urban areas in the world, how and why they developed, what makes them unique, what it might be like to live there, and what issues they may face in achieving a sustainable future. This course gives students a way of thinking about cities in a global context that highlights both their differences and their similarities. Through lectures, text and other multi-media formats, students explore some of the main opportunities and challenges facing the inhabitants of large cities in today's world.

Typically Offered
Spring

PLAN 315 - Introduction to City Planning

Credits: 3

The origins and evolution of planning in response to economic, social, political, physical, and environmental issues. The planning process and its relationship to the design professions and the social and behavioral sciences.

Typically Offered
Fall

PLAN 316 - Planning Principles Seminar

Credits: 2

Discussion of the principles and process of regional and community planning as practiced by the profession. The tools, skills and knowledge of the planning professions are presented in a focused introduction to the profession.

Requisites:
Corequisite: PLAN 315, admission to the Regional and Community Planning program.

Typically Offered
Fall

PLAN 320 - Community Development Field Workshop

Credits: 3

This course integrates meaningful field experiences with in-class instruction and reflection to introduce students to community assets. Coursework focuses on critical thinking, cultural literacy, and applied classroom knowledge of community assets to encourage shared civic engagement.

Requisites:
Prerequisite or co-requisite: PLAN 315.

Typically Offered
Fall

PLAN 444 - Career Planning Seminar

Credits: 2

Exploration and identification of career paths and development of academic plans for reaching personal and professional goals including specific coursework internships, study abroad and extracurricular activities.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Fall

PLAN 510 - Graphic Composition and Representation for Planning

Credits: 2

A hands on, introductory course that prepares built environment professionals to meet the varying challenges of the practice world by making them familiar with digital graphic tools, representation and composition rules and skills, and color theory.

Requisites:
Corequisite: PLAN 640.

Typically Offered
Fall

PLAN 640 - Urban Design and Development

Credits: 3

Review of recent and historical developments of urban form and space, presented through lecture and discussion. Criteria and methodology for urban design and planning as well as the role of historic preservation.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Fall

PLAN 650 - Housing and Development Programs

Credits: 3

Review and evaluation of historical and current housing issues, production, and financial systems, including consideration of racial, ethnic, income, and gender issues as they relate to the role of housing developments and programs in community development.

Requisites:

Prerequisite: PLAN 315; ENGL 200.

Typically Offered
Spring

PLAN 655 - Land Development Planning

Credits: 3

Examination of the process of land development in the United States, and its impacts from the perspective of developers, financial institutions, community planners, and city administrators. Focus is on the understanding of the land development process in meeting community goals and shaping land development to meet community expectations for the improvement of the community. Conflict resolution and negotiation skills represent a communication emphasis.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Spring

PLAN 660 - Community Development Planning

Credits: 3

Examination of past and present approaches to community development planning in the United States. Review and assessment of community development planning policies, programs and practices.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Spring

PLAN 661 - Community Development Workshop

Credits: 3

The organization, planning, design, development, and evaluation of community development projects with real clients and actual locations.

Requisites:
none

Typically Offered
Fall

PLAN 665 - Planning Professional Internship

Credits: 7-9

Internship with an approved planning sponsor subject to the approval of the departmental faculty.

Requisites:
Prerequisite: PLAN 444.

Typically Offered
Spring

PLAN 667 - Transportation Planning

Credits: 3

The background, framing theories, professional activities and policy debates of transportation planning regarding transit, roads, non-motorized travel, energy use and climate change, land use, congestion, finance, economic development, health, safety, politics, asset management, politics, emerging technologies and the sharing economy.

Typically Offered
Fall, Spring

PLAN 668 - Travel Demand Modeling

Credits: 3

The history, evolving theory, application, and debates surrounding travel demand modeling. Instruction in one of the main travel demand modeling software packages. Practical use of that software.

Typically Offered
Fall, Spring, Summer

PLAN 670 - Planning in POP Culture

Credits: 3

Planning in POP Culture is an exploratory educational adventure of regional and community planning issues through the cultural

media of song, literature, visual art, and film.

Typically Offered
Fall, Spring, Summer

PLAN 672 - Collective Decisions

Credits: 3

Provides an introduction to planning as a collective decision-making tool; examines how planners work within a decision-making environment to move from regional and community planning concepts to implementing plans.

Requisites:
Prerequisite: PLAN 315 or instructor permission.

Typically Offered
Fall, Spring

PLAN 674 - Regional Economic Development Policy

Credits: 3

Introduce students to the theory & practice of economic development at the sub-national level. Evaluate the design and implementation of economic development activities.

Typically Offered
Fall, Spring

PLAN 703 - Off-Campus Studies

Credits: 5

Off campus studies fulfilled in an approved professional office or in an approved international studies program.

Requisites:
Prerequisite: PLAN 720, PLAN 801, PLAN 803.

Typically Offered
Spring

PLAN 705 - Master's Project

Credits: 3

Comprehensive application of research and planning through individual studies approved by the department faculty.

Requisites:
Prerequisite: PLAN 897.

Typically Offered
Spring

PLAN 707 - Writing and Thinking the City

Credits: 3

Hands-on discussion and writing course focused on building an in-depth understanding of the growth, development and social dimensions of cities, and critical thinking and writing skills for built environment scholars and professionals.

Requisites:
None.

Typically Offered
Fall

PLAN 718 - Principles and Strategies of Community Change

Credits: 3

This course prepares built environment professionals to address the field of community development through application of community development principles and strategies.

Requisites:
None.

Typically Offered
Fall

PLAN 720 - Infrastructure and Plan Implementation

Credits: 3

Examination of infrastructure systems, the transportation process, land-use, and development standards; consideration of policy options and strategies; review of

financing options and regulatory requirements associated with the various infrastructure elements. The course also reviews social and other issues that affect and are affected by infrastructure related decisions.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Fall

PLAN 730 - Planning Professional Practice

Credits: 3

Students will learn the functions of public and private sector professional practice including organizational structures, administration and management, and professional ethics.

Typically Offered
Fall

PLAN 740 - Small Community and Rural Area Planning

Credits: 3

Synthesis of small community and rural area change, including socio-economic-political determinants as bases for community design and planning.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Fall

PLAN 741 - Special Studies in Planning

Credits: 1-18

Special Studies in the area of regional and community planning.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Fall, Spring, Summer

PLAN 749 - Metropolitan Planning and Design

Credits: 3

Examination of urban form and the making of livable and sustainable metropolitan regions from an urban design perspective. Introduction to public and private roles in the creation of urban form at regional, city, neighborhood, and site scales; consideration of regional and global consequences of local decisions; examination of design tools and methods used to shape decision making in urban development. Mixed lecture/seminar/workshop format. Interdisciplinary course open to students in architecture, landscape architecture, regional and community planning and related disciplines.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Spring

PLAN 753 - Planning Law

Credits: 3

Examination of the evolution and current state of land use regulation within constitutional limits. Introduction to zoning, subdivision, and other police power controls within the comprehensive planning process.

Typically Offered
Fall

PLAN 755 - Professional Practice: Discipline-Specific Topics

Credits: 1

Covers discipline-specific concerns, focusing on issues specific to architecture, interior architecture and product design, landscape architecture or regional and community planning.

Requisites:
Prerequisite: PLAN 316.

PLAN 765 - Growth Management

Credits: 3

Study of the process of city growth and change in relation to planning techniques and socio-economic-political determinants. Criteria and methodology for the growth management are reviewed and applied to the contemporary city.

Requisites:
Prerequisite: PLAN 315, PLAN 720.

Typically Offered
Spring

PLAN 801 - Knowledge Methods

Credits: 3

A course on quantitative analytical methods for planners. The students will learn problem solving and data analysis in the planning profession such as population project, economic analysis and introductory statistics.

Typically Offered
Fall

PLAN 802 - Planning Methods II

Credits: 3

The application of computer concepts to problem solving and data analysis in the planning profession for community demographic analysis, economic analysis, and market analysis. Included are elements of professional report preparation and visual graphic presentations of planning projects for use in public meetings and for public viewing. Material developed in PLAN 801 form the subject matter of the presentations.

Requisites:
Prerequisite: PLAN 801.

Typically Offered
Spring

PLAN 803 - Community Research Methods

Credits: 3

Focus is on the analytical tools for the selection, collection, analysis, and interpretation of regional and community policy planning activities. Included is the development of survey instruments and interpretation, work flow and work measurement skills, performance standards and program evaluation techniques for policy planning and analysis at the local governmental level.

Requisites:
Prerequisite: STAT 325, STAT 350, STAT 702, or STAT 703.

Typically Offered
Fall

PLAN 805 - Internship in Planning

Credits: 1-4

Assignment to a planning staff for a period of at least 10 weeks; supervision by a professional planner with periodic reports of activities to planning faculty.

Requisites:
Prerequisite: Completion of two semesters of graduate study in planning.

Typically Offered
Fall, Spring, Summer

PLAN 812 - Planning Theory & Law

Credits: 3

A course on planning theory and planning law. Students will learn about the procedural theories and legal frameworks that support planning practice.

Requisites:
Prerequisite: PLAN 315.

Typically Offered
Spring

PLAN 815 - Planning Theory, Ethics and Practice

Credits: 3

Review of the basic theories of regional and community growth and change, analysis of the process of urbanization in relation to societal determinants and environmental constraints, and the study of a process of planning for professional practice. Exploration of societal and human values in relation to issues of equity, social justice, economic welfare, and efficient use of resources, as well as ethical approaches to these issues.

Requisites:

Prerequisite: PLAN 315.

Typically Offered
Spring

PLAN 836 - Plan Making

Credits: 5

This course is about plan-making. Students will learn criteria, standards, and methodology for community and/or regional analysis and planning, and apply them to the practice of planning.

Typically Offered
Spring

PLAN 880 - Topics in Planning

Credits: 1-18

Independent study of selected concepts and trends in regional and community planning and development.

Requisites:
Prerequisite: PLAN 803.

Typically Offered
Fall, Spring, Summer

PLAN 897 - Proposal Writing

Credits: 2-3

Exploration of procedures of planning, design, scheduling, organization, and management of a regional and community planning research project.

Note:
Thesis students enroll for 2 credit hours. Master's Project and Report students enroll for 3 credit hours.

Requisites:
Prerequisite: PLAN 803.

Typically Offered
Fall, Spring

PLAN 898 - Master's Report

Credits: 2

Comprehensive application of research and planning through individual studies approved by the department faculty.

Requisites:
Prerequisite: PLAN 897.
Corequisite: PLAN 705 or PLAN 836.

Typically Offered
Spring

PLAN 899 - Research in Planning

Credits: 0-18

Original research and advanced study in regional and community planning, urban design, and related fields for the master's report/thesis.

Requisites:
Prerequisite: PLAN 803 or LAR 725 or ARCH 725 and completion of two semesters of graduate study in planning.

Typically Offered
Fall, Spring, Summer

PLPTH 500 - Principles of Plant Pathology

Credits: 3

An introductory class in the nature of plant pathogens and the cause, effect, and control of plant diseases. Diseases of field and horticultural crops will be addressed.

Note:
Two hours lecture, one 2-hr. lab a week.

Requisites:
Prerequisite: BIOL 198, or BIOL 210.

Typically Offered
Spring

PLPTH 575 - Topics in Plant Pathology

Credits: 1-3

Discussions and lectures on important areas and contributions in the field of plant pathology.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PLPTH 576 - Special Topics in Plant Pathology

Credits: 1-3

Discussions and lectures on important areas and contributions in the field of plant pathology.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PLPTH 585 - Crop Diseases

Credits: 2

An overview of plant diseases associated with Kansas crops, with an emphasis on identification and management strategies.

Note:
Two hours lecture and four hours lab a week. To meet first half of the semester.

Requisites:
Prerequisite: PLPTH 500.

Typically Offered
Fall

PLPTH 587 - Turfgrass Diseases and Their Management

Credits: 1

Biology, diagnosis and integrated management of turfgrass diseases. Emphasis is on diseases of intensively maintained turfgrass.

Note:
Two hours lecture and two hours lab a week, for the first five weeks of the semester.

Requisites:
Prerequisite: HORT 582 or concurrent enrollment and HORT 515 or concurrent enrollment.

Typically Offered
Fall

Crosslisted:
HORT 587

PLPTH 590 - Landscape Diseases

Credits: 2

An overview of plant diseases associated with Kansas greenhouse and nursery production systems as well as landscape settings, with an emphasis on identification and management strategies.

Note:
One hour lecture and one lab a week.

Requisites:
Prerequisite: PLPTH 500 or concurrent enrollment.

Typically Offered
Spring

PLPTH 610 - Biotechnology

Credits: 3

The use of biotechnology and molecular genetic approaches in plant and animal sciences. Emphasis is on the use of molecular techniques for plant and animal improvement.

Note:
Three hours lecture per week.

Requisites:
Prerequisite: ASI 500 or BIOL 450.

Typically Offered
Fall

Crosslisted:
AGRON 610

PLPTH 676 - Fusarium Laboratory Workshop

Credits: 1

A one-week laboratory/lecture course on the identification, systematics, physiology, mycotoxicology, genetics, and molecular biology of fungi in the genus Fusarium. Students should not be enrolled in any other class while attending this workshop.

Requisites:
Prerequisite: BIOL 455 or BIOL 604, and consent of instructor.

Typically Offered
Summer-Odd Years

PLPTH 730 - Plant Nematology

Credits: 3

An introduction to the morphology, taxonomy, and ecology of phytoparasitic and free-living nematodes found in plants, soil, and fresh water. Emphasis is on the identification and control of plant parasitic nematodes and on lab techniques used in their study.

Note:
Two hours lecture, one 2-hr lab a week.

Requisites:
Prerequisite: PLPTH 500.

Typically Offered
Spring-Even Years

PLPTH 732 - Introduction to Plant Resistance to Pests

Credits: 2

Basic concepts of the biology, ecology, genetics and breeding for pest resistance in plants.

Note:
Four hours lecture and discussion a week. Meets first half of term.

Requisites:
Prerequisite: ENTOM 300 or PLPTH 500 or ENTOM 312 and ENTOM 313, and one course in plant or animal genetics.

Typically Offered
Fall-Even Years

Crosslisted:
ENTOM 732 and AGRON 732

PLPTH 750 - Problems in Plant Pathology

Credits: 1-3

Work is offered in general plant pathology, plant virology, plant nematology, disease physiology, epidemiology, and disease diagnosis.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PLPTH 755 - Plant Resistance to Diseases

Credits: 2

To meet second half of semester for four hours per week. Survey of recent literature on conventional and novel strategies for obtaining durable resistance to plant diseases. Several well-characterized host/pathogen systems will be selected for in-depth analysis.

Requisites:
Prerequisite: PLPTH/ENTOM 732.

Typically Offered
Fall-Even Years

PLPTH 765 - Integrated Plant Disease Management

Credits: 2

Advanced topics in integrated plant disease management will be examined, including: epidemiological concepts, disease loss assessment, fungicides, resistance traits, on-farm research trials and utilization of precision agriculture technologies to measure disease impacts.

Note:
The course will meet the second eight weeks of the semester.

Requisites:

Pr.: PLPTH 590 or concurrent enrollment with PLPTH 585.

Typically Offered
Fall

PLPTH 812 - Introduction to Integrative Genome Analysis

Credits: 3

An introduction to genomics technologies genomics technologies, methods and approaches and their integration to the study of genome biology.

Note:
Three hours lecture per week.

Requisites:
Recommended Prerequisite: BIOL 450 or ASI 500 and a 700 level statistics course.

Typically Offered
Fall-Even Years

PLPTH 813 - Bioinformatics Applications

Credits: 3

This course will cover the basic principles of regular bioinformatics applications and emphasize the practice of bioinformatics in biological research. The course will introduce the use of computation skills in data analysis focused on the application of bioinformatics in next-generation sequencing (NGS). The goal of this course is to help students be prepared for the next-generation biological research that often generates large data and requires researchers to have the capability in data management and data mining.

Note:
Two hour lecture and two hours lab per week.

Requisites:
Recommended Prerequisite: BIOL 450 or ASI 500 and a 700 level statistics course.

Typically Offered
Spring-Odd Years

PLPTH 820 - Population Genetics

Credits: 3

Theoretical basis for and applications of population genetic principles to populations of humans, domesticated plants and animals, and natural ecosystems.

Note:
Three hours lecture/discussion per week.

Requisites:
Prerequisite: ASI 500, BIOCH 521, MATH 220, and STAT 510 or STAT 703.

Typically Offered
Spring-Odd Years

PLPTH 835 - Plant Virology

Credits: 3

A study of the composition, symptomatology, diagnosis, isolation, replications, molecular biology, genetics, and evolution of plant-infecting viruses.

Note:
Two hours lecture a week plus one hour of recitation.

Requisites:
Prerequisite: ASI 500, BIOCH 521, BIOCH 522, and PLPTH 500.

Typically Offered
Fall-Odd Years

PLPTH 840 - Plant Pathogenic Bacteria

Credits: 2

Emphasizes the diversity, mechanisms of pathogenicity, host-parasite relations, control measures, and the principles and methods of identifying plant pathogenic bacteria.

Note:
The course will meet for half of the semester. Four hours lec/ week.

Requisites:
Prerequisite: BIOCH 521, PLPTH 500.

Typically Offered
Spring-Odd Years

PLPTH 845 - Plant Pathogenic Fungi

Credits: 3

The isolation, handling, storage, inoculation, terminology and taxonomy of fungal pathogens of plants. Particular attention will be given to techniques used to study fungi and to the genus and species concepts for important plant pathogenic fungal genera.

Note:
Two hr lecture, and one 3-hr lab a week.

Requisites:
Prerequisite: PLPTH 500 and BIOL 604.

Typically Offered
Fall-Even Years

PLPTH 850 - Introduction to R Programming for Biologists

Credits: 1

An introduction to the R programming environment for biological applications, including an overview of data management, graphics, introductory statistics, phylogenetic analyses, biomathematical modeling, and bioinformatics.

Note:
Lec/recitation Four half days.

Requisites:
Prerequisite: One course in introductory statistics or quantitative biology.

Typically Offered
Summer

PLPTH 870 - Thesis/ Dissertation Proposal Seminar

Credits: 1

Theory and practice of research proposal development.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Spring

PLPTH 871 - Professional Communications in Plant Pathology

Credits: 1

Theory and practice of effective communication of plant pathology research and concepts to scientific and non-scientific audiences.

Requisites:
Prerequisite: Consent of Instructor.

Typically Offered
Fall

PLPTH 880 - Plant Molecular Biology

Credits: 3

A study of plant genes and genome organization, plant gene expression and regulation, and functional analysis of plant genes.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: BIOCH 521, PLPTH 610, or BIOL 541.

Typically Offered
Fall-Even Years

Crosslisted:
AGRON 880

PLPTH 885 - Genomic Technologies Workshop

Credits: 2

Lecture and laboratory on the modern techniques to study genes and genomes.

Repeat for Credit
Repeatable

Requisites:
Recommended Prerequisite: One of the following courses: PLPTH 610, AGRON 610, BIOCH 521, BIOCH 522, BIOL 675, BIOL 676, PLPTH 680, AGRON 680

Typically Offered
Summer

PLPTH 898 - Master's Report

Credits: 1-2

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

PLPTH 899 - Research in Plant Pathology for the MS Degree

Credits: 1-18

Work is offered in each of the major pathogen groups, genetics of plant-microbe interactions, disease physiology, ecology, and epidemiology.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

PLPTH 905 - Ecology and Epidemiology of Plant Pathogens

Credits: 3

Experimental and theoretical approaches to the study of plant disease ecology in agricultural and natural systems.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: A course in Statistics, a course in Calculus, and one of the following: PLPTH 500, PLPTH 730, PLPTH 835, PLPTH 840, PLPTH 845, or a course in Ecology.

Typically Offered
Spring-Even Years

PLPTH 910 - Molecular Plant-Microbe Interactions

Credits: 3

Discussions of molecular and genetic perspectives of resistant and susceptible interactions between plants and bacterial, viral and fungal pathogens. Evaluation of current hypotheses on the nature of disease resistance.

Requisites:
Prerequisite: PLPTH 500, BIOCH 521, and BIOL 500; BIOL 450 or ASI 500; PLPTH 835, PLPTH 840, or PLPTH 845.

Typically Offered
Fall-Odd Years

PLPTH 915 - Advanced Plant Genetics

Credits: 3

In-depth treatment of advanced concepts in molecular, quantitative, and cytogenetics of plants.

Note:
Three hrs. lecture a week.

Requisites:
Prerequisite: PLPTH 680/AGRON 680.

Typically Offered
Fall-Odd Years

Crosslisted:
AGRON 915

PLPTH 916 - Cytogenetics Laboratory

Credits: 1

An advanced laboratory course in classical and molecular cytogenetic techniques, C-banding and flourescence in situ hybridization techniques.

Note:
Three hours lab a week.

Requisites:
Prerequisite: PLPTH 915 or concurrent.

Typically Offered
Fall-Odd Years

PLPTH 920 - Topics in Plant Pathology

Credits: 1-18

Discussions and lectures on important areas and contributions in the field of plant pathology.

Repeat for Credit

Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PLPTH 921 - Special Topics in Plant Pathology

Credits: 1-18

Discussions and lectures on important areas and contributions in the field of plant pathology.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PLPTH 922 - Teaching Practicum in Plant Pathology

Credits: 1-2

Practical training in teaching courses offered in the Department of Plant Pathology. Most students will serve as Teaching Assistants.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PLPTH 927 - Fungal Genetics

Credits: 3

A study of the classical, molecular, and population aspects of fungal genetics in both model and commercially important systems. Topics to be discussed include genetic analysis via mitosis and meiosis, models of recombination, genetic control of fungal development, basic molecular genetics of fungi, and genetic factors affecting fungal population structure and stability.

Note:
Three hours lecture discussion a week.

Requisites:
Prerequisite: BIOCH 521, ASI 500; recommended: BIOL 604 and a 600-level or higher course in genetics.

Typically Offered
Spring-Even Years

PLPTH 999 - Research in Plant Pathology for the PhD Degree

Credits: 1-18

Work is offered in each of the major pathogen groups, genetics of plant-microbe interactions, disease physiology, ecology, and epidemiology.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring, Summer

PMC 510 - Forestry for Park Professionals

Credits: 3

Principles and practices of managing forest resources in the park setting. Special emphasis will be given to tree management in high use areas such as parks where human visitors present special problems for tree survival and development.

Note:
Two hours lecture and two hours lab a week.

Requisites:
Recommended Prerequisite: PMC 330.

Typically Offered
Fall

PMC 575 - Water Management for Natural Resource Managers

Credits: 3

A study of the management of water resources for public and commercial uses. The course investigates the use of rivers, lakes, reservoirs, and marine resources. Management considerations, including agency policy formation, legal rights, use conflicts, and use valuation are covered.

Note:
Three hours lecture a week.

Typically Offered
Fall

PMC 580 - Park Operations and Maintenance Management

Credits: 4

A focus on the principles and practices of operating and maintaining park and recreation areas and facilities. The focus of the course will be on the daily operation and related issues of various public parks (e.g federal, state, county and municipal) and specific park features, including: campgrounds, trails and OHV areas, marinas, zoos, shooting ranges, aquatic facilities, and multipurpose sports complexes and limited facilities.

Note:
Two hours lecture and two hours lab a week, with an extended 8 hr on-site lab experience.

Typically Offered
Fall

PMC 620 - Park Planning and Design

Credits: 3

Analyzes park and protected area planning, its importance, the planning process from beginning to implementation, barriers to successful implementation, and problem-based solutions. Understanding the planning process, related planning policy and the importance of public involvement in the process are the main focus of this course.

Note:
Recommended Prerequisites: PMC 210, PMC 275, PMC 580

Requisites:
Recommended Prerequisites: PMC 210, PMC 275, PMC 580

Typically Offered
Spring

PMC 635 - Methods of Environmental Interpretation

Credits: 3

This course focuses on principles and techniques necessary to communicate environmental and cultural values to visitors in park areas. The philosophy, theory, design, and application of interpretive media to communicate information about the environment is studied.

Note:
Two hours recitation and three hours lab a week. Field trips required.

Typically Offered
Fall

PMC 690 - Parks and Recreation Administration

Credits: 4

This course will introduce students to the use of specific practices to effectively manage a contemporary leisure service enterprise. Special emphasis is placed on financial management, human resource management, policy development, risk management and general administrative operations.

Note:
Four hours lecture a week.

Requisites:
Prerequisite: Junior standing or instructor permission.

Typically Offered
Spring

PMC 710 - Natural Resource Based Tourism

Credits: 3

Develops awareness of global nature-based outdoor recreation services and practices. Statutory and regulatory policies, and current issues regarding public use of protected lands and waters are discussed. Environmental impacts of recreation, and recreation conflicts are discussed. Land use policies and decisions related to

outdoor recreation in protected areas will be examined.

Note:
Recommended prerequisites: PMC 210, PMC 275, PMC 620

Requisites:
Recommended prerequisites: PMC 210, PMC 275, PMC 620

Typically Offered
Fall

PMC 740 - Advanced Environmental Interpretation

Credits: 3

This course builds on the principles and interpretive techniques which are introduced in RRES 635. Specifically, labs emphasize development of personal interpretive skills and students are introduced to interpretive media not covered in RRES 635 (e.g., video equipment, computers, etc.). The lecture and readings focus on the philosophy of interpretation and the theoretical framework for designing and evaluating interpretive strategies.

Note:
One hour lecture and four hours lab a week. Field trips required.

Requisites:
Prerequisite: PMC 635.

Typically Offered
Spring

PMC 810 - Quantitative Research Methods in Park Management and Conservation

Credits: 3

An overview of quantitative research design and methods in park management and conservation settings, focusing on survey design, scale development, and associated statistical analyses.

Typically Offered
Fall

PMC 820 - Outdoor Recreation Behavior

Credits: 3

The practical and theoretical basis of recreational use of public and private lands is examined in the context of ecosystem management. The statutory and regulatory policies and current issues regarding the management and use of lands in wilderness systems, wild and scenic river corridors, parks, and protected areas are discussed in detail. The impacts of recreational uses on the environment and conflicts with other uses of land and resources are discussed. Land use planning policies and decisions, which respond to recreation, wilderness and protected area issues will be examined.

Typically Offered
Fall

PMC 830 - Conservation Attitudes and Behaviors

Credits: 3

Explores the development of the field, psychological constructs that influence behaviors, theories that explain the relationship of these constructs to conservation outcomes, strategies to foster a connection to nature, influencing responses to the natural and built environments, and how to cultivate sustainability through the adoption of conservation behaviors. The main focus is to understand the relationship of humans to nature and how this influences conservation.

Typically Offered
Fall

POLSC 504 - Political Sociology

Credits: 3

An introduction to the principles of political sociology. Processes of political socialization, participation within and outside established organizational channels, recruitment of elites, communication and influence, power, decision making, and policy outputs. Data are presented from a cross-national perspective.

Requisites:
Prerequisite: SOCIO 211; POLSC 110.

Typically Offered
Spring-Even Years

Crosslisted:
SOCIO 504

POLSC 505 - South Asian Civilizations

Credits: 3

Interdisciplinary survey of recent and contemporary civilization in India, Pakistan, Sri Lanka, Bangladesh, Nepal, Bhutan, and Afghanistan, including geography, philosophy, social, economic, political institutions, and historical movements.

Requisites:
Prerequisite: 3 hours of Social Science or junior standing.

Typically Offered
Fall-Even Years

Crosslisted:
GEOG 505, HIST 505, ECON 505, ANTH 505

POLSC 507 - Introduction to Public Administration

Credits: 3

The basic concepts of public administration, with emphasis on orientation for citizen understanding; the place of administration and the role of the administrator in the American political process; the organization and activities of government in carrying out public policy; administrative functions, organization, accountability, finance, and personnel.

Requisites:
Prerequisite: POLSC 110 or POLSC 325 or ECON 110.

Typically Offered
Fall

POLSC 510 - Internship in Government, Public Administration, and Politics

Credits: 1-6

Supervised field work at the international, national, state, and local levels of government or with political parties or other politically oriented voluntary organizations.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor and a minimum of One Course in political science, that is relevant to the internship area.

Typically Offered
Fall, Spring, Summer

POLSC 524 - Political Islam

Credits: 3

Introduction to the main tenets of Muslim politics and a survey of thematic issues across the political systems in the Muslim world. Issues may include Muslim democracy, Islamist movements and political parties, Shia-Sunni conflict, Islamic law (shari'a), Islamophobia, violent organizations, Muslim public opinion, and the Arab Spring.

Requisites:
Prerequisite: POLSC 135 or POLSC 301 or instructor permission.

Typically Offered
Spring

POLSC 525 - US National Government and Politics

Credits: 3

Advanced overview of U.S. National Government. Especially tailored to meet content area needs of prospective K-12 teachers. Topics to be addressed include: the constitution and the American founding; political and electoral processes; institutional structure and function; and, public policy.

Note:
Non-majors only.

Requisites:
Prerequisite: POLSC 325.

Typically Offered
Spring

POLSC 526 - Comparative Political Institutions

Credits: 3

Analysis of political institutions in comparative perspective, including institutional creation and change, the functions and effects of institutional arrangements, as well as how they structure political behavior.

Requisites:
Prerequisite: POLSC 135

Typically Offered
Fall, Spring, Summer

POLSC 527 - Comparative Political Corruption

Credits: 3

Explores the meaning and origins of political corruption. Emphasizes constraints on power and the political economy of corruption-reform efforts from a comparative perspective.

Requisites:
Prerequisite: POLSC 135

Typically Offered
Fall, Spring, Summer

POLSC 540 - Global Security Threats

Credits: 3

Analysis of global threats to the security of societies and individuals emphasizing issues outside the traditional scope of international relations theory.

Typically Offered
Fall, Spring

POLSC 545 - The Politics of Developing Nations

Credits: 3

Comparative analysis of politics in emergent states with emphasis on process of modernization and nation building.

Requisites:
Prerequisite: POLSC 110 or POLSC 344 or sophomore standing.

Typically Offered
Spring

POLSC 549 - International Defense Strategies

Credits: 3

Contemporary international strategies and defense policies with emphasis on nuclear, conventional, and guerrilla war, arms control and disarmament, diplomatic and political roles of the military.

Requisites:
Prerequisite: POLSC 333, POLSC 541, or junior standing.

Typically Offered
Fall

POLSC 555 - Senior Honors Seminar

Credits: 3

Open to senior majors who have attained a 3.0 grade point average in political science.

POLSC 576 - Mass Communications and Political Campaigns

Credits: 3

The roles of journalism, advertising and public relations in political campaigns. Examines campaign communication strategies, staffing, and the roles of political consultants. Analyzes how voter decision making is affected by mass communications and how voters develop attitudes about candidates and issues.

Requisites:
Prerequisite: POLSC 325.

Typically Offered
Other

POLSC 601 - Topics in Political Science

Credits: 3

Extensive exploration of a specific problem in political thought. American government, comparative politics, international relations, or public administration.

Requisites:

Prerequisite: POLSC 400.

Typically Offered
Fall, Spring, Summer

POLSC 603 - Political Parties and Elections

Credits: 3

Origins, structure and function of political parties. Dynamics of the two-party system. Roles of third parties. Analysis of election results and voting behavior.

Requisites:
Prerequisite: POLSC 110, POLSC 325 or junior standing.

Typically Offered
Fall

POLSC 604 - Interest Groups and Public Opinion

Credits: 3

Group theory and politics. Structure, internal politics, and techniques of interest groups and their impact on public policy. Formation and measurement of public opinion.

Requisites:
Prerequisite: POLSC 110 or POLSC 115.

Typically Offered
Spring

POLSC 605 - The American Presidency

Credits: 3

The presidency as an institution, its evolution, congressional relationships, executive organization.

Requisites:
Prerequisite: POLSC 110, POLSC 325 or junior standing.

POLSC 606 - Gender and Politics

Credits: 3

Analysis of the role of gender in political behavior, including gender differences in voting and political participation, legal and cultural restrictions on women's rights and political activity, and women's liberation and other gender-based political movements.

Requisites:
Prerequisite: SOCIO 545 or POLSC 325.

Typically Offered
Spring

POLSC 607 - Administrative Law

Credits: 3

Legal analysis of the rule-making, adjudicatory, and enforcement functions of administrative agencies, with emphasis on constitutional framework, judicial review, requirements of procedural fairness, and rights of public employees.

Requisites:
Prerequisite: One course in political science, U.S.history, or legal or political philosophy.

Typically Offered
Spring

POLSC 608 - Political Participation in the United States

Credits: 3

A broad overview of the various tools of democracy: public opinion, political parties, interest groups, and elections.

Requisites:
Prerequisite: POLSC 110 or POLSC 115 or junior standing.

Typically Offered
Spring

POLSC 610 - Local Government Law

Credits: 3

Explores the dynamic relationship between states and cities. Major issues may include budget shortfalls, social issues, and sprawl. Focus on the legal framework of state and city powers, including the forms of government, state preemption, and home rule theory and practice.

Requisites:
Prerequisite: POLSC 110 or POLSC 115 or junior standing.

Typically Offered
Fall

POLSC 611 - The Legislative Process

Credits: 3

Legislative decision-making in modern democracy with emphasis on the United States, the concept of representation, and political behavior of participants in the legislative process.

Requisites:
Prerequisite: POLSC 110, POLSC 325, or junior standing.

Typically Offered
Spring

POLSC 612 - The Judicial Process

Credits: 3

The structure, process, and politics of the American judicial system. Analysis of important issues concerning law and courts.

Requisites:
Prerequisite: POLSC 325 or junior standing.

POLSC 614 - Constitutional Law

Credits: 3

Principles of the American political system as prescribed by the Constitution and interpreted by Supreme Court decisions, with emphasis on the institutions and powers of the national government, federalism, and property rights.

Requisites:
Prerequisite: One course in political science, U.S. history, or legal or political philosophy.

Typically Offered
Fall

POLSC 615 - The Constitution, Civil Rights and Civil Liberties

Credits: 3

The Constitution as a limitation on governmental power, with emphasis on Supreme Court decisions defining fundamental civil rights and liberties.

Requisites:
Prerequisite: One course in political science, U.S. history, or legal or political philosophy.

Typically Offered
Spring

POLSC 618 - Urban Politics

Credits: 3

Fundamental problems of political power and decision making in urban suburban governmental settings.

Requisites:
Prerequisite: POLSC 110 or POLSC 325.

Typically Offered
Fall

POLSC 619 - Comparative Agriculture Politics and Policy

Credits: 3

Comparative examination of agricultural politics and policy with emphasis on decision making processes and the socio-political impacts of agricultural policy.

Requisites:
Prerequisite: POLSC 110, POLSC 344, or junior standing.

Typically Offered
Fall-Even Years

POLSC 620 - State and Local Government

Credits: 3

The United States system of federalism with emphasis on a comparative analysis of the government and politics of the fifty states and their subdivisions.

Requisites:
Prerequisite: POLSC 110 or POLSC 115.

Typically Offered
Spring

POLSC 621 - West European Politics

Credits: 3

Comparative analysis of British, French, German, and Italian democracies, political systems.

Requisites:
Prerequisite: POLSC 344.

Typically Offered
Fall

POLSC 622 - Latin American Politics

Credits: 3

Comparative analysis of selected political systems of Latin America emphasizing political inputs, political organization, and political outputs. special consideration is given to problems of political change.

Requisites:
Prerequisite: POLSC 110 or POLSC 344 or junior standing.

Typically Offered
Fall

POLSC 623 - South Asian Politics

Credits: 3

Analysis of selected political systems of South Asia.

Requisites:
Prerequisite: POLSC 344, POLSC 505, or junior standing.

Typically Offered
Fall-Odd Years

POLSC 624 - Middle East Politics

Credits: 3

Comparative analysis of selected political systems in the Middle East including nationalism and the conflict of differing ideologies. Validity and usefulness of various theories of political development are tested.

Requisites:
Prerequisite: POLSC 110, POLSC 344, or junior standing.

Typically Offered
Spring

POLSC 625 - East Asian Politics

Credits: 3

Comparative analysis of selected political systems in East Asia, including consideration of the democratization process in the region.

Requisites:
Prerequisite: POLSC 110, POLSC 344, or junior standing.

Typically Offered
Spring

POLSC 626 - African Politics

Credits: 3

Comparative analysis of selected political systems of sub-Sahara Africa, including consideration of problems of nationalism and development.

Requisites:
Prerequisite: POLSC 110, POLSC 344, or junior standing.

POLSC 627 - Eastern and Central European Politics

Credits: 3

Examination of comparative politics and policy in the countries of Easter and Central Europe.

Requisites:
Prerequisite: POLSC 344.

Typically Offered
Spring

POLSC 628 - Civic Engagement

Credits: 3

Seminar on the role of voluntary organizations and civic groups in American political life and the factors that lead citizens to participate in both electoral and non-electoral activities.

Requisites:
Prerequisite: POLSC 325 and junior standing.

Typically Offered
Fall, Spring, Summer

POLSC 629 - Development Policy and Administration

Credits: 3

Comparative examination of development policy, politics, and administration.

Requisites:
Prerequisite: POLSC 110, POLSC 344, POLSC 377, or POLSC 507.

Typically Offered
Fall-Odd Years

POLSC 630 - Politics of Russia and the Former Soviet Union

Credits: 3

An overview of the major factors influenicing the evolution of politics in Russia and the Soviet Union. Special emphasis is placed on the problems associated with the transition from a communist to a non-communist more democratic policy.

Requisites:
Prerequisite: POLSC 344.

POLSC 638 - Ethnic Conflict

Credits: 3

Ethnic Conflict in Comparative Prospective. Comparative examination of ethnic conflicts across regions with the emphasis on Africa.

Requisites:
Prerequisite: Sophomore standing.

Typically Offered
Spring

POLSC 642 - International Conflict

Credits: 3

Examines the nature of international political conflicts and the types of such conflicts.

Requisites:
Prerequisite: POLSC 333.

Typically Offered
Fall, Spring, Summer

POLSC 643 - Global Human Rights

Credits: 3

Introduction to human rights in the global system with a focus on the philosophical foundations, historical evolution, institutional development, and important actors in global human rights.

Requisites:
Prerequisite: POLSC 333, POLSC 400.

Typically Offered
Fall, Spring, Summer

POLSC 645 - International Politics of Europe

Credits: 3

Relationships among the countries of Europe since World War II. With emphasis on efforts to create a more unified European Community. Among the organizations that will be studied are the former Warsaw Pact, NATO, the European Parliament, and the European Union.

Requisites:
Prerequisite: POLSC 333.

Typically Offered
Spring

POLSC 647 - International Law

Credits: 3

Theories of international law, and general problems, such as: recognition, responsibility, war crimes, sources, evidence, codification, and settlement of disputes.

Requisites:
Prerequisite: POLSC 333, POLSC 541, or junior standing.

POLSC 651 - International Organization

Credits: 3

Structure, functions, values, and effectiveness of international organizations with emphasis on the United Nations, European Union, and other regional arrangements.

Requisites:
Prerequisite: POLSC 333, POLSC 541, or junior standing.

POLSC 652 - International Politics of South Asia

Credits: 3

Study of regional problems of South Asia and of international roles and foreign policies of South Asian states.

Requisites:
Prerequisite: POLSC 344 or POLSC 623.

Typically Offered
Fall

POLSC 653 - International Politics of the Middle East

Credits: 3

Consideration of the Arab-Israeli conflict, inter-Arab relations, foreign policies of Middle Eastern states, and the impact of the major foreign powers on the area.

Requisites:
Prerequisite: POLSC 333, POLSC 344, or three hours of other social sciences.

Typically Offered
Fall

POLSC 654 - International Politics of Africa

Credits: 3

The course analyzes contemporary relations among African countries including economic and political security, border claims, formal and informal economic relations, and regional groupings. The course also examines the relations between African countries, the United States and the former Soviet Union, and between African countries and the former colonial rulers.

Requisites:
Prerequisite: POLSC 334, POLSC 344, or junior standing.

POLSC 655 - International Politics of Latin America

Credits: 3

Analysis of international relations of Latin America. Examining theoretical approaches to the study of Latin America's relations, U.S. Latin American relations, and comparative foreign policies of Latin American states. This course also explores special topics such as regional integration and geopolitics.

Requisites:
Prerequisite: POLSC 333 or POLSC 541.

Typically Offered
Spring

POLSC 661 - Ancient and Medieval Political Thought

Credits: 3

Systematic study of ideas about law, politics, and government of great philosophers of Western civilization from Greek antiquity to the sixteenth century.

Requisites:
Prerequisite: POLSC 110, POLSC 301, or junior standing.

Typically Offered
Fall

POLSC 663 - Early Modern Political Thought

Credits: 3

Study of the development of Western political thought from the sixteenth century to the twentieth century.

Requisites:
Prerequisite: POLSC 110, POLSC 301, or POLSC 325 or junior standing.

Typically Offered
Fall

POLSC 667 - American Political Thought

Credits: 3

Political ideas underlying the American union, including the doctrine of rights, the nature of union, liberty, property, and democracy.

Requisites:
Prerequisite: POLSC 110, POLSC 301, POLSC 325 or three hours in other social sciences.

Typically Offered
Fall

POLSC 670 - Law, Politics, and Literature

Credits: 3

Classic and contemporary works of literature, including novels, plays, short stories, and poems, are used to explore themes in law and politics.

Requisites:
Prerequisite: POLSC 301 or junior standing or instructor permission.

Typically Offered
Fall, Spring, Summer

POLSC 671 - Late Modern Political Thought

Credits: 3

Study of contemporary political ideas and social thought.

Requisites:
Prerequisite: POLSC 110, POLSC 301, POLSC 325, or junior standing.

POLSC 672 - Ideologies: Their Origins and Impact

Credits: 3

Explores ideologies, including liberalism, conservatism, socialism, communism, and fascism. Their philosophical origins, transformation into systems of thought with mass appeal, and practical consequences are discussed. The conflict between ideology and philosophy is examined.

Requisites:
Prerequisite: POLSC 110, POLSC 301, POLSC 325, or junior standing.

Typically Offered
Spring

POLSC 675 - Religion and Politics

Credits: 3

Focuses on religious life in America and its changing relationship to politics and government. Examination of the American founding as it relates to church/ state issues, the controversy over meaning of the First Amendment's establishment and free exercise clauses, and contemporary political agendas of mainline and evangelical churches.

Requisites:
Prerequisite: POLSC 110, POLSC 301, POLSC 325, or 3 hours in other social sciences.

Typically Offered
Spring

POLSC 700 - Research Methods in Political Science

Credits: 3

Principles of research design, of measurement of political phenomena, and of methods for collecting and analyzing political data.

Requisites:
Prerequisite: POLSC 325, POLSC 333, or POLSC 344.

Typically Offered
Fall

POLSC 701 - Computer and Quantitative Analysis in Political Science

Credits: 3

Advanced data management, data analysis, and computing skills involved in conducting political science and public policy research.

Requisites:
Prerequisite: POLSC 400 or POLSC 700.

Typically Offered
Spring

POLSC 702 - Public Administration and Society

Credits: 3

Introduction to the discipline and profession of public administration, which may include the cultural, constitutional, institutional, organizational, and ethical context of public administration. Introduction to central issues facing public administrators, using the related perspectives of management, politics, and law.

Requisites:
Prerequisite: POLSC 507.

Typically Offered
Fall

POLSC 707 - Comparative Administrative Systems

Credits: 3

Comparative analysis of public administration concepts and the morphology of administrative systems. Included are U.S., British,and French models and attempts by Third World countries to adapt these to their local cultures.

Requisites:
Prerequisite: POLSC 344 or POLSC 507.

Typically Offered
Fall

POLSC 708 - Public Personnel Administration

Credits: 3

Personnel aspects of administration at all levels of government, including recruitment, selection, discrimination law, pay, and motivation. Emphasis on to those features unique to the public sector, e.g. civil service systems, public unions, and public sector ethics law.

Requisites:
Prerequisite: POLSC 507 or POLSC 607.

Typically Offered
Fall

POLSC 710 - Policy Analysis and Evaluation

Credits: 3

Methods of policy analysis and evaluation. Includes a discussion of the relationship between public policy and the distribution of values in society. Students analyze policies in an area of their choice; e.g., agriculture, business, health, income, trade.

Requisites:
Prerequisite: POLSC 325 or POLSC 507.

Typically Offered
Spring

POLSC 711 - Administrative Ethics

Credits: 3

Ethical issues, approaches, and strategies in public service.

Requisites:
Prerequisite: POLSC 325 or POLSC 507 or graduate standing, or consent of the instructor.

Typically Offered
Fall

POLSC 712 - Game Theory for Political Scientists

Credits: 3

Introduction to game theoretic models as applied to problems in American politics, international relations and comparative politics.

Requisites:
Prerequisite: POLSC 301, POLSC 325, POLSC 333, POLSC 344.

Typically Offered
Fall, Spring, Summer

POLSC 731 - Comparative Civil-Military Relations

Credits: 3

A look at civil-military relations in the U. S., Russia, Germany, and Spain. Primary focus will be on understanding the political role of the military in totalitarian, authoritarian, and democratic states.

Requisites:
Prerequisite: POLSC 110, POLSC 344, or senior standing.

Typically Offered
Fall

POLSC 735 - Public Organization Theory

Credits: 3

Theories of the structure and mission of public organizations. Explores the use of analytical questioning of various theories, to solve organizational problems.

Requisites:
Prerequisite: POLSC 325 or POLSC 507.

Typically Offered
Fall

POLSC 736 - Strategic Management of Public Organizations

Credits: 3

Strategic management in the public sector of democratic societies. Provides a set of tools and research skills to focus thinking, judgment and decision making in order to act strategically.

Requisites:
Prerequisite: POLSC 507 or POLSC 735.

Typically Offered
Spring

POLSC 737 - Public Budgeting

Credits: 3

Budgeting as apart of our political system and as a fiscal process assists in allocating scarce resources. Overview of the budgetary decision-making process and the various budgetary approaches.

Requisites:
Prerequisite: POLSC 507 or MANGT 420.

Typically Offered
Fall

POLSC 738 - Public Finance

Credits: 3

Economics of the public sector, addressing the fundamental issue of the appropriate role of government activity in a market economy. Behavioral consequences of government policy. Model construction to explain real world government policymaking.

Requisites:
Prerequisite: POLSC 737.

Typically Offered
Fall

POLSC 739 - Intergovernmental Relations

Credits: 3

Evolution of the intergovernmental system in the United States and internationally. Emphasis on federal, state, and local interrelationships.

Typically Offered
Fall, Spring, Summer

POLSC 740 - Nonprofit Financial Management

Credits: 3

Introduction to the major issues in nonprofit management. Highlights the unique nature of the nonprofit sector with government (public) and business (for-profit) sectors. Issues may include governance roles and responsibilities, ethics and risk management, financial management and resource generation, managing staff and volunteers, performance measurements, and the emerging trends that threaten nonprofits' tax-exempt status.

Requisites:
Prerequisite: Graduate student standing.

Typically Offered
Fall

POLSC 754 - The Professional Diplomat and Foreign Policy Formulation

Credits: 3

Present day foreign policy formulation in the United States government, including the role of professional diplomats and foreign affairs specialists in the State Department and embassies abroad, as well as within other U.S. Government agencies.

Requisites:
Prerequisite: POLSC 333.

Typically Offered
Fall

POLSC 756 - International Political Economy

Credits: 3

The course introduces students to the political and historical dimensions of the international economy, dimensions that include trade, monetary systems, foreign investment, aid, dependency, and global interdependence. This course also examines various theories and practices of the international system, the state, bureaucracies, interest groups, international organizations, bargaining processes, and distributive norms.

Requisites:
Prerequisite: ECON 110 and ECON 120, POLSC 333, POLSC 344, and POLSC 541, or junior standing.

POLSC 785 - Readings in Political Science

Credits: 3

Directed reading and discussion of a selected topic in political science.

Typically Offered
Fall, Spring

POLSC 790 - Problems in Political Science

Credits: 3

Students will complete a research project and prepare an original paper under the supervision of a faculty member.

Repeat for Credit
Repeatable

Typically Offered
Fall, Spring

POLSC 791 - Topics in Political Science

Credits: 3

Extensive exploration of a specific problem in political thought. American government, comparative politics, international relations, and public administration.

Repeat for Credit
Repeatable. May be repeated for a total of 6 hours in two sub-fields.

Requisites:
Since topics will cover different areas in political science, prerequisites will be determined by the department as appropriate when the course is offered.

Typically Offered
Fall, Spring, Summer

POLSC 799 - Pro-Seminar in Political Science

Credits: 3

Study and analysis in various areas of the discipline with emphasis on critical evaluation of political conflicts and issues.

Typically Offered
Fall, Spring

POLSC 800 - Seminar: Scope and Methodology of Political Science

Credits: 3

Exploration of theoretical foundations of political science, and critique of various analytical models in the study of political phenomena; construction and application of research designs and techniques.

POLSC 805 - Seminar in American Government

Credits: 3

This seminar introduces students to the methods and the theories used to study American politics. Topics to be addressed include the constitution and the American founding, political and electoral processes, institutional structure and function, and public policy. Exams and a seminar paper are required.

Typically Offered
Fall

POLSC 810 - Security Studies Methodology

Credits: 2

An exploration of commonly used research methods in history and political science. Students will investigate quantitative and qualitative humanities and social sciences methodology through selected readings and limited research exercises.

Typically Offered
Fall, Spring

Crosslisted:
HIST 810.

POLSC 811 - Seminar in International Politics

Credits: 3

The seminar introduces students to the different school of thought in international relations as well as the different methods used to study the subject. It also analyzes middle range theories on subjects such as the causes of interstate conflict, the democratic peace, and foreign policy decision-making. Exams and a seminar paper are required.

Typically Offered
Spring

POLSC 812 - Foundations of Security Studies

Credits: 3

An interdisciplinary introduction to the major historical developments and scholarly approaches in the fields of military history, international relations, and security studies.

Typically Offered
Fall, Spring, Summer

Crosslisted:
HIST 812

POLSC 813 - International Security

Credits: 3

Surveys traditional issues in the study of international security such as the causes of war, the utility of deterrence, coercion, and engagement, international intervention, and the proliferation of weapons of mass destruction. Attention will also be placed on security and conflict in important regional settings, such as East Asia and the Middle East.

Typically Offered
Fall

POLSC 814 - Terrorism and Transnational Security Issues

Credits: 3

Introduction to the general aspects of terrorism and counter-terrorism in order to build transnational security. The course examines these issues in terms of forms, causal factors, goals, and consequences. The main objective is to understand terrorism as part of new international security issues such as failed states, environmental degradation, demographic explosion and poverty, conflict in developing world, post-conflict reconstruction, income distribution, humanitarian emergencies, and globalization.

Typically Offered
Fall

POLSC 815 - Research Design in Security Studies

Credits: 1

An exploration of research methods in history and political science culminating in a piece of original research in Security Studies.

Requisites:
Prerequisite: POLSC 810/HIST 812.

Typically Offered
Fall, Spring

Crosslisted:
HIST 815

POLSC 821 - Seminar: Political Thought

Credits: 3

A study of the history of political philosophy as well as contemporary scholarship. Political philosophy as a subdiscipline of political science and its relevance for other subdisciplines as well as for leadership and administration. Class discussion and research training will focus on textual analysis, or exegesis. Course requirements include a major research paper.

Typically Offered
Spring

POLSC 831 - Public Administration Capstone

Credits: 3

Students integrate previous classroom learning with practical experience. Operation of a government agency on a day-to-day basis. The meaning of public service and communication in the public sector.

Requisites:
Prerequisite: Graduate student standing.

Typically Offered
Spring

POLSC 841 - Seminar: Comparative Politics

Credits: 3

The seminar introduces students to the methods and theories of comparative politics as well as critical analysis of various topics in political science such as institution and institutional change, social movements and state building, regime and development, political parties and electoral processes, policy making and political performance. Course requirements include two exams, book reviews, research design, and a major research paper.

Typically Offered
Fall

POLSC 842 - Seminar in Comparative Ideologies

Credits: 3

This seminar provides a graduate level exploration of ideologies such as liberalism, conservatism, socialism, communism, and fascism. The tension between ideology and philosophy is also examined.

POLSC 897 - Internship

Credits: 1-6

Directed off-campus employment experience.

Note:
Must be taken for a total of 3 hours.

Typically Offered
Fall, Spring, Summer

POLSC 898 - Master's Report

Credits: 0-18

Typically Offered
Fall, Spring, Summer

POLSC 899 - Master's Thesis

Credits: 6

Typically Offered
Fall, Spring, Summer

POLSC 900 - Advanced Research Methods I

Credits: 3

The first of a two course methods sequence in security studies. Surveys the role of theory, hypotheses testing, operationalization and measurement, and research design in social science. Case study and historical methods will be given particular attention. Students will also be provided with a brief introduction to quantitative social science analysis.

Typically Offered
Fall

POLSC 901 - Advanced Research Methods II

Credits: 3

The course is the second in the sequence of two method courses in security studies. It emphasized quantitative analysis in political science and covers regression analysis, violation of regression assumptions, and logit models. The course also introduces students to time series, decision theory, and game theory.

Requisites:
Prerequisite: POLSC 900.

Typically Offered
Spring

POLSC 985 - Readings in Security Studies

Credits: 1-6

Directed reading and discussion of a selected topic in international security.

Typically Offered
Fall, Spring, Summer

POLSC 991 - Topics in Security Studies

Credits: 3

Exploration of a specific issue in one of the fields or areas of international security.

Note:
Specific topics will be listed in the class schedule for the semester in which they are offered.

Requisites:
Prerequisite: POLSC 900 and POLSC 901.

Typically Offered
Fall, Spring, Summer

POLSC 999 - PhD Research in Security Studies

Credits: 1-15

PhD research culminating in completed PhD dissertation.

Typically Offered
Fall, Spring, Summer

PSYCH 500 - Junior Seminar in Psychology

Credits: 1

Discussion of professional, research, and educational methods and objectives in psychology. Acquaints psychology majors with psychology as a profession, and with the various options available to them at various levels of training.

Requisites:
Prerequisite: Psych/Pre-Psych Major; Junior standing.

Typically Offered
Fall

PSYCH 505 - Abnormal Psychology

Credits: 3

An introductory study of behavior pathologies, with emphasis on their etiology and treatment.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: Junior standing; PSYCH 110.

Typically Offered
Fall, Spring, Summer

PSYCH 510 - Introduction to Behavior Modification

Credits: 3

Study of the principles of behavior modification and applications to human behavior. Emphasis on the learning principles and research in behavior modification.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 505.

Typically Offered
Spring

PSYCH 515 - Psychology Applied to Work

Credits: 3

Introduction to the basic theories and practices used by industrial and organizational psychologists to enhance individual and organizational effectiveness and well-being. Topics include personnel selection, training, performance management, job attitudes, work motivation, leadership, occupational health, and group processes at work.

Typically Offered
Fall, Spring

PSYCH 518 - Introduction to Health Psychology

Credits: 3

Psychosocial factors relevant to general health maintenance, recovery from disease or injury, and the achievement of health. Topics include stress-management techniques, personality characteristics associated with disease, cognitive-emotional effects of diet and exercise, and theories of pain and pain management. Concepts of prevention and behavioral medicine are also included.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Spring

PSYCH 520 - Life Span Personality Development

Credits: 3

Theories and research in the development of personality from infancy through old age. Origins of personality in heredity and early experience, socialization practices, life crises and choices at various stages throughout life, and problems of aging.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110; sophomore standing.

Typically Offered
Fall, Spring, Summer

PSYCH 530 - Psychology of Mass Communications

Credits: 3

The psychological effects of mass communication on behavior and thought, including advertising, stereotyping of women and minorities, effects on children, violence and sex in the media, effects of news on behavior, and the promotion of prosocial behavior through the media.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Spring

PSYCH 535 - Social Psychology

Credits: 3

Psychology of the individual in society. Survey of empirical studies and theoretical models of social perception, attitudes, and social behavior (e.g., attribution, ethnic and gender prejudice, conformity). Relationship of these topics to personal and media influence, social mores, and social systems is also included.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Fall, Spring

PSYCH 540 - Psychology of Women

Credits: 3

Investigation of psychological processes of women. A developmental sequence with emphasis on major life events for women. Female physiology, early socialization into sex roles, friendship, achievement motivation, sexuality, marriage, childbearing, work, and mental health.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Spring

PSYCH 545 - Consumer Psychology

Credits: 3

Survey of psychological principles and facts in perception, learning, attitude formation, personality, etc., as they apply to behavior of consumers.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110 and junior standing.

Typically Offered
Fall

PSYCH 550 - Advanced Psychological Research Methods

Credits: 4

Students will read primary literature, design research studies, employ the instruments and technology currently used in psychological research.

Requisites:
Prerequisite: PSYCH 350, STAT 325 (or equivalent). Corequisite.: Majors only, Grade of B or better in PSYCH 350.

Typically Offered
Fall, Spring

PSYCH 556 - Multicultural Psychology

Credits: 3

Introduce and familiarize students with the concept of multicultural psychology.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Fall, Spring

PSYCH 557 - The Psychology of Ethnic Humor

Credits: 3

Reviews the structure, dynamics, and social functions of ethnic humor.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110 or SOCIO 211.

Typically Offered
Summer

PSYCH 559 - Psychological Testing

Credits: 3

Principles of psychological testing in industrial, clinical/ counseling, and research environments. Topics include technical issues such as reliability, validity, norming, selection, placement, discrimination, etc. Also covers procedures for selecting, administering, and interpreting psychological tests.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Spring

PSYCH 560 - Industrial Psychology

Credits: 3

Survey of human behavior and psychological principles in an industrial/personnel context. Topics include: recruiting, selecting, and training personnel; evaluating their job performance; conducting job analyses; and implementing compensation strategies.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Fall, Summer

PSYCH 563 - Gender Issues in the Workplace

Credits: 3

Psychological experiences of women and men in the world of work, with emphasis on traditional and nontraditional sex-role behavior, sexual discrimination and harassment, and relevant socialization experiences.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Fall

PSYCH 564 - Psychology of Organizations

Credits: 3

Relationships between individuals, groups, and organizations. How organizational factors contribute to individual behavior, and how individuals affect groups and organizational functioning. Emphasis is on such traditional topics as work motivation, job satisfaction and other attitudes, leadership, communication, socialization, and organization and job design.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Spring

PSYCH 565 - Occupational Health Psychology

Credits: 3

Survey of occupational health issues for juniors and seniors. Provides students with a background in psychologically related health issues occurring at work. The basic processes for identification, prevention, treatment, and well being of workers will be identified and explored.

Requisites:
Prerequisite: PSYCH 110.

Typically Offered
Fall, Spring

PSYCH 570 - Psychopharmacology

Credits: 3

Survey of basic principles of neural communication and pharmacology, the etiology and bio-behavioral bases of substance abuse, and chemical treatments of psychiatric disorders.

Requisites:
Prerequisite: PSYCH 202, PSYCH 470.

Typically Offered
Spring

PSYCH 580 - Psychology of Sexual Behavior

Credits: 3

Study of psychological determinants and consequences of human sexual behavior; roles of personality, attitudinal and emotional factors will be emphasized.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110, sophomore standing.

Typically Offered
Fall, Spring

PSYCH 585 - Basic Concepts of Clinical Psychology

Credits: 3

Critical analysis of the profession. Review of theoretical and empirical bases of such areas as intelligence and its measurement, personality and diagnosis, psychotherapy,

and other modes of behavioral change.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 110, PSYCH 505, and 3 additional hours of psychology.

Typically Offered
Spring

PSYCH 586 - Laboratory in Clinical Concepts

Credits: 2

May be taken only in conjunction with PSYCH 585. Supervised practice in, demonstration of, and orientation to selected psychological techniques and practices.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: Concurrent enrollment in PSYCH 585.

Typically Offered
Fall

PSYCH 587 - Field Placement

Credits: 1-6

Supervised field experience in an agency or institutional setting in the application of psychological techniques to individuals, groups, or organizations. Regular supervision emphasizes relationship between theory and application and the evaluation of outcomes.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Requisites:
Prerequisite: PSYCH 585 and PSYCH 586, or PSYCH 560, PSYCH 561, and PSYCH 562 and consent of psychological technician training committee.

Typically Offered
Fall, Spring, Summer

PSYCH 590 - Interdisciplinary Topics in Psychology

Credits: 1-3

Topics selected in consultation with the instructor, covering interdisciplinary and innovative approaches to psychological topics. Topics selected in consultation with the instructor, covering interdisciplinary and innovative approaches to psychological topics.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PSYCH 599 - Research in Psychology

Credits: 0-18

Investigation of selected problems.

Note:
500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PSYCH 605 - Advanced Social Psychology

Credits: 3

An advanced look at some of the core topics in social psychology (e.g. the self, social influence, personal relationships, prejudice and discrimination, group processes) with a strong emphasis on applying the theory in these areas to current social problems and students' daily lives.

Requisites:
Prerequisite: PSYCH 350; Psychology majors only.

Typically Offered
Spring

PSYCH 620 - Psychology of Personality

Credits: 3

Discussion of different approaches to the study of personality.

Requisites:
Prerequisite: PSYCH 350.

Typically Offered
Fall

PSYCH 625 - Human Factors Psychology

Credits: 3

The application of psychological principles to the design and operation of machines, products, and systems, including human-computer interactions, automation, and training.

Requisites:
Prerequisite: PSYCH 110, STAT 325, or equivaltent.

Typically Offered
Fall

PSYCH 630 - Human Neuropsychology

Credits: 3

Study of brain-behavior relationships in humans. Brief review of human neuroanatomy followed by a major emphasis on brain function in learning, memory, language, and other cognitive behaviors. Also includes an examination of behavioral alterations following brain damage.

Requisites:
Prerequisite: BIOL 198 and PSYCH 110, or BIOL 101 and PSYCH 110.

Typically Offered
Spring

PSYCH 650 - Psychology of Language

Credits: 3

Experimental study of language, including sentence comprehension and memory, language acquisition and development, speech perception, and effects of context, perception, reasoning, and linguistic structure on processing of language.

Requisites:
Prerequisite: PSYCH 110 and junior standing.

Typically Offered
Fall

PSYCH 715 - Psychology of Aging

Credits: 3

The psychological aspects of human aging. An analysis of the contributions of experimental, developmental, and personality-social psychology to the study of aging. The psychopathology of aging and psychological intervention strategies are also covered.

Requisites:
Prerequisite: PSYCH 110 or DAS 315 and junior standing.

Typically Offered
Spring

PSYCH 775 - History of Current Trends

Credits: 3

A review of the contributions of individuals and intellectual movements to the development of modern psychology. A survey of theoretical systems currently of influence.

Requisites:
Prerequisite: PSYCH 110 and 9 additional hours of psychology; senior standing.

Typically Offered
Spring

PSYCH 790 - Topics in Psychology

Credits: 1-18

Requisites:
Prerequisite: PSYCH 110 and consent of instructor.

Typically Offered
Fall, Spring, Summer

PSYCH 799 - Problems in Psychology

Credits: 1-18

Requisites:
Prerequisite: PSYCH 110 and consent of instructor.

Typically Offered
Fall, Spring, Summer

PSYCH 802 - Psychological Research Design and Analysis I

Credits: 3

Introduction to techniques of research planning and design, including critical evaluation of psychological research practices and selected research studies.

Requisites:
Prerequisite: STAT 325 or equivalent, and Psychology major or consent of instructor.

Typically Offered
Fall

PSYCH 803 - Physiological Psychology

Credits: 3

An advanced survey of basic technique, theory, and research in the field of behavioral neuroscience, including memory and learning, sensory and motor processes, motivation, and sexual behavior.

Requisites:
Prerequisite: BIOL 198 and PSYCH 110.

Typically Offered
Fall

PSYCH 804 - Industrial/Organizational Psychology

Credits: 3

Advanced survey of theory and research pertaining to human behavior in work organizations. Topics include selection, training, and evaluation of employees, job analysis and evaluation, work motivation and satisfaction, organizational structure and development, and working conditions.

Requisites:
Prerequisite: PSYCH 560 or PSYCH 564.

Typically Offered
Fall

PSYCH 805 - Psychological Research Design and Analysis II

Credits: 3

Extensive coverage of repeated measures designs, advanced experimental design, and the treatment of common psychological measures.

Requisites:
Prerequisite: PSYCH 802 with a grade of B or better.

Typically Offered
Spring

PSYCH 806 - Psychological Measurement

Credits: 3

The logic and methodology underlying the construction of psychological measuring instruments from the psychophysical estimate of threshold to the scaling of complex psychological variables.

Requisites:
Prerequisite: PSYCH 110 and STAT 325.

Typically Offered
Fall

PSYCH 807 - Research Methods in Occupational Health Psychology

Credits: 3

Reviews research methods used in social science with emphasis on occupational health psychology issues.

Requisites:
Prerequisite: STAT 325.

Typically Offered
Fall

PSYCH 808 - Applied Research Methods

Credits: 3

Examines research methods and analyses that are used in the applied psychology literature. Focuses on planning and conducting program evaluation.

Requisites:
Prerequisite: STAT 325.

Typically Offered
Spring-Even Years

PSYCH 809 - Applied Research Methods II

Credits: 3

Provides students with a detailed knowledge of human resource management research methods and analyses. Focuses on how to plan and conduct research in industrial/organizational psychology. Preparation for the M.S. practicum.

Requisites:
Prerequisite: PSYCH 808.

Typically Offered
Summer

PSYCH 810 - Learning

Credits: 3

In-depth study of empirical and theoretical research on basic learning principles and their effects on behavior.

Requisites:
Prerequisite: PSYCH 350 or equivalent.

Typically Offered
Spring

PSYCH 812 - Perception

Credits: 3

Various systematic approaches to perception, with emphasis on experimental and quantitative data. The role of perception in affectivity, motivation, and personality theory is stressed.

Requisites:
Prerequisite: PSYCH 350 or equivalent.

Typically Offered
Spring

PSYCH 814 - Advanced Cognitive Psychology

Credits: 3

Study of contemporary trends and research in cognition, including memory, language, problem solving, decision making, and human learning.

Requisites:
Prerequisite: PSYCH 350 or equivalent.

Typically Offered
Fall

PSYCH 816 - Psychology of Health

Credits: 3

Presents psychological research investigating illness and related dysfunction, as well as the promotion and maintenance of health. Provides students with the theoretical, empirical and clinical aspects of health psychology from a number of perspectives, discusses leading research and explores personal and practical implications of this information.

Typically Offered
Fall

PSYCH 820 - Personality Theory and Research

Credits: 3

A comparative examination of contemporary theories of personality as well as research findings relevant to such theories.

Requisites:
Prerequisite: PSYCH 620 or equivalent.

Typically Offered
Spring

PSYCH 822 - Developmental Psychology

Credits: 3

Human psychological development throughout the lifespan. Examination of major theoretical systems relevant to Developmental Psychology.

Requisites:
Prerequisite: Consent of Instructor.

Typically Offered
Fall, Spring

PSYCH 825 - Judgmental Processes

Credits: 3

Examination of empirical findings and theoretical approaches to decision making and judgment with emphasis on higher cognitive processes.

Requisites:
Prerequisite: PSYCH 350 and PSYCH 802.

Typically Offered
Fall

PSYCH 830 - Pro-Seminar in Social Psychology

Credits: 3

Discussion of empirical findings and theoretical approaches to selected problem areas, such as attitude change, personality and social structure, person perception, small group processes.

Requisites:
Prerequisite: PSYCH 535.

Typically Offered
Fall

PSYCH 840 - Proseminar in Occupational Health Psychology

Credits: 3

Survey of occupational health issues for first or second year graduate students in health and related fields.

Requisites:
Prerequisite: STAT 325.

Typically Offered
Fall-Odd Years

PSYCH 841 - Seminar in Occupational Health Behaviors

Credits: 3

Focuses on organizational and individual prevention and coping behaviors relevant to work-related health problems.

Requisites:
Prerequisite: PSYCH 840.

Typically Offered
Fall-Even Years

PSYCH 842 - Practicum in Occupational Health Psychology

Credits: 3

Provides supervised practical experience with occupational health problems in various business, manufacturing and government settings. Students will prepare evaluative analyses of their assigned sites.

Requisites:
Prerequisite: PSYCH 840 and PSYCH 841.

Typically Offered
Spring-Odd Years

PSYCH 850 - Current Issues in Health Psychology

Credits: 1

Introduction to current issues in health psychology research.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

PSYCH 851 - Practicum in Health Psych

Credits: 3

Independent health research designed in conjunction with

major faculty advisor plus another faculty member to produce a journal submission and departmental presentation.

Requisites:
Prerequisite: Consent of Instructor.

Typically Offered
Fall, Spring

PSYCH 853 - Seminar in Psychopharmacology

Credits: 3

Surveys basic principles of neural communication and pharmacology, the etiology and bio-behavioral bases of substance abuse, and chemical treatment of psychiatric disorders.

Requisites:
Prerequisite: Consent of Instructor.

Typically Offered
Fall, Spring

PSYCH 855 - Seminar in Applied Cognitive Science

Credits: 3

Multidisciplinary survey and discussion of empirical research and theoretical approaches to cognitive science topics.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring

PSYCH 860 - Practicum in Psychology

Credits: 1-18

Supervised practical experience in applied psychology.

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

PSYCH 870 - Practicum in Teaching Psychology

Credits: 1-4

Supervised experience regularly teaching a college psychology course.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: Graduate standing in Department of Psychology.

Typically Offered
Fall, Spring

PSYCH 875 - Industrial Psychology: Personnel Training

Credits: 3

An examination of the training of personnel in an organization. Topics include: determination of an organization's training needs, selection and motivation of trainees, design and evaluation of training programs, and examination of several specific strategies for accomplishing the training function.

Requisites:
Prerequisite: PSYCH 560 or equivalent.

Typically Offered
Spring

PSYCH 876 - Industrial Psychology: Work Motivation

Credits: 3

An examination of empirical findings and theoretical approaches to understanding the relationship between worker motivation and job outcomes.

Requisites:
Prerequisite: PSYCH 564 or GENBA 520.

Typically Offered
Fall

PSYCH 877 - Industrial Psychology: Leadership

Credits: 3

Examination of current leadership theories, research, and practice in the work setting, focusing on situational approaches to leadership, leadership styles, and interactions between personal characteristics and organizational factors.

Requisites:
Prerequisite: PSYCH 564 or equivalent.

Typically Offered
Fall

PSYCH 878 - Industrial Psychology: Personnel Selection

Credits: 3

Examination of theoretical and practical issues in staffing industrial organizations, including recruitment, test validation, and other equal employment opportunity issues (test fairness, adverse impact, etc.).

Requisites:
Prerequisite: PSYCH 560 or equivalent.

Typically Offered
Spring

PSYCH 879 - Organizational Psychology

Credits: 3

An examination of the individual's role in industrial organizations and the effects of organizational variables on the individual worker. Topics include organizational communication, employee socialization, psychological climates of organizations, psychological stress in organizations, group processes and employee performance, and organizational change.

Requisites:
Prerequisite: PSYCH 564.

Typically Offered
Fall

PSYCH 880 - Industrial Psychology: Performance Appraisal

Credits: 1

Examination of data sources, rating procedures, psychometric criteria for evaluating performance appraisal systems, and models/theories of the performance evaluation process.

Requisites:
Prerequisite: PSYCH 560 or equivalent.

Typically Offered
Spring

PSYCH 899 - Master's Research in Psychology

Credits: 1-18

Requisites:
Prerequisite: Consent of supervisory committee.

Typically Offered
Fall, Spring, Summer

PSYCH 951 - Seminar in Physiological Psychology

Credits: 1-3

Selected topics in physiological psychology.

Repeat for Credit
Repeatable with consent of supervisory committee.

Requisites:
Prerequisite: Consent of instructor.

PSYCH 952 - Seminar in Sensory Processes

Credits: 1-3

Selected topics in sensory psychology.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: Consent of instructor.

PSYCH 953 - Seminar in Personality

Credits: 1-3

Intensive discussion of current problems of theoretical and empirical interest in the field of personality.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: Consent of instructor.

PSYCH 954 - Seminar in Experimental Psychology

Credits: 1-18

Intensive discussion of a problem of current interest based on the class's study of the pertinent original literature.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: PSYCH 810 or consent of instructor.

PSYCH 956 - Seminar in Psychological Measurement

Credits: 1-18

Intensive discussion of a problem of current interest, based on the class's study of the pertinent original literature.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: Consent of instructor.

PSYCH 957 - Seminar in Cognitive Processes

Credits: 1-3

Selected topics in the study of human thinking and cognition.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: Consent of instructor.

PSYCH 958 - Seminar in Mathematical Models of Behavior

Credits: 1-3

Selected topics in mathematical psychology, and applications of mathematical models to behavior.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: Consent of instructor.

PSYCH 959 - Seminar in Social Psychology

Credits: 1-3

Emphasis on discussion of advanced topics of current interest in social psychology.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: Consent of instructor.

PSYCH 960 - Seminar in Industrial Psychology

Credits: 3

Intensive examination of current empirical and theoretical issues in industrial and organizational psychology.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: PSYCH 560 or equivalent.

Typically Offered
Fall

PSYCH 961 - Multivariate Analyses of Behavioral Data

Credits: 3

Methods of working with behavioral sciences multivariate data, including screen data for compliance with assumption and addressing violations of assumptions. Coverage of common multivariate analyses used, with specific application to behavioral research content and topics.

Requisites:
Prerequisite: PSYCH 805 or consent of instructor.

Typically Offered
Fall

PSYCH 968 - Seminar in Professional Problems

Credits: 1-3

Intensive study and discussion of current professional problems in psychology.

Repeat for Credit
Repeatable. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: Consent of instructor.

PSYCH 990 - Internship in Psychology

Credits: 1-18

Requisites:
Prerequisite: Consent of the supervisory committee.

Typically Offered
Fall, Spring, Summer

PSYCH 999 - PhD Research in Psychology

Credits: 1-18

Requisites:
Prerequisite: Consent of supervisory committee.

Typically Offered
Fall, Spring, Summer

RUSSN 504 - Russian Literature in Translation: The Nineteenth Century

Credits: 3

Survey of principal writers of Tsarist Russia with emphasis upon Turgenev, Dostoevsky, Tolstoy, and Chekhov.

Note:
Courses taught in English.

RUSSN 508 - Russian Literature in Translation: The Soviet Period

Credits: 3

The development of Russian literature since the Revolution, with emphasis upon Mayakovsky, Sholokov, Pasternak, and Solzhenitsyn.

Note:
Courses taught in English.

RUSSN 551 - Russian V

Credits: 3

Reading of Russian short stories of the nineteenth and twentieth centuries, including works by Pushkin, Lermontov, Dostoevsky, and Chekhov.

RUSSN 552 - Survey of Russian Literature

Credits: 3

A history of Russian literature from its beginnings until the present, with emphasis on the works of the nineteenth century, including those of Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, and Tolstoy.

RUSSN 553 - Russian Conversation and Composition

Credits: 3

Discussion in Russian. Extensive practice in writing Russian compositions.

RUSSN 559 - Special Studies in Russian

Credits: 1-18

Requisites:
Prerequisite: Consent of department head and instructor involved.

SALES 542 - Fundamentals of Professional Selling

Credits: 3

Focuses on interpersonal communications between buyers and sellers, both oral and written. The mechanics and intricacies of personal sales presentations, which will be developed through practice.

Requisites:
Prerequisite or concurrent enrollment: MKTG 400.

Typically Offered
Fall, Spring

SALES 555 - Sales Technology

Credits: 3

Reviews sales technology and examines the application of sales technologies to the sales process. Course projects will include role plays, along with the active use of technology systems. Content will include managing leads, prospects, and the sales pipeline using technology.

Requisites:
Pre-Requisite: SALES 542 and permission required from the National Strategic Selling Institute Office. Email: kstatesalesprogram@k-state.edu

Typically Offered
Fall, Spring

SALES 560 - Sales Force Leadership

Credits: 3

Management of the sales force in non-retail settings including hiring, training, organizing, motivating, supervising, and evaluating sales representatives and techniques of sales forecasting.

Requisites:
Prerequisite: SALES 542 and instructor permission.

Typically Offered
Fall

SALES 561 - Sales Negotiation

Credits: 3

Covers the fundamentals of negotiation, and how those fundamentals can be used during the sales process, with the goal of improving student understanding of negotiation theory and practical application. Students are expected to participate in role playing exercises.

Typically Offered
Spring

SALES 562 - Key Account Management

Credits: 3

Introduces students to the complex strategies and tactics used in identifying and managing key customer accounts, including those with large multi-national footprints. Students are expected to participate in role playing exercises.

Requisites:
Prerequisite: SALES 542.

Typically Offered
Fall

SALES 563 - Cooperation Selling

Credits: 3

Teaches participants how to successfully synchronize their selling process with the decision maker's buying process so they can create completely satisfied customers and generate more sales. Students are expected to participate in role playing exercises.

Requisites:
Prerequisite: SALES 542.

Typically Offered
Intersession

SALES 565 - Customer Relationship Management

Credits: 3

This course introduces students to the strategies, methodology and technology used to manage customer relationships; and support and enhance the sales and marketing functions.

Requisites:
Prerequisite: SALES 542 and instructor permission.

Typically Offered
Spring

SALES 570 - Advanced Selling

Credits: 3

Provides students the opportunity to enhance their professional selling skills through advanced instruction and skill development. Extensive use will be made of role playing and actual sales experience. Content will include prospecting, developing a sales story, adaptive selling, cold-calling, and managing a sales pipeline.

Requisites:
Prerequisite: SALES 555 and instructor permission.

Typically Offered
Spring

SOCIO 500 - Sociological Perspectives on Contemporary Issues

Credits: 1-3

Analysis of a selected topic of contemporary interest. Topics vary from semester to semester and might include: impact of public policy on rural life; white collar crime; student-athlete education; social change in the Third World.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Fall, Spring, Summer

SOCIO 504 - Political Sociology

Credits: 3

An introduction to the principles of political sociology. Processes of political socialization, participation within and outside established organizational channels, recruitment of elites, communication and influence, power, decision making, and policy outputs. Data are presented from a cross-national perspective.

Requisites:
Prerequisite: SOCIO 211, POLSC 110.

Typically Offered
Spring-Even Years

SOCIO 505 - South Asian Civilizations

Credits: 3

Interdisciplinary survey of the development of civilizations in India, Pakistan, Sri Lanka, Bangladesh, Nepal, Bhutan, and Afghanistan, including geography, philosphy, social, economic, political institutions, and historical movements.

Requisites:
Prerequisite: 3 hours of social science or junior standing.

Typically Offered
Fall-Even Years

Crosslisted:
GEOG 505, HIST 505, POLSC 505, ECON 505, ANTH 505

SOCIO 507 - International Development and Social Change

Credits: 3

A survey of the socioeconomic and political dimensions of international development, with attention focused on developing world contexts. Special attention is given to understanding post-war development trends, including the debt crisis, globalization and neoliberalism, and movements for social change, such as the anti-globalization and the fair trade movements.

Requisites:
Prerequisite: SOCIO 211 or consent of instructor.

SOCIO 510 - Social Welfare as a Social Institution

Credits: 3

The development and present status of social welfare in meeting changing human needs and the requirements in other parts of our social system; the analysis of present-day philosophy and functions of social welfare.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Fall, Spring

SOCIO 522 - Community Engaged Research and Evaluation

Credits: 3-6

Introduction to partnering with community organizations and
applying observation, surveys, interviews, governmental resources, secondary data identification and analysis, and basic program and policy evaluation. Students
practice notetaking, report writing, and ethical standards that protect the well-being of study participants.

Requisites:
Prerequisite: SOCIO 520.

Typically Offered
Fall, Spring

SOCIO 531 - Urban Sociology

Credits: 3

Growth, development, and structure of the city as determined by geographical, ecological, and social factors; relation of rural and urban communities; problems of the city and various approaches to their solution.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Spring

SOCIO 532 - Our Communities, Our Futures

Credits: 3

Combines real-world experience and sociological knowledge about community organization. Explores organizational ties, social interaction, social capital, and leadership in communities.

Requisites:
Prerequisite: SOCIO 211

Typically Offered
Fall, Spring

SOCIO 533 - Society, Food, and Agriculture

Credits: 3

Examines the relationships between agriculture, food, and society. Topics to be examined include the changing structure of agriculture, food system resilience, the globalization of food and agriculture, issues of distribution, access, and food security, and related social movements. Examines implications for both rural and urban societies in the US and around the world.

Requisites:
Prerequisite: SOCIO 211 or consent of instructor.

Typically Offered
Fall

SOCIO 535 - Population Dynamics

Credits: 3

World population trends and their implications for economic development, public policy, and social and cultural change. The interaction of fertility, mortality, and migration with the size, distribution, and structure of populations in nations and world regions.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Spring-Odd Years

SOCIO 536 - Society and Natural Resources

Credits: 3

The interrelations among human societies, social institutions, and the biophysical environment. Emphasis on the reciprocal links among technological change, economic structure, and the ecological basis of human societies.

Requisites:

Prerequisite: SOCIO 211 or instructor consent.

Typically Offered
Fall, Spring

SOCIO 537 - Sociology of Emotions

Credits: 3

Examines different sociological perspectives on the role of emotions in social life, from the level of self and identity, through social interaction, to the macro level of social structure, social order, and social change. Emotions as both social products, and as factors constitutive of social life.

Typically Offered
Spring

SOCIO 538 - Sociology of Culture

Credits: 3

Introduction to the concept of "culture" and the role of culture and collective meaning in social life and social change. How we make sense of the world, and how this affects our responses and actions in the world. Relationship between cultural change and social change.

Typically Offered
Fall

SOCIO 540 - Sexuality and Society

Credits: 3

Overview of key concepts related to sexuality studies and examination of social and cultural constructions of sexuality. Discussion of issues of power, inequalities, and social control.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Summer

SOCIO 541 - Wealth, Power, and Privilege

Credits: 3

Analysis of social inequality, particularly within the contemporary U.S. Competing explanations for unequal wealth, status, power, etc. Emphasis on explanations related to class, occupational structure, gender, and ethnicity.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Spring

SOCIO 544 - Social Gerontology: An Introduction to the Sociology of Aging

Credits: 3

Analysis of the phenomenon of human aging in its individual, social, and cultural aspects with special attention to the problems of aging populations in Western societies.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Spring

SOCIO 545 - The Sociology of Women

Credits: 3

Examines patterns of gender in contemporary society and corresponding experiences of women. The course emphasizes both interactional and structural approaches and provides an overview of theoretical work in the field. Paricular attention is paid to how gender interacts with ethnicity, class, and sexuality.

Requisites:
Prerequisite: SOCIO 211.

SOCIO 546 - Bureaucracy in Modern Societies

Credits: 3

The nature and types of bureaucratic organizations in modern societies. Selected aspects of their internal structure, such as peer group and hierarchical relations in organizations, processes of communication, management, and impersonal mechanisms of control.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Fall

SOCIO 550 - Technocrime, Security, and Society

Credits: 3

Critically examines the social and cultural issues surrounding technology, crime, deviance, and crime control, including hackers, digital activists, online fraudsters, techno security agents, and other actors and subcultures from sociological and criminological perspectives.

Requisites:
Required prerequisite: SOCIO 211.
Recommended Prerequisite: SOCIO 361.

Typically Offered
Fall, Spring

SOCIO 561 - Criminology

Credits: 3

Addresses basic concepts, theories, and research methods used in the study of crime, with an emphasis on critical perspectives on crime as a social phenomenon. The course provides an overview of the nature and extent of major categories of crime as well as the integration of current issues dealing with crime.

Requisites:
Prerequisite: SOCIO 361 or SOCIO 511.

Typically Offered
Fall, Spring

SOCIO 562 - Study of Serial Murder

Credits: 3

The course critically examines the social construction of serial murder as a phenomenon that has long existed but only recently has been polarized as a concern of the criminal justice system and the public in general. The objective of the course is to synthesize historical and social scientific analysis of serial murder, assess public and media debates centered on both offenders and victims, and evaluate the portrayal of serial murder in contemporary literature and film.

SOCIO 565 - Program and Policy Formulation and Analysis

Credits: 3

Examination of policies and programs developed to cope with various social problems. Emphasis will be on analysis of existing programs and policies and the formulation of alternative policies. Attention will be given to policy change through legislative action.

Requisites:
Prerequisite: SOCIO 260, SOCIO 510.

Typically Offered
Fall, Spring

Crosslisted:
SOCWK 565

SOCIO 567 - Pre-Internship Orientation

Credits: 1

This course prepares students for internship placements. Resumes are written, interview procedures discussed, agency interviews conducted, internships selected, and agency orientation completed.

Requisites:
Prerequisite: SOCIO 520.

Typically Offered
Fall, Spring

SOCIO 568 - Criminology and Sociology Internship

Credits: 6-9

Supervised field experience in various agencies within the criminal justice systems or other public or private organizations in areas involving applied sociological analysis or practice. Criminology majors wishing to pursue careers in the field of criminal justice are strongly encouraged to complete an internship. General sociology students may take this course under the direction of a faculty member who agrees to serve as their internship advisor. Does not fulfill sociology or criminology elective

requirements.

Requisites:
Prerequisite: SOCIO 567. Must be taken concurrently with SOCIO 569.

Typically Offered
Fall, Spring, Summer

SOCIO 569 - Criminology and Sociology Professional Seminar

Credits: 3

Integrates field experience and everyday practices with relevant bodies of sociological and criminological theory and research.

Requisites:
Prerequisite: SOCIO 567. Must be taken currently with SOCIO 568.

Typically Offered
Fall, Spring, Summer

SOCIO 570 - Race and Ethnic Relations in the USA

Credits: 3

This survey of racial and ethnic relations focuses on discrimination and conflict now as well as on background factors of the past to enlarge understanding of dominant and minority groups.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Fall, Spring

SOCIO 572 - Sociology of the Death Penalty

Credits: 3

Studies data, public opinion, execution patterns and methods, and debates regarding capital punishment as public policy in the US, from early history to 21st century. Examines selected cases and issues such as general deterrence, methods of execution, and constitutional challenges.

Typically Offered
Summer

SOCIO 582 - The Construction of the Criminal Mind

Credits: 3

Examines interaction between social forces and physical experiences, such as cognitive impairment and/or abuse. Critically reviews history of criminology and biological theories of crime; explores how remnants of these feature in current explanations of crime.

Typically Offered
Summer

SOCIO 592 - Anatomy of Mass Murder

Credits: 3

Examines a specific kind of murder, killing of four or more people in a single incident. Examine the killers' pathways, the weapons, and especially the social context of mass murder.

Requisites:
Recommended prerequisite: Any social science course.

Typically Offered
Fall, Spring

SOCIO 599 - Senior Thesis in Sociology

Credits: 3-6

Independent research in sociology. Students conduct original research and produce a senior thesis in sociology.

Requisites:
Prerequisite: SOCIO 423, SOCIO 431, and instructor consent.

Typically Offered
Fall, Spring

SOCIO 618 - Religion in Culture

Credits: 3

The nature of religion and its manifestations in different cultural systems.

Requisites:
Prerequisite: ANTH 200 or SOCIO 211.

Typically Offered
Spring-Odd Years

Crosslisted:
ANTH 618

SOCIO 633 - Gender, Power, and Development

Credits: 3

Examination of various models of development and their impact on roles of women and men in various cultures. Emphasis upon Africa, Asia, and Latin America. Comparisons of public, service, and economic sectors, including agriculture, marketing, and industry. Examination of policy issues.

Requisites:
Prerequisite: SOCIO 211 or ANTH 200 and 3 additional hours in sociology or cultural anthropology.

Typically Offered
On sufficient demand

Crosslisted:
ANTH 633

SOCIO 635 - Sociology of Human Trafficking

Credits: 3

The course explores a range of topics related to human trafficking, anti-trafficking institutions, and legislation in the context of globalization. Analysis of contemporary forms of slavery-like practices (forced labor, child trafficking, domestic servitude, and others), with primary focus on sex trafficking of women.

Typically Offered
Summer

SOCIO 640 - Sociology of the Family

Credits: 3

Origin and development of marriage customs and systems of family organization; the preparation for family life under present conditions.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Fall

SOCIO 643 - Sociology of Religion

Credits: 3

The role of religion as an institution in American society. An assessment of the functions of religion and an exploration of contemporary trends and movements, including information on traditional denominations and emerging sects and cults.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Fall

SOCIO 645 - Post-Communist Societies

Credits: 3

Analysis of divergent scenarios of post-communist social transformation, primarily in the countries of Eastern Europe and Eurasia. Discussion of the history of communist societies, changing social institutions, and social stratification in the post-communist contexts. Examines post-communist space and mobility, class and gender inequalities, political democratization, youth culture and prospects, crime, global connections of the transformation, human rights and civil society, security and conflict, religion and ethnicity, and the changing family.

Requisites:
Prerequisite: SOCIO 211.

Typically Offered
Spring

SOCIO 647 - Sociology of Work

Credits: 3

Analysis of the world of work, both paid and unpaid. Examines changes that affect the organization of work and the distribution of income, and examines how change alters class, gender, and ethnic relations.

Requisites:
Prerequisite: SOCIO 211 and junior standing.

SOCIO 665 - Women and Crime

Credits: 3

Nature and extent of criminal offending among women and women offenders' interactions with legal and criminal justice systems; women's victimization, including rape and intimate violence; women workers in the criminal justice system, specifically in law, policing, and prison work.

Requisites:
Prerequisite: SOCIO 561 or SOCIO 545 or other Gender, Women, and Sexuality Studies course at the 500-level or above.

SOCIO 670 - Diversity and Social Interaction in the Workplace

Credits: 3

Examines changes in the world of work; examines various contexts of work, such as business, the professions, education, and home; analyzes the social organization of work, both in terms of formal arrangements, such as authority and hierarchy, and in terms of informal structure, such as gender, race, class, and other categories of social difference; provides hands-on experience in dealing with interpersonal relations, management styles, communication, diversity issues, and conflict and stress management.

Requisites:
Prerequisite: 6 hours of social science.

Typically Offered
Intersession

SOCIO 701 - Problems in Sociology

Credits: 1-18

Requisites:
Prerequisite: SOCIO 211 and junior standing.

Typically Offered
Fall, Spring, Summer

SOCIO 738 - International Migration

Credits: 3

A comprehensive examination of international migration dynamics with a focus on immigration to the U.S. Introduces current theoretical debate on migration and examines global migration trends, integration and community formation of immigrants, construction of immigration policies, and impacts on U.S. society.

Typically Offered
Other

SOCIO 742 - Society and Change in South Asia

Credits: 3

Examines recent studies of family and community, population, mobility, urbanization, and modernization in the India-Pakistan region, with focus on social change.

Requisites:
Prerequisite: SOCIO 211 or ANTH 200 and either a 500-level course in South Asian studies or one in social change and development.

Typically Offered
Spring-Even Years

SOCIO 801 - Introductory Proseminar

Credits: 1

Discussions designed to introduce entering graduate students to the discipline of sociology as a profession and to the members of the sociology graduate faculty.

Note:
Required during the first fall semester on campus.

Requisites:
Prerequisite: Admission to the graduate program in sociology.

Typically Offered
Fall

SOCIO 802 - Teaching Proseminar

Credits: 1

Designed to aid new graduate teaching assistants. Includes such topics as planning a sociology course, handling

sensitive issues, leading discussions in large and small classes, use of audiovisuals, special projects, classroom deportment, designing and grading examinations.

Note:
Required of first-semester GTAs.

Requisites:
Prerequisite: Interest in teaching sociology and enrollment in the sociology graduate program.

Typically Offered
Fall

SOCIO 809 - Classical Social Theory

Credits: 3

Intensive seminar in classical sociological theory. Examines the theoretical frameworks and methodologies of Karl Marx, Max Weber, and Emile Durkheim, along with selections from the works of other major classical theorists. Analysis of primary texts will be emphasized.

Requisites:
Prerequisite: SOCIO 511 or equivalent.

Typically Offered
Fall

SOCIO 810 - Contemporary Sociological Theory

Credits: 3

Comparative analysis of contemporary schools of sociological thought showing their development, current status, and possible future trends. Emphasis on structural functionalism, Marxism and neo-Marxism, symbolic interactionism, phenomenology and ethnomethodology, and exchange theory. A working knowledge of classical sociological theory is assumed.

Requisites:
Prerequisite: SOCIO 710 or equivalent.

Typically Offered
Spring

SOCIO 822 - Introduction to Methods of Social Analysis

Credits: 3

Provides an introduction to the methods and techniques utilized in sociological research. Includes such topics as basic collecting and analyzing sociological data.

Requisites:
Prerequisite: STAT 702 or equivalent.

Typically Offered
Fall

SOCIO 823 - Intermediate Methods of Social Research

Credits: 3

Current sociological research techniques, strategies of research design, construction of research instruments, logic of sociological inquiry, conceptualization, problem formation, and preparation of research proposals.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring

SOCIO 824 - Qualitative Methodology

Credits: 3

Collection, analysis, and presentation of sociological data using such methods as participant observation, ethnomethodology, community analysis, documentary research and historiography, case study, and life history. Emphasis upon formulation of problems and the execution of research.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
On sufficient demand

SOCIO 825 - Quantitative Methods

Credits: 3

Provides instruction for advanced techniques in the quantitative analysis of sociological data. Includes regression analysis and estimation of models with categorical data. A working knowledge of basic statistical

concepts is assumed.

Requisites:
Prerequisite: STAT 702 or equivalent.

Typically Offered
Fall

SOCIO 830 - Social Demography

Credits: 3

The study of human population, including the social, economic, political, ecological, and cultural determinants and consequences of changes in fertility, mortality, and migration.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall

SOCIO 831 - Sociology of Agriculture

Credits: 3

Provides a survey of the subfield of sociology of agriculture, including an examination of its roots, growth and current theoretical and substantive directions. Explores the linkages between agriculture, commodity systems, food and the environment.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring-Odd Years

SOCIO 832 - Sociology of Community

Credits: 3

A survey of theoretical perspectives and current research on the sociology of community in the U.S. and other countries. Examples of issues covered include community growth and decline, social inequality, community power and politics, social implications of community economic change, urbanization, and the global context of local change.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring-Odd Years

SOCIO 833 - Gender Differentiation and Inequality

Credits: 3

Offers an analysis of the social construction and reproduction of gender identities. Focuses on current feminist theory and research on the links between gender identities and gender inequality.

Typically Offered
Spring-Even Years

SOCIO 835 - Environment and Society

Credits: 3

The interrelationships among population, technology, environment, and social organization. An examination of the origins and development of human ecology in sociology, and recent attempts to redefine the area. Special emphasis on current theoretical and research efforts focusing on the history and uses of ecological ideas.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring-Even Years

SOCIO 838 - Sociology of Culture

Credits: 3

Intensive reading and discussion of classical and contemporary works relating to the study of culture, all those things that render the world around us comprehensible, communicable, and meaningful. The Focus on collective meaning, the process through which meaning is generated, and the roles collective meanings play in social life.

Typically Offered
Fall

SOCIO 840 - Comparative Social Systems

Credits: 3

Compares social systems in different regions of the world. Examines models of comparative and historical sociology. Provides students with a background for conducting and evaluating comparative research. Treats such issues as socioeconomic development, group relations, and age and sex roles from a cross-cultural perspective.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall-Even Years

SOCIO 841 - Social Stratification

Credits: 3

Survey of major sociological theories and research on inequality in modern societies. Examines the distribution of wealth, status, political power, and other valued resources; the effects of class, race, gender, and other modes of social differentiation; social mobility and the reproduction of inequality.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Fall

SOCIO 842 - Technology and Society

Credits: 3

Technology has contributed to significant changes in our social, cultural, and economic landscape. Provides a survey of theoretical perspectives and current research on the role of technology in society.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring-Even Years

SOCIO 850 - Criminal Justice in Context

Credits: 3

Examines various institutions of contemporary criminal justice operations, focusing primarily on the "three C's"-cops, courts, and corrections-and adjacent subjects such as law. Emphasis will be given to foundational works that emphasize history, theory, policy, and empirical research.

Requisites:
Prerequisite: Graduate standing.

SOCIO 851 - Sociology of Development

Credits: 3

Introduction to the sociology of development. Focus is comparative-historical, involving theoretical and empirical analysis of development dynamics over time and across places, both within the U.S. and abroad. Significant attention to the interdisciplinary aspects of the sociology of development, including economic, geographic-spatial, and political analyses.

Requisites:
Prerequisite: Graduate standing.

Typically Offered
Spring-Odd Years

SOCIO 853 - International Development

Credits: 3

Comparative analysis of competing theories and experiences of development in post-WWII Asian, African, and Latin American societies. Topics include how core theories of development have changed over time and how well they explain related and changing patterns of finance and production, class struggle, state society-relations, labor rights, gender relations, and migration.

Requisites:
Prerequisite: SOCIO 809.

Typically Offered
Fall

SOCIO 861 - Sociology of Deviance

Credits: 1

A critical examination of the nature, types, and societal reactions to deviant behavior. Special emphasis will be given to the process of stigmatization, the social construction of deviance as a social problem, and the effect of inequalities such as race, gender, class, and sexuality on the process of creating and applying deviant labels to individuals and groups.

Requisites:
Prerequisite: 9 hours social science credit.

Typically Offered
Fall-Odd Years

SOCIO 862 - Criminological Theory

Credits: 3

Focuses on traditional and contemporary criminological theories with secondary emphasis on presentation of empirical studies employing the theories under study. Theoretical integration will be stressed.

Requisites:
Prerequisite: Twelve hours of social science.

Typically Offered
Spring-Odd Years

SOCIO 863 - Sociology of Victimology

Credits: 3

Focuses on the unique area of Victimology. Examines recent scholarship, methodological issues, and theoretical perspectives. Requires research paper and peer criticism.

Typically Offered
Fall or Spring

SOCIO 880 - Social Movements

Credits: 3

Examines sociological theories about social movements and their organizational structures and strategies, with an analysis of historical and contemporary nationalist, socialist, labor, womens, civil rights, and environmental movements in the United States and around the world.

Typically Offered
Fall-Odd Years

SOCIO 897 - Practicum in Social Analysis

Credits: 3-6

Provides professional field experience for students enrolled in the Master's in Social Analysis program in an approved public agency, organization, or private firm, under direction of a faculty member. Requires participation in a quarterly seminar.

Requisites:
Prerequisite: One semester in the MSA program and SOCIO 822.

Typically Offered
Spring

SOCIO 898 - Master's Report Research

Credits: 1-18

Typically Offered
Fall, Spring, Summer

SOCIO 899 - Master's Thesis Research

Credits: 1-18

Typically Offered
Fall, Spring, Summer

SOCIO 901 - Research Problems in Sociology

Credits: 1-18

Individual study and research for students admitted to doctoral standing in the Graduate School.

Requisites:
Prerequisite: M.A., consent of instructor.

Typically Offered
Fall, Spring, Summer

SOCIO 911 - Seminar in Sociological Theory

Credits: 3

Selected topics in sociological theory. May be repeated with consent of supervisory committee.

Requisites:
Prerequisite: SOCIO 710 and SOCIO 810.

Typically Offered
Spring

SOCIO 923 - Methods of Social Policy Research

Credits: 3

Examination of principles, techniques, and design of retrospective and prospective social policy research.

Requisites:
Prerequisite: SOCIO 823 or equivalent.

Typically Offered
Fall-Even Years

SOCIO 925 - Specialized Approaches to Sociological Research

Credits: 3

Intensive examination of methodological approaches developed for analysis of sociological problems. The approaches to be examined will depend on faculty and student interests. Likely foci include estimation procedures for structural equation models, advanced techniques for quantitative analysis of categorical data, techniques for social network analysis and methods for comparative and historical analysis.

Requisites:
Prerequisite: SOCIO 823 and instructor's permission.

Typically Offered
Spring-Odd Years

SOCIO 931 - Seminar in Demographic Methods

Credits: 3

Demographic processes such as fertility, mortality, and migration, with emphasis on measurements, methods, and analytical techniques. Includes the construction of life tables and population estimates and projections.

Requisites:
Prerequisite: SOCIO 823 and SOCIO 830.

Typically Offered
Spring-Even Years

SOCIO 932 - Seminar in Comparative Community Organization

Credits: 3

Recent developments in theory and research on processes affecting community organization. Topics will vary. Possible emphases include world urbanization, community linkages to regional and global systems, technology and local economic development, rural community development, and community-based collective action.

Requisites:
Prerequisite: SOCIO 832 or SOCIO 834 or equivalent.

Typically Offered
Fall-Odd Years

SOCIO 933 - Gender and Society

Credits: 3

Exploration of feminist theorizing of gender relations in constructing and maintaining social institutions. Objective is to acquaint students with the strengths and weaknesses of current theories of gender, and to analyze social structures as both constituting and constitutive of gender relations at the macro/meso level of society.

Requisites:
Prerequisite: SOCIO 841.

Typically Offered
Spring-Odd Years

SOCIO 934 - Sociology of Rural Development

Credits: 3

Consideration of selected topics and issues in the social organization of rural areas, both international and in the U.S.

Requisites:
Prerequisite: SOCIO 851 or consent of instructor.

Typically Offered
Fall-Odd Years

SOCIO 935 - Seminar in Demography

Credits: 3

Consideration of selected topical areas in demography such as fertility and family planning, migration, population and development, and regional demography.

Requisites:
Prerequisite: SOCIO 830 or equivalent.

Typically Offered
On sufficient demand

SOCIO 940 - Seminar in Work and Organizations

Credits: 3

Topics and issues in the social structure of industries, firms, and labor processes.

Requisites:
Prerequisite: SOCIO 841.

Typically Offered
Fall-Odd Years

SOCIO 944 - Seminar in the Sociology of Aging

Credits: 3

Consideration of selected topics and issues in the sociology of aging such as retirement and institutional change, societal reactions to aging, population structure and socioeconomic consequences of aging populations, the social organization of leisure, the impact on social organization of services for older people, the structural and organizational consequences of widowhood, age-grading and stratification in aging populations, analysis of the impact on community structure, and organization of special institutions for older people.

Requisites:
Prerequisite: SOCIO 744.

SOCIO 950 - Seminar in Social Interaction

Credits: 3

Examination of current theoretical, methodological, and research issues and topics.

Requisites:
Prerequisite: SOCIO 852, or equivalent.

Typically Offered
Spring-Even Years

SOCIO 951 - Political Sociology

Credits: 3

A survey of core readings in the subfield of political sociology. Covers classical sociological and political theory followed by current debates and research agendas, including world systems theory, post-colonial theory, neo-marxism, resource mobilization theory, game theory, and cultural theories of political action.

Requisites:
Prerequisite: SOCIO 809

Typically Offered
Spring-Even Years

SOCIO 953 - States and Civil Society

Credits: 3

Examines the relationship between the modern nation-state and powerful non-state institutions and social forces. Introduces prominent theories on the rise of the nation-state and its global transmission as the dominant form of governance. Addresses the role of social capital, social movements, NGOs, religious organizations, and educational institutions in upholding or challenging nation-state legitimacy.

Requisites:
Prerequisite: SOCIO 809; SOCIO 851.

Typically Offered
Spring-Even Years

SOCIO 961 - Methods Seminar in Criminology/Deviance

Credits: 3

Examination of principles, techniques, and design of research in criminology, deviance, and corrections.

Requisites:
Prerequisite: SOCIO 824 or SOCIO 825.

Typically Offered
Fall-Even Years

SOCIO 962 - Topics Seminar in Criminology/Deviance

Credits: 3

Selected topical areas in criminology/deviance such as gender, race and/or class and crime; social control; domestic violence; lethal violence; victimology; issues in corrections; and issues in law.

Repeat for Credit
Repeatable. May repeat as topic varies.

Requisites:
Prerequisite: SOCIO 850 or consent of instructor.

Typically Offered
Spring-Odd Years

SOCIO 999 - PhD Dissertation Research

Credits: 1-18

SOCWK 501 - Proficiency Development

Credits: 1-3

Integrative review of social work concepts and skills under faculty supervision. For single students or groups of students.

Note:
Not applicable to major field requirements.

Requisites:
Prerequisite: consent of instructor and superior performance in relevant course.

SOCWK 510 - Social Welfare as a Social Institution

Credits: 3

The development and present status of social welfare in meeting changing human needs; the analysis of historical realities that have resulted in social injustices and inequalities for diverse populations in the United States.

Requisites:
Recommended Prerequisites: One course in each of the following areas: sociology, economics, and political science.

Typically Offered
Fall, Spring

Crosslisted:
SOCIO 510

SOCWK 530 - Social Work Research Methods and Analysis II

Credits: 3

Second of two research methods courses. Emphasis on designing and conducting social work research projects appropriate for baccalaureate social work practice. Attention given to research strategies for the evaluation of social work practice.

Note:
Social work majors only.

Requisites:
Prerequisite: SOCWK 330.

Typically Offered
Fall

SOCWK 550 - Field Practicum Preparation

Credits: 3

Social work majors take this course in the semester before enrollment in SOCWK 562 Field Experience, in preparation for the field practice experience. Students explore various fields of practice and social work settings and work with the instructor to plan their practicum for the following semester.

Note:
Social work majors only.

Requisites:
Prerequisite: Senior standing and instructor permission.

Typically Offered
Fall, Spring

SOCWK 560 - Social Work Practice I

Credits: 3

Continued development of social work practice skills. The social systems perspective is used to guide the development

of a problem-solving methodology with attention to information gathering, assessment, and problem identification. Values clarification and self awareness are emphasized and the skills needed for intervention, termination, and evaluation are introduced.

Note:
Social Work majors only.

Requisites:
Prerequisite: SOCWK 100, SOCWK 200, SOCWK 315, and SOCWK 510; junior standing and permission of the instruction.

Typically Offered
Fall, Spring

SOCWK 561 - Social Work Practice II

Credits: 3

Continuation of SOCWK 560 with emphasis on skill development in interventinon techniques, and practice evaluatiuon from a social systems perspective. A variety of intervention strategies and techniques is presented with emphasis on the development of a social work frame of reference.

Note:
Must be taken concurrently with SOCWK 571.

Requisites:
Prerequisite: SOCWK 560 and senior standing and permission of the instructor.

Typically Offered
Fall, Spring

SOCWK 562 - Field Experience

Credits: 10

Supervised field experience in community agencies and programs as a practical application of social work knowledge and skills gained from major course work. Emphasis on direct work with clients, whether individuals, groups, or communities. Seminars make use of student's experiences to analyze social work theory and practice.

Note:
Social Work majors only.

Requisites:
Prerequisite: SOCWK 550 and SOCWK 561; senior standing; permission of the instructor.

Typically Offered
Spring, Summer

SOCWK 563 - The Practice of Social Work in Rural Areas

Credits: 3

A review of characteristics and social problems of rural areas. The development of practice competency in social work roles and skills necessary for rural practice.

Requisites:
Prerequisite: SOCWK 560.

Typically Offered
On sufficient demand

SOCWK 564 - Social Work Professional Seminar

Credits: 2

A review of various theories in the behavioral sciences which influence the practice of social work. Primary focus of the course is on the use of these theories in implementing change in various client systems.

Requisites:
Prerequisite: To be taken concurrent with SOCWK 562. Social work majors only.

Typically Offered
Spring, Summer

SOCWK 565 - Social Policy

Credits: 3

Examination of policies and programs developed to cope with various social problems. Emphasis will be placed on analysis of existing programs and policies and the formulation of alternative policies. Attention will be given to policy change through organizational and legislative actions.

Requisites:
Prerequisite: SOCWK 510; one course in each of the following areas: sociology, economics, and political

science; and one course in social science research methods.

Typically Offered
Fall, Spring

Crosslisted:
SOCIO 565

SOCWK 568 - Macro Practice and Theory

Credits: 3

Continuation of social work practice sequence with focus on skills development for macro-level social work practice and an understanding of macro-systems using the ecological perspective as a framework. Community and organization intervention strategies with emphasis on the development of a social work frame of reference. Focus on institutional racism, institutional discrimination, and the importance of recognizing these functions within society.

Requisites:
Co-requisite: SOCWK 560(taken concurrently with)

Typically Offered
Fall, Spring

SOCWK 570 - Social Work with Groups

Credits: 3

Taken concurrently with SOCWK 561. Course provides the theoretical framework for effective generalist social work practice with groups, facilitates the development of group leaders who possess an understanding of group dynamics and effective leadership skills through group discussion, experiential exercises and leadership experiences.

Requisites:
Prerequisite: SOCWK 560.

Typically Offered
Fall, Spring

SOCWK 580 - Women's Perspectives on Peace and War

Credits: 2-3

This course will consider the issue of the participation of women in opposition to ware and weapons of war and advocacy for peaceful resolution of conflict. Readings and discussions will focus on four areas: (1) historical and contemporary women's peace movements; (2) the influence of a male-dominated societal structure on the use of violence and militarism as a means of resolving conlict; (3) the question of whether or not women are naturally more included to be peaceful; and (4) the activities, thoughts, and works of individual women in their quest for peace, within themselves, and in the world.

Typically Offered
Intersession

SOCWK 610 - Topics in Social Work

Credits: 1-3

Supervised independent study projects.

Requisites:
Prerequisite: SOCWK 100 plus 6 hours of behavioral science foundation courses and consent of instructor.

SOCWK 612 - Fundamentals of Communication for the Agriculture and Food Science Community

Credits: 3

This course develops communication skills among the scientific community to improve discourse with lay persons. Fundamentals of active listening as well as techniques to diffuse tense situations are addressed. Students will apply the skills learned to their career field through a final research project.

Typically Offered
Fall, Spring

SOCWK 620 - Global Social Work

Credits: 3

Explores the underlying theories, concepts, and practice skills related to international social work.

Requisites:
Socwk 100 or Socio 211

Typically Offered
Fall-Odd Years

SOCWK 650 - Assessment and Treatment of Substance Use Disorders

Credits: 3

Comprehensive examination of substance use treatment and rehabilitation includes a thorough examination of the treatment models of addiction, recovery, and relapse.

Typically Offered
Fall, Summer

SPAN 530 - Professional Spanish: Business

Credits: 3

Develops culturally relevant communication skills in business and professional contexts. Specialized content and vocabulary including professional writing, such as employment materials.

Requisites:
Prerequisite: SPAN 410 or SPAN 411

Typically Offered
Fall, Spring

SPAN 531 - Professional Spanish: Health and Human Services

Credits: 3

Develops culturally relevant communication skills in health and human services contexts (including social work, kinesiology, dietetics, education). Specialized content and vocabulary, community-based learning, and experience in professional writing.

Requisites:
Prerequisite: SPAN 410 or SPAN 411

Typically Offered
Fall

SPAN 550 - Introduction to Hispanic Readings and Media

Credits: 3

Communication, critical thinking, and analytical skills applied to Spanish-language literary texts, film, and art. Skill development through conversation, presentations, papers, and creative projects.

Requisites:
Prerequisite: SPAN 410 or SPAN 411 or equivalent.

Typically Offered
Fall, Spring

SPAN 560 - Cultures of the Spanish-speaking World: U.S. Latinx

Credits: 3

Explores the development of literature and other media representing Latinx experiences in the United States since the Mexican-American War.

Note:
Taught in Spanish, may include some texts in English. SPAN 550 strongly recommended.

Requisites:
Prerequisite: SPAN 410 or SPAN 411.

Typically Offered
Fall, Spring, Summer

SPAN 565 - Cultures of the Spanish-speaking World: Spain

Credits: 3

Develops a critical understanding of the historical, political, and forces that have shaped Spanish literature and culture through an interdisciplinary focus on a topic, (e.g. cities, music, sport).

Requisites:
Prerequisite: SPAN 550

Typically Offered
Fall, Spring, Summer

SPAN 566 - Cultures of the Spanish-speaking World: Spanish America

Credits: 3

Develops critical understanding of the historical, political and social forces that have shaped Spanish America through interdisciplinary focus on a region or topic (e. g. food and identity, journeys, revolutions).

Requisites:
Prerequisite: SPAN 550

Typically Offered
Spring

SPAN 567 - Cultures of Spanish-speaking World: Transatlantic

Credits: 3

Analysis of representative works of Spanish literature from the Middle Ages to the present. Develops an understanding of the periods, genres and contexts of course readings and the relationship among texts.

Requisites:
Prerequisite: SPAN 550 and SPAN 565.

Typically Offered
Fall, Spring, Summer

SPAN 568 - Literature of Spanish America

Credits: 3

Analysis of representative works of Spanish American literature from the per-Columbian period to the present. Develops an understanding of historical and cultural context within the framework of Spanish American literary criticism.

Requisites:
Prerequisite: SPAN 550 and SPAN 566.

Typically Offered
Fall, Spring, Summer

SPAN 569 - Special Studies in Spanish

Credits: 1-18

Requisites:
Prerequisite: Consent of department head and instructor involved.

SPAN 575 - Introduction to Spanish Translation

Credits: 3

Introduction to concepts of translation, including aspects of history, theory, and professional ethics. Practice in bi-directional translation [Spanish-English-Spanish] of a variety of texts in different genres including literature.

Requisites:
Prerequisite: Minimum of 3 hours at the 500 level or instructor permission.

Typically Offered
On sufficient demand

SPAN 580 - Introduction to Spanish Linguistics

Credits: 3

Introduction to the fundamentals of linguistic analysis, including the sound system, word and sentence formation, and semantic and pragmatic meaning. Formal and usage-based perspectives. Application of linguistics to language acquisition theory and to pedagogy.

Note:
Taught in Spanish.

Requisites:
Prerequisite: Minimum of 3 hours at the 500 level or instructor permission.

Typically Offered
fall, Spring

SPAN 670 - Advanced Spanish Grammar

Credits: 3

Intensive study of the structures of the Spanish language for communicative and pedagogical purposes. Comparison/contrast to English structures.

Requisites:
Prerequisite: SPAN 410 or equivalent.

Typically Offered
Fall, Spring, Summer

SPAN 730 - Medieval Spanish Literature

Credits: 3

Texts and contexts in Medieval Spain, from jarchas to La Celestina. Focus on the roles of ideologies, schools and genres. Incorporates manuscripts and oral traditions. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 567 or SPAN 568.
Recommended prerequisite: SPAN 565.

Typically Offered
Fall, Spring

SPAN 731 - Early Modern Literature of Spain

Credits: 3

Contextualized discussion and analysis of literature and cultural life in 15th-17th-century Spain. Course may be focused on a theme, genre, or writer (such as Miguel de Cervantes).

Note:
Note: Develops ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 550 and 6 additional hours at the 500-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 732 - Cervantes

Credits: 3

Reading and discussion of the works of Cervantes and of his literary and cultural background. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 567 or SPAN 568.
Recommended Prerequisite: SPAN 565.

Typically Offered
Fall, Spring

SPAN 734 - 18th- and 19th- Century Spain

Credits: 3

Contextualized discussion and analysis of literature and cultural life in 18th-19th-century Spain. Course may be focused on a theme, genre, or movement (Enlightenment, Romanticism, Realism, Naturalism). Topics may include anticlericalism and Catholicism; revolution and empire; scientific reasoning.

Note:
Develops ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 550 and 6 additional hours at the 500-level or instructor permission.

Typically Offered
Fall, Spring

SPAN 735 - 20th- and 21st-Century Spain

Credits: 3

Contextualized discussion and analysis of contemporary Spanish literature and cultural life. Course may be focused on a theme or genre (e.g., the Generation of '27, the Spanish Civil War, the Franco dictatorship and transition to democracy, feminism, or immigration).

Note:
Develops the ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 550 and 6 additional hours at the 500-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 736 - Spanish Poetry

Credits: 3

Texts and contexts of poetry in Spain from the jarchas of the early Middle Ages through the 21st Century. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 567 or SPAN 568.
Recommended prerequisite: SPAN 565.

Typically Offered
Fall, Spring

SPAN 750 - Spanish American Narrative

Credits: 3

Contextualized discussion and analysis of literary and cultural narratives over time, focused on a theme or

region. Topics may include cultural encounters, illness, and disability, ecology, modernity.

Note:
Develops ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 550 and 6 additional hours at the 500-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 751 - Spanish-American Narrative: Early Twentieth Century

Credits: 3

Contextualized discussion and analysis of early twentieth-century narrative literature. Includes modernismo, the Avant-Garde, and criollismo/la novela de la tierra. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 567 or SPAN 568.
Recommended prerequisite: SPAN 565.

Typically Offered
Fall, Spring

SPAN 752 - Spanish-American Topics

Credits: 3

Interdisciplinary exploration of a Spanish American political, social, or cultural issue over time. Examples: memory and testimonio, utopia and dystopia, gender and sexuality. Includes literary readings and media.

Repeat for Credit
Repeatable. May be repeated with a different topic.
Develops the ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 550 and 6 additional hours at the 500-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 755 - Spanish American Performance Studies

Credits: 3

A contextualized interdisciplinary approach to performance studies in Spanish America. Discussion and analysis of plays and other performative events (political protests, rituals, installations). May focus on a time period, region, or theme.

Note:
Develops the ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 550 and 6 additional hours at the 500-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 757 - Spanish-American Poetry

Credits: 3

Contextualized discussion of Spanish American poetry over time, focused on a theme or region. Examples: musicality and song lyrics, places and journeys, voice and identity, innovation.

Note:
Develops the ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 550 and an additional 6 hours at the 500-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 760 - U.S. Latinx Literature and Culture in Spanish

Credits: 3

Examines the border as a metaphorical concept in Latinx literature and culture. Analysis of literary texts and media that explore intersecting identities, languages, and counter-traditions that shape the Latinx cultural legacy in the U.S.

Note:

Develops the ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 550 and 6 additional hours at the 500-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 768 - Hispanic Cinema

Credits: 3

Critical analysis of films representing a selected region, period, or theme, within their theoretical, cultural, socio-political and historical contexts.

Note:
Develops the ability to interpret and craft complex, abstract language. Reading- and writing-intensive class. May be repeated with a different topic.

Requisites:
Prerequisite: SPAN 550 and 6 additional hours at 500-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 771 - Advanced Spanish Translation

Credits: 3

Analysis and practice in bi-directional translation [Spanish-English-Spanish] of a variety of texts from a number of genres, including literary texts. Discussion of professional opportunities for translators and interpreters. Development of personal portfolio.

Requisites:
Prerequisite: SPAN 575 or senior level.

Typically Offered
Spring, Summer

SPAN 772 - Spain Today

Credits: 3

Explores key issues of contemporary Spain including the legacy of the Spanish Civil War. Interdisciplinary focus on a topic, such as regional tensions, economics, politics. Representative literary texts and media serve as a basis for developing a critical view of the region.

Note:
Develops the ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: Minimum of 3 hours at the 700-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 773 - Spanish America Today

Credits: 3

Focus on the most significant cultural, social, political, ecological and economic issues affecting Spanish America in recent years. Representative literary texts and media serve as a basis for developing a critical view of the region. Reading- and writing-intensive class.

Note:
Develops the ability to interpret and craft complex, abstract language. Reading- and writing-intensive class.

Requisites:
Prerequisite: Minimum of 3 hours at the 700-level or instructor permission.

Typically Offered
On sufficient demand

SPAN 774 - Topics in Spanish Translation/Interpreting

Credits: 3

Theory, strategies, terminology, and practice in a designated field between Spanish and English translation and /or interpreting (fields: healthcare, literary translation, legal, technical and scientific, community interpreting).

Repeat for Credit
Repeatable. May be repeated for credit with a focus on a different topic.

Requisites:
Prerequisite: SPAN 575 or SPAN 771.

SPAN 776 - History of the Spanish Language

Credits: 3

The development of Spanish from Latin to its present-day variation in the Spanish-speaking world. Influence of and interaction with world cultures and languages across time. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 565 or SPAN 566 or SPAN 567 or SPAN 568.

Typically Offered
Spring

SPAN 777 - Hispanic Cultures and Literatures: Teaching Strategies

Credits: 3

An integrated teaching program that develops linguistic, cultural and literary skills through the analysis and interpretation of texts from Spain and Spanish-America. Emphasis on student-centered cooperative and collaborative learning. Reading- and writing-intensive class.

Requisites:
Prerequisite: SPAN 565 or SPAN 566 or SPAN 567 or SPAN 568.

Typically Offered
Fall, Spring

SPAN 779 - Selected Topics in Spanish

Credits: 3

In depth exploration of a special cultural, linguistic and/or literary subject. Reading- and writing- intensive class.

Requisites:
Prerequisite: SPAN 565 or SPAN 566 or SPAN 567 or SPAN 568.

Typically Offered
Fall, Spring, Summer

SPAN 799 - Research Topics in Spanish

Credits: 1-18

A seminar with variable topics.

Repeat for Credit
Repeatable

Typically Offered
Fall

SPAN 898 - Master's Report

Credits: 1-2

A written report of either research or problem work on a topic in the major field.

Requisites:
Prerequisite: Consult of major professor.

Typically Offered
Fall, Spring, Summer

SPAN 899 - Research in Modern Languages

Credits: 1-18

STAT 510 - Introductory Probability and Statistics I

Credits: 3

Descriptive statistics, probability concepts and laws, sample spaces; random variables; binomial, uniform, normal, and Poisson; two-dimensional variates; expected values; confidence intervals; binomial parameter, median, mean, and variance; testing simple hypotheses using CIs and X2; goodness of fit. Numerous applications.

Requisites:
Prerequisite: MATH 221.

Typically Offered
Fall, Spring

STAT 511 - Introductory Probability and Statistics II

Credits: 3

Law of Large Numbers, Chebycheff's Inequality; continuation of study of continuous variates; uniform, exponential, gamma, and beta distribution; Central Limit Theorem; distributions from normal sampling; introduction to statistical inference.

Requisites:
Prerequisite: STAT 510.

Typically Offered
Fall, Spring

STAT 610 - Introduction to Mathematical Statistics I

Credits: 3

Development of axiomatic probability; univariate and multivariate random variables and their probability distribution functions; conditional distributions and independent random variables; methods of transformation for distributions of functions of random variables; convergence in distribution and probability.

Requisites:
Prerequisite: MATH 222.

Typically Offered
Fall

STAT 611 - Introduction to Mathematical Statistics II

Credits: 3

Estimation of probability distribution parameters by maximum likelihood, Bayesian and bootstrap methods; minimum variance unbiased estimation based on sufficient statistics; mean squared error and consistency of estimators; confidence interval estimation; statistical tests of hypotheses by likelihood ratios; most powerful tests; distribution-free inference; applications to regression models and categorical data.

Requisites:
Prerequisite: STAT 610.

Typically Offered
Spring

STAT 701 - Fundamental Methods of Biostatistics

Credits: 3

A course emphasizing concepts and practice of statistical data analysis for the health sciences. Basic techniques of descriptive and inferential statistical methods applied to health related surveys and designed experiments. Populations and samples, parameters and statistics; sampling distributions for hypothesis testing and confidence intervals for means and proportions involving one sample, paired samples and multiple independent samples; odds ratios, risk ratios, simple linear regression. Use of statistical software to facilitate the collection, manipulation, analysis and interpretation of health related data.

Requisites:
Prerequisite: Junior standing and equivalent of college algebra or with instructor permission.

Typically Offered
Fall, Spring, Summer

Crosslisted:
MPH 701

STAT 703 - Introduction to Statistical Methods for the Sciences

Credits: 3

Statistical concepts and methods applied to experimental and survey research in the sciences; tests of hypotheses, parametric and rank tests; point estimation and confidence intervals; linear regression; correlation; one-way analysis of variance; contingency tables, chi-square tests.

Requisites:
Prerequisite: Junior standing and equivalent of college algebra or with instructor permission.

Typically Offered
Fall, Spring, Summer

STAT 705 - Regression and Analysis of Variance

Credits: 3

Simple and multiple linear regression, analysis of covariance, correlation analysis, one-, two- and three-way analysis of variance; multiple comparisons; applications including use of computers; blocking and random effects.

Requisites:
Prerequisite: One previous statistics course.

Typically Offered
Fall, Spring, Summer

STAT 706 - Basic Elements of Statistical Theory

Credits: 3

The mathematical representation of frequency distributions, their properties, and the theory of estimation and hypothesis testing. Elementary mathematical functions are used to illustrate theory.

Requisites:
Prerequisite: MATH 205, MATH 210 or MATH 220 and STAT 325.

Typically Offered
Fall

STAT 710 - Sample Survey Methods

Credits: 3

Design, conduct, and interpretation of sample surveys.

Requisites:
Prerequisite: STAT 510 or STAT 770.

Typically Offered
Fall-Even Years

STAT 713 - Applied Linear Statistical Models

Credits: 3

Matrix-based regression and analysis of variance procedures at a mathematical level appropriate for a first year graduate statistic major. Topics include simple linear regression, linear models in matrix form, multiple linear regression, model building and diagnostics, analysis of covariance, multiple comparison methods, contrasts, multifactor studies.

Note:
A student may not receive credit for both STAT 704/705 sequence and STAT 713.

Requisites:
Prerequisite: Prior knowledge of matrix or linear algebra and one prior course in statistics.

Typically Offered
Fall

STAT 716 - Nonparametric Statistics

Credits: 3

Hypothesis testing when form of population sampled is unknown: rank, sign, chi-square, and slippage tests; Kolmogorov and Smirnov type tests; confidence intervals and bands.

Requisites:
Prerequisite: STAT 704 and STAT 705 or STAT 713.

Typically Offered
Fall-Odd Years

STAT 717 - Categorical Data Analysis

Credits: 3

Analysis of categorical count and proportion data. Topics include tests of association in two-way tables; measures of association; Cochran-Mantel-Haenzel tests for 3-way tables; generalized linear models; logistic regression; loglinear models.

Requisites:
Prerequisite: STAT 704 and STAT 705 or STAT 713.

Typically Offered
Spring

STAT 720 - Design of Experiments

Credits: 3

Planning experiments so as to minimize error variance and avoid bias; Latin squares; split-plot designs; switch-back or reversal designs; incomplete block designs; efficiency.

Requisites:
Prerequisite: STAT 704 and 705 or STAT 713.

Typically Offered
Spring, Summer

STAT 722 - Experimental Design for Product Development and Quality Improvement

Credits: 3

A study of statistically designed experiments which have proven to be useful in product development and quality

improvement. Topics include randomization, blocking, factorial treatment structures, factional factorial designs, screening designs, and response surface methods.

Requisites:
Prerequisite: STAT 704 and 705, or STAT 511, or STAT 713.

Typically Offered
Fall

STAT 725 - Introduction to the SAS Computing

Credits: 1

Topics may include basic environment and syntax, reading and importing data from files, writing and exporting data to files, data manipulation, basic graphics, and built-in and user-defined functions.

Requisites:
Prerequisite: One prior course in Statistics.

Typically Offered
Fall

STAT 726 - Introduction to R Computing

Credits: 1

Topics may include basic environment and syntax, reading and importing data from files, data manipulation, basic graphics, and built-in and user-defined functions.

Requisites:
Prerequisite: One prior course in Statistics.

Typically Offered
Fall

STAT 727 - Statistical Computing/Numerical Methods of Statistics

Credits: 3

Topics may include efficient programming techniques, generating data from non-standard distributions, designing simulation studies, resampling methods, creating and using functions and subroutines, parallel computing in statistics, interfacing lower-level languages (e.g., C, C++, Fortran) with data analysis software (e.g., SAS, R), computational complexity, convergence analysis of algorithms.

Requisites:
Prerequisite: STAT 726 and STAT 771 or STAT 511.

Typically Offered
Spring-Odd Years

STAT 730 - Multivariate Statistical Methods

Credits: 3

Multivariate analysis of variance and covariance; classification and discrimination; principal components and introductory factor analysis; canonical correlation; digital computing procedures applied to data from natural and social sciences.

Requisites:
Prerequisite: STAT 705 or STAT 713.

Typically Offered
Spring

STAT 736 - Bioassay

Credits: 2

Direct assays; quantitative dose-response models; parallel line assays; slope ratio assays; experimental designs for bioassay; covariance adjustment; weighted estimates; assays based on quantal responses.

Note:
Meets four times a week during second half of semester.

Requisites:
Prerequisite: STAT 704 and STAT 705 or STAT 713.

Typically Offered
Spring-Odd Years

STAT 745 - Statistical Graphics

Credits: 3

Visual display of quantitative information. Statistical graphics topics to include visual perception, basic graphics construction, quantitative univariate to multivariate statistical graphics, trellis displays, introduction to smoothing and graphics, introduction to density estimation and graphics, and categorical graphics. Modern graphics software will be used.

Requisites:
Prerequisite: STAT 705 or equivalent.

Typically Offered
Spring-Even Years

STAT 750 - Studies in Probability and Statistics

Credits: 1-4

Studies of topics in probability, statistics, experimental design, stochastic processes, or other topics.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor consent.

Typically Offered
On sufficient demand

STAT 760 - Optimization for Data Science

Credits: 3

The class presents the theory and algorithms for linear and nonlinear optimization problems with continuous variables. Topics covered include convex analysis, first- and second-order optimality methods, duality, KKT conditions, algorithms for unconstrained optimization, linearly and nonlinearly constrained problems, and convergence rates of algorithms. The theory and algorithms are applied to data science problems arising in machine learning, statistics, and related fields (e.g., maximizing likelihood and penalized likelihood functions, MM algorithms, EM algorithms, model selection, Sparse PCA). Students are expected to be comfortable with rigorous mathematical arguments.

Requisites:
Prerequisite: STAT 511 or STAT 771, and prior knowledge of linear algebra and matrix theory (e.g., MATH 551), and some programming knowledge (e.g., STAT 726).

Typically Offered
Spring-Even Years

STAT 761 - Discrete Optimization and Scalability for Data Science

Credits: 3

Topics covered include computational complexity, NP-hardness, data as networks, graph theoretic algorithms, exact, approximation, heuristic and online algorithms, and connections between convex and non-convex optimization problems. The theory and algorithms are applied to data science problems arising in statistical machine learning, statistical clustering, design of experiments, observational studies, sampling, and variable selection. Applications may be motivated using data from social networks, search engines, the stock market and elections.

Requisites:
Prerequisites: (STAT 705 or STAT 713) and STAT 720 and programming knowledge (e.g. STAT 726).

Typically Offered
Spring-Odd Years

STAT 764 - Applied Spatio-Temporal Statistics

Credits: 3

Construction and analysis of spatial, time-series, and spatio-temporal data sets. Topics include data generation using geographic information systems, exploratory data analysis and visualization, and descriptive and dynamic spatio-temporal statistical models. For context, a focus will be on biological or ecological data.

Requisites:
Prerequisite: (STAT 510 or STAT 770), and (STAT 705, or STAT 713), and STAT 726 or equivalent.

Typically Offered
Fall-Even Years

STAT 766 - Applied Data Mining/Machine Learning and Predictive Analytics

Credits: 3

Addresses the complete process of building analytical tools suitable for learning from data, including automatic online data collection, feature extraction, supervised and unsupervised statistical machine learning methods, evaluation, and report writing. Automatic retrieval of various format online data, including JSON, REST, and Streaming API, http(s), html, xml, and databases. Statistical text processing/mining, state of the

art supervised and unsupervised data mining methods, case studies and applications to business, government,social and news media data. Methods include regularized linear and logistic regression, classification trees, nearest neighbor methods, support vector machines, naive Bayes, random forests, boosting/bagging/AdaBoost, clustering, latent Dirichlet allocation, network analysis, and topic modeling models.

Requisites:
Prerequisite: STAT 705 or STAT 713 or STAT 717, and prior computer programming proficiency on C, C++, Fortran, R, or Python (e.g., CIS 209, STAT 726).

Typically Offered
Fall-Odd Years

STAT 768 - Applied Bayesian Modeling and Prediction

Credits: 3

Bayes rule, principles of Bayesian inference, Bayesian perspective on statistical models, posterior distribution computations using simulations, Markov Chain Monte Carlo (MCMC) (including Gibbs sampling, Metropolis-Hastings algorithm, slice sampler, hybrid forms and alternative algorithms), convergence monitoring and diagnosis, hierarchical models, model checking and model selection, and applications in the sciences using computer software such as R and WinBUGS.

Requisites:
Prerequisite: (STAT 705 or STAT 713), and (STAT 510 or STAT 770).

Typically Offered
Spring-Even Years

STAT 770 - Theory of Statistics I

Credits: 3

Probability models, concepts of probability, random discrete variables, moments and moment generating functions, bivariate distributions, continuous random variables, sampling. Central Limit Theorem, characteristic functions. More emphasis on rigor and proofs than in STAT 510 and STAT 511.

Requisites:
Prerequisite: MATH 222.

Typically Offered
Fall

STAT 771 - Theory of Statistics II

Credits: 3

Introduction to multivariate distributions; sampling distributions, derivation, and use; estimation of parameters, testing hypothesis; multiple regression and correlation; simple experimental designs; introduction to nonparametric statistics; discrimination.

Requisites:
Prerequisite: STAT 770.

Typically Offered
Spring

STAT 799 - Topics in Statistics

Credits: 0-3

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

STAT 810 - Seminar in Probability and Statistics

Credits: 1

Discussion and lectures on topics in probability and statistics; one seminar talk by each student registered for credit.

Requisites:
Prerequisite: Graduate standing and at least two graduate courses in statistics.

Typically Offered
Fall, Spring

STAT 818 - Theory of Life-Data Analysis

Credits: 3

A study of models and inferential procedures important to life-data analysis. Comparison of estimators (MLE, BLUE, etc.). Pivotal quantities. Design and regression models for non-normal distributions. Analysis of censored data.

Requisites:
Prerequisite: STAT 771 and STAT 705 or STAT 713.

Typically Offered
Fall-Even Years

STAT 842 - Probability for Statistical Inference

Credits: 3

Probability spaces and random elements, distributions, generating and characteristic functions, conditional expectation, convergence modes and stochastic orders, continuous mapping theorems, central limit theory and accuracy, laws of large numbers, asymptotic expansions for approximating functions of random variables and distributions.

Requisites:
Prerequisite: STAT 770 and STAT 771, or equivalent; MATH 633 or equivalent, or concurrent enrollment in MATH 633.

Typically Offered
Fall

STAT 843 - Statistical Inference

Credits: 3

Distributions (commonly used univariate and multivariate distributions, including exponential families of distributions and properties), order statistics and distributional properties, (asymptotic) unbiased estimation and the information inequality, likelihood inference for parametric statistical models (including the multi-parameter case, regular and non-regular cases), confidence sets, functional parameters and statistical functional, density estimation and nonparametric function estimation, permutation methods.

Requisites:
Prerequisite: STAT 842; MATH 634 or equivalent, or concurrent enrollment in MATH 634.

Typically Offered
Spring

STAT 850 - Stochastic Processes

Credits: 3

Normal processes and covariance stationary processes; Poisson processes; renewal counting processes; Markov chains; Brownian motion; applications to science and engineering.

Requisites:
Prerequisite: STAT 770.

Typically Offered
Spring-Even Years

STAT 860 - Linear Models I

Credits: 3

Subspaces, projections, and generalized inverses; multivariate normal distribution, distribution of quadratic forms; optimal estimation and hypothesis testing procedures for the general linear model; application to regression models, correlation model.

Requisites:
Prerequisite: STAT 713, STAT 771.

Typically Offered
Fall

STAT 861 - Linear Models II

Credits: 3

Continued application of optimal inference procedures for the general linear model to multifactor analysis of variance, experimental design models, analysis of covariance, split-plot models, repeated measures models, mixed models, and variance component models; multiple comparison procedures.

Requisites:
Prerequisite: STAT 860.

Typically Offered
Spring

STAT 870 - Analysis of Messy Data

Credits: 3

Design structures; treatment structures; equal and unequal variances; multiple comparisons; unequal subclass numbers; missing cells; interpretation of interaction; variance components; mixed models; split-plot and repeated measures; analysis of covariance; cross-over designs.

Requisites:
Prerequisite: STAT 720.

Typically Offered
Fall

STAT 880 - Time Series Analysis

Credits: 3

Autocorrelation function; spectral density; autoregressive integrated moving average processes; seasonal time series; transfer function model; intervention analysis; regression model with time series error.

Requisites:
Prerequisite: STAT 713 and STAT 771.

Typically Offered
Fall-Odd Years

STAT 898 - Master's Report

Credits: 2

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

STAT 899 - Master's Thesis Research

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

STAT 903 - Statistical Methods for Spatial Data

Credits: 3

Theoretical development of modeling and inference techniques for spatially and/or temporally referenced data, including geostatistical data, lattice data and spatial point patterns; methodology for autocorrelation estimation and prediction; nonstationary spatial processes; asymptotics and computational methods for large spatial datasets; computer-aided applications.

Requisites:
Prerequisite: STAT 771, plus one introductory course in statistical computing (e.g. STAT 726 or equivalent background).

Typically Offered
Spring-Odd Years

STAT 904 - Resampling Methods

Credits: 3

Theoretical development of resampling procedures, including parametric and nonparametric bootstrap, jackknife, randomization and permutation methods; expansion theory for bootstrap inference; implementation of resampling procedures via statistical computational tools.

Requisites:
Prerequisite: STAT 713, STAT 771.

Typically Offered
Spring-Even Years

STAT 905 - High-Dimensional Data and Statistical Learning

Credits: 3

Theoretical framework of statistical methods for the analysis of large-scale data with the aim of understanding data mining, supervised and unsupervised statistical learning techniques from a statistical decision theoretic framework. Methods for model selection, dimensionality reduction, multiple testing control, and estimation in high-dimension data. Emphasis on the conceptual underpinning of different tools for analysis of large-scale data and how they relate to each other. Applications in various fields, including the sciences and engineering, using computer software.

Requisites:

Prerequisite: (STAT 713 and STAT 771), or (STAT 727 and STAT 760).

Typically Offered
Fall-Even Years

STAT 907 - Bayesian Statistical Inference

Credits: 3

Principles of Bayesian estimation, testing and prediction; Bayes factors and posterior probabilities of hypotheses; hierarchical modeling; Bayesian model selection and assessment; Bayesian computation and asymptotics; nonparametric Bayesian models.

Requisites:
Prerequisite: STAT 713 and STAT 771, plus one introductory course in statistical computing (e.g. STAT 725 or STAT 726 or equivalent background).

Typically Offered
Fall-Odd Years

STAT 920 - Experimental Design Theory

Credits: 3

Incomplete block designs; theory of the construction and analysis of experimental designs.

Requisites:
Prerequisite: STAT 720 and STAT 861.

Typically Offered
Spring-Odd Years

STAT 930 - Theory of Multivariate Analysis

Credits: 3

The multivariate normal distribution, the Wishart distribution, Jacobians of vector and matrix transformations, Hotelling's T2statistic, the union-intersection principle, tests on mean vectors and covariance matrices, Box's approximations to critical points, the multivariate general linear model, discriminant analysis, and principal component analysis.

Requisites:
Prerequisite: STAT 730 and STAT 861.

Typically Offered
Spring-Even Years

STAT 940 - Advanced Statistical Methods

Credits: 3

Generalized linear models and generalized mixed models. Statistical models based on the exponential family of distributions. Applications to non-normal and discrete data, including binary, Poisson and gamma regression, and log-linear models. Topics include likelihood-based estimation and testing, model-fitting, residual analyses, over-dispersed models, quasi-likelihood, large sample properties, and the use of computer packages. Also, methods for longitudinal repeated measures data that will include inference for continuous and discrete data. Inferential objectives include prediction of response and estimation of correlation/covariance structures. Nonparametric and semiparametric methods covered as time permits.

Requisites:
Prerequisite: STAT 861, plus one introductory course in statistical computing (e.g. STAT 725 or STAT 726 or equivalent background).

Typically Offered
Fall-Even Years

STAT 941 - Advanced Statistical Inference

Credits: 3

Foundations and methods of modern statistical inference including asymptotic theory in parametric models (including local asymptotic normality and contiguity), efficiency of estimators and tests, Bayes procedures, rank, sign and permutation statistics, U-,M-, L-, R-estimates, chi-square tests, empirical processes and the functional delta method, quantiles and order statistics, inference for nonparametric and semi-parametric models.

Requisites:
Prerequisite: STAT 843.

Typically Offered
Spring-Even Years

STAT 945 - Problems in Statistical Consulting

Credits: 1-3

Principles and practices of statistical consulting. Supervised experience in consultation and consequent research concerning applied statistics and probability associated with on-campus investigations.

Requisites:
Prerequisite: STAT 720 and instructor consent

Typically Offered
On sufficient demand

STAT 950 - Advanced Studies in Probability and Statistics

Credits: 1-3

Theoretical studies of advanced topics in probability, decision theory, Markov processes, experimental design, stochastic processes, or advanced topics.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor consent.

Typically Offered
Fall, Spring, Summer

STAT 999 - Research in Statistics

Credits: 1-18

Requisites:
Prerequisite: Consent of instructor.

Typically Offered
Fall, Spring, Summer

THTRE 560 - Advanced Stage Movement

Credits: 3

Study in the physical development of character and advanced techniques of stage movement.

Repeat for Credit
Repeatable. May be repeated for a total of 9 hours credit by qualified students.

THTRE 563 - Stage Management

Credits: 3

Theory and practice of stage management in the professional and nonprofessional theatre. Emphasis is on the organization of all areas of theatre knowledge needed for the running of theatrical productions.

Typically Offered
Fall, Spring

THTRE 565 - Principles of Directing

Credits: 3

Principles, processes and techniques of directing for the theatre.

Requisites:
Prerequisite: THTRE 261.

THTRE 566 - Rehearsal Techniques

Credits: 0-12

A laboratory course for students enrolled in performance and production classes.

Repeat for Credit
Repeatable. May be repeated for 12 hours.

Requisites:
Prerequisite: concurrent enrollment in THTRE 765 or THTRE 783 or THTRE 779.

Typically Offered
Fall, Spring

THTRE 567 - Costume Design

Credits: 3

The theory and practice of costume design for stage.

Requisites:
Prerequisite: THTRE 367.

Typically Offered
Fall

THTRE 568 - Scene Design

Credits: 3

Examination of the role of scene design in theatre, principles and techniques of design. Development, presentation, and synthesis of design images with the scripted play.

Requisites:
Prerequisite: THTRE 368 and THTRE 369.

THTRE 569 - Advanced Technical Production

Credits: 3

Independent study in advanced technical theatre problems.

Requisites:
Prerequisite: THTRE 368.

Typically Offered
Fall, Spring

THTRE 572 - History of Theatre I

Credits: 3

A survey of the development of the theatre from ancient times to 1700.

Requisites:
Prerequisite: THTRE 370.

Typically Offered
Spring

THTRE 573 - History of Theatre II

Credits: 3

A survey of the development of the theatre from 1700 to the present.

Requisites:
Prerequisite: Junior standing or consent of instructor.

Typically Offered
Fall

THTRE 579 - Lighting Design

Credits: 3

Theory and practice of theatrical lighting design, control systems, projection equipment, and lighting consulting. Production work with KSU Theatre season required.

Requisites:
Prerequisite: THTRE 369.

THTRE 580 - Music Theatre Workshop

Credits: 2

Principles and techniques of musical theatre production with emphasis on rehearsal and performance of selected scenes from musical theatre. Dance, music, and theatre are studied as integrated elements within the musical theatre genre. Culminates in a public performance.

Note:
Course may be repeated twice for credit.

Requisites:
Prerequisite: MUSIC 202, two semesters of voice; THTRE 261; and DANCE 380; or consent of instructor.

Typically Offered
Spring

THTRE 610 - Internship in Theatre

Credits: 0-6

Supervised participation in an internship at a professional theatre.

Repeat for Credit
Repeatable. May be repeated for a maximum of 12 credit hours.

Requisites:
Prerequisite: THTRE 261 or THTRE 368; junior standing and consent of supervising faculty member and approval of faculty.

Typically Offered
Fall, Spring, Summer

THTRE 630 - Topics in Theatre

Credits: 1-4

Selected topics in theatre.

Repeat for Credit

Repeatable with topic change for a maximum of 12 hours credit.

Requisites:
Prerequisite: Junior standing and consent of instructor.

Typically Offered
Fall, Spring, Summer

THTRE 661 - Professional Development

Credits: 1

Study of audition techniques including supervised preparation of appropriate material. Business aspects of professional theatre, including unions, contracts, and professional ethics.

Requisites:
Prerequisite: 12 hours in theatre, music, and/or dance.

Typically Offered
Fall

THTRE 662 - Playwriting

Credits: 3

Theoretical study and practical application of techniques of playwriting with regard to plot, characters, and production; emphasis on the one-act form.

THTRE 664 - Creative Drama

Credits: 3

The development of creative imagination and personal well-being through theatre games, improvisation, storytelling, and puppetry for use in educational and recreational settings.

Requisites:
Prerequisite: Junior standing.

THTRE 665 - Drama Therapy with Special Populations

Credits: 3

The therapeutic uses of drama in the development of creative imagination, self expression, and social relatedness with special populations such as clients who have developmental disabilities, physical disabilities, health issues, or are aging.

Requisites:
Prerequisite: Junior standing.

THTRE 667 - Period Styles for the Theatre 1

Credits: 3

Survey of historical styles of architecture, furnishings, and clothing in relation to theatrical design and the history of the theatre from the Greeks to 1800.

Requisites:
Prerequisite: THTRE 572 or concurrent enrollment.

Typically Offered
Spring

THTRE 668 - Period Styles for the Theatre 2

Credits: 3

Survey of historical styles of architecture, furnishings, and clothing in relation to theatrical design and the history of the theatre from 1800 to present.

Requisites:
Prerequisite: THTRE 573 or concurrent enrollment.

Typically Offered
Fall

THTRE 670 - Playback Theatre

Credits: 1-3

Improvisational theater forms in which actors listen to stories told by audience and improvisationally act the story out. Students will learn playback acting forms and how to conduct a session. Playback is often used as a technique by drama therapists in performance and in therapy sessions.

Note:
Course maybe repeated for up to 6 hours.

Typically Offered
Fall, Spring, Summer

THTRE 672 - American Ethnic Theatre

Credits: 3

Drama and stagecraft of ethnic groups in the United States, including the theatre of African, Asian, Hispanic, Jewish, and Native Americans.

Requisites:
Prerequisite: Junior standing.

THTRE 673 - Theatre for Conflict Resolution

Credits: 3

Drama and theatre techniques used to explore the nature of conflict and how to promote collaboration through action.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Summer

THTRE 674 - Drama Therapy with Adolescents

Credits: 3

The therapeutic uses of drama with adolescents, including normal development, youth-at-risk, ESL, SED, and BD adolescents.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Summer

THTRE 675 - Drama Therapy with Older Adults

Credits: 1-3

The therapeutic uses of drama with older adults, focusing on the development of life review, social relatedness, and creative self-expression in the here and now.

Requisites:
Prerequisite: Junior standing.

Typically Offered
Summer

THTRE 710 - Practicum in Theatre

Credits: 0-6

Supervised participation in a position of major responsibility.

Repeat for Credit
Repeatable. May be repeated for a maximum of 12 hours credit.

Requisites:
Prerequisite: THTRE 160 or THTRE 261 or THTRE 368; junior standing; consent of supervising faculty member and approval of faculty members are required.

THTRE 711 - Topics in Technical Theatre

Credits: 3

Selected topics in creative techniques and investigation for technical theatre.

Repeat for Credit
Repeatable with change in topic.

Requisites:
Prerequisite: THTRE 368 and consent of instructor.

THTRE 712 - Theatre Management

Credits: 3

Theatre management, promotion, finance, organization; emphasis on contract negotiations and use of facilities.

THTRE 761 - Advanced Acting

Credits: 3

Studies in style, technique, and characterization.

THTRE 762 - Advanced Playwriting

Credits: 3

Further study in the writing of drama; emphasis on problems of writing the full-length play.

Repeat for Credit
Repeatable. May be repeated for a total of 9 hours credit by qualified students.

Requisites:
Prerequisite: THTRE 562.

Crosslisted:
ENGL 762

THTRE 765 - Practice in Directing

Credits: 3

A lecture-lab course with emphasis on directing dramatic productions under performance conditions.

Note:
May be repeated for a total of 9 hours credit by qualified students.

Requisites:
Prerequisite: Consent of instructor.

THTRE 780 - Theatrical Design Studio

Credits: 0-3

Advanced problems in conceptualization and realization of design, including sets, costumes, lights and technical production. Emphasis on advanced techniques in research, analysis, and production problems.

Repeat for Credit
Repeatable. May be repeated to a maximum of 6 credits.

Requisites:
Prerequisite: THTRE 567, THTR 568, THTRE 579, or THTRE 569.

Typically Offered
Fall, Spring

THTRE 782 - Women in Theatre

Credits: 3

A history of the contributions made by women in theatre as playwrights, managers, directors, and performers; contemporary women in theatre and their experiments in expressing women's consciousness.

THTRE 783 - Practice in Acting

Credits: 3

Advanced studies in characterization with emphasis on communicating with the director. Taught in conjunction with the Practice in Directing workshop.

Repeat for Credit
Repeatable. May be repeated once.

Requisites:
Prerequisite: THTRE 361 and consent of instructor.

THTRE 784 - Psychodrama

Credits: 3

Theory and practice of Psychodrama as a treatment modality for use in Drama Therapy.

THTRE 785 - Sociodrama

Credits: 3

Theory and practice of Sociodrama as a therapeutic and educational modality for use in Drama Therapy.

THTRE 799 - Projects in Theatre

Credits: 1-4

Individual guided work in selected area.

Note:
Only 3 hours may be applied to MA.

Requisites:
Prerequisite: Junior standing and consent of instructor.

Typically Offered
Fall, Spring

THTRE 800 - Introduction to Graduate Studies in Theatre: Library, Research, and Information Skills

Credits: 1-3

Skills for accessing research tools and resources needed in the age of the internet, along with instruction on citations, literature reviews, and other formatting necessary for graduate research papers.

THTRE 810 - Survey of Research in Drama Therapy

Credits: 3

Basic terminology, concepts, and principles underlying research in drama therapy and the helping fields.

Typically Offered
Fall, Spring

THTRE 820 - Principles of Drama Therapy

Credits: 3

Theory, history, and practice in the use of drama as therapy group treatment. Survey of major drama therapy methods.

THTRE 830 - Creative Arts Therapies

Credits: 3

Survey of five creative arts therapy modalities: drama/psychodrama, art, poetry/bibliotherapy, music, and dance/movement. Instruction in theory and hands-on experience with each modality, as well as reading, discussion and methods for using modalities interdisciplinarily.

Typically Offered
Fall, Spring, Summer

THTRE 840 - Play Therapy Practices and Techniques

Credits: 3

The history and philosophy of, and rationale for, using play media in counseling and therapy with children and adults. Directive Play Therapy models will be explored and practiced.

Typically Offered
Fall, Spring, Summer

THTRE 862 - Workshop in Playwriting

Credits: 3

Advanced writing of drama.

Requisites:
Prerequisite: THTRE 762 or ENGL 762 or proof of equivalence. Proficiency.

Crosslisted:
ENGL 862

THTRE 865 - Ethics and Professionalism in Drama Therapy

Credits: 3

The application of ethical principles involved in the practice of drama therapy in a variety of educational and therapeutic settings.

Requisites:
Prerequisite: THTRE 820 or THTRE 830.

Typically Offered
Spring, Summer

THTRE 870 - Greek and Roman Theatre

Credits: 3

Studies in the drama and stagecraft of the Greek and Roman period.

Requisites:
Prerequisite: THTRE 572.

THTRE 871 - Medieval and Baroque Theatre

Credits: 3

Studies in the drama and stagecraft of the Medieval and Baroque periods.

Requisites:
Prerequisite: THTRE 572.

THTRE 875 - Contemporary Theatre

Credits: 3

Studies in drama and stagecraft since 1968.

Requisites:
Prerequisite: THTRE 573.

THTRE 876 - Seminar in Theatre

Credits: 3

Selected topics in theatre research.

Repeat for Credit
Repeatable. May be repeated for credit with change of topic.

Requisites:
Prerequisite: THTRE 572 or THTRE 573.

THTRE 878 - History of the Physical Stage

Credits: 3

A survey course in the emergence and development of the theatre building as a distinct architectural form, with particular emphasis on the effect of the physical environment on the play.

Requisites:
Prerequisite: THTRE 368.

THTRE 879 - Modern Theatre

Credits: 3

Studies in the drama and stagecraft of Europe and America in the period from 1870 to the present.

Requisites:
Prerequisite: THTRE 573.

Typically Offered
Spring-Even Years

THTRE 880 - Master's Project

Credits: 3

Major project undertaken to demonstrate competence in Drama Therapy as required for the Master's Degree.

Requisites:
Prerequisite: Sixteen hours of graduate credit in theatre.

Typically Offered
Fall, Summer

UFS 791 - Urban Agriculture

Credits: 2

Students will become familiar with a wide variety of urban agriculture types and production systems utilized in urban settings. The course will include background readings, case studies, guest speakers, student-facilitated class discussions, and lectures.

Requisites:
Prerequisite: Junior standing

Typically Offered
Fall

Crosslisted:
HORT 791

UFS 794 - Urban Food Systems

Credits: 2

This course will cover all components of urban food systems through the lens of food security, food justice, access, policy, and community planning. Students will gain skills in grant-writing, non-profit planning and management, and working with urban policy and planning boards.

Typically Offered
Spring

Crosslisted:
HORT 794

UFS 796 - Professional Development in Urban Food Systems

Credits: 1

A team instructed seminar course that provides urban food systems students with a suite of skills complimentary to their research experience but still necessary for professional career success.

Typically Offered
Fall, Spring

Crosslisted:
HORT 796

UFS 798 - Urban Food Systems Field Experience

Credits: 1

Students will engage in a work experience at Willow Lake Student Farm, Olathe Horticulture Research and Extension Center or another approved site. Three hours of field work per week are required.

Repeat for Credit
Repeatable

Typically Offered
Fall, Summer

VAP 802 - Advanced Toxicology

Credits: 3-6

VAP 804 - Veterinary Physiology I

Credits: 5

Function of the animal body at the cellular level, including nerve and muscle function. Basic pathophysiological mechanisms and intermediary metabolism will be emphasized and correlated with clinical topics.

Note:
Five hours lecture a week.

Requisites:
Prerequisite: First-year standing in College of Veterinary Medicine or consent of instructor.

VAP 806 - Gross Anatomy I

Credits: 6

Gross dissection of the dog with comparative aspects of the cat.

Note:
Two hours lecture and nine hours lab a week.

Requisites:
Prerequisite: First-year standing in College of Veterinary Medicine or consent of the instructor.

Typically Offered
Fall

VAP 808 - Introduction to Veterinary Medicine and Biomedical Research: Concepts and Values

Credits: 1

This course is intended to provide first-year students an opportunity to experience the depth of veterinary/biomedical research required to advance the practice of veterinary medicine, and advance the field of medicine in general. The students will examine the challenges of conducting 1) foundational and translation research (genetic/genomic and mechanistic research), 2) foundational and applications to clinical research 3) population and observational research (epidemiology, prospective clinical trials, retrospective studies), 4) pharmacologic research (the impact of pharmacology on the biomedical sciences). The students will examine relevant connections, consider conceptual relationships, and critically evaluate integrative issues germane to both the practice of and the innovative progress of veterinary medicine. Faculty members in the Departments of A&P, DM/P, and CS, will present topical overviews, based on their professional experiences. This will be designed to connect and integrate fundamental principles and relationships between research and clinical application. These presentations provide examples of the fundamental requirements for clinical therapies and also provide examples of how innovative science leads to new therapies for long standing clinical disease. Additionally, students will learn the tools required to search relevant topic to their career paths within the medical literature. Finally, drawing on the multidisciplinary literature presented by faculty, students will explore the challenges in conducting genetic/genomic research, using genomic information, implementing research results to clinical practice, as well as addressing the social, legal, and professional policies that are emerging from new research. Students will be expected to do reading and to complete online worksheets and present their findings/opinions in class. Class time will be devoted to presentations and to discussion of readings and related current events.

Typically Offered
Fall

VAP 810 - Microscopic Anatomy I

Credits: 5

Origin, development, and microscopic structure and appearance of the cells and tissues of the animal body.

Note:
Three hours lecture and six hours lab a week.

Requisites:
Prerequisite: First-year standing in College of Veterinary Medicine.

Typically Offered
Fall

VAP 816 - Gross Anatomy II

Credits: 5

Gross dissection of the horse and ruminant with comparative aspects of the pig, laboratory animals, and the chicken.

Note:
Three hours lecture and nine hours lab a week.

Requisites:
Prerequisite: VAP 806.

Typically Offered
Spring

VAP 818 - Veterinary Physiology II

Credits: 6

Function of the cardiovascular, endocrine, respiratory, renal, digestive, and reproductive systems of domestic animals with emphasis on physiologic control mechanisms, interrelationships of body systems, and criteria for evaluating animal health.

Note:
Five hours lecture and three hour lab a week.

Requisites:
Prerequisite: VAP 804.

Typically Offered
Spring

VAP 844 - Veterinary Pharmacology I

Credits: 4

The basic principles of pharmacology, the interactions of drugs and living systems including fundamental principles of pharmacokinetics, pharmacodynamics, receptor-coupling, and mechanisms of action. A systems-based approach to drug classes will be emphasized.

Note:
Four hours of lecture a week.

Requisites:
Prerequisite: VAP 804 and VAP 818 or equivalent.

Typically Offered
Fall

VAP 845 - Toxicology

Credits: 2

Effects of harmful substances on the animal body. Emphasis placed on toxicologic principles and management of the poisoned patient.

Note:
Four hours of lecture a week for half of the semester plus three one-to three-hour field trips.

Requisites:
Prerequisite: Second-year standing in the College of Veterinary Medicine, BIOCH 521, and VAP 818.

Typically Offered
Spring

VAP 846 - Veterinary Pharmacology II

Credits: 2

The basic principles of pharmacology, the relationship of drug actions and interactions on physiological principles and pathophysiological conditions. Pharmacokinetics, pharmacodynamics, and a systems-based approach to drug classes will be emphasized.

Requisites:
Prerequisite: Student must have a "C" or higher in VAP 844 and DMP 712.

Typically Offered
Spring

VAP 888 - Practical Use and Interpretation of Veterinary Scientific Literature

Credits: 1

Designed primarily for veterinary students in the first, second or third year of the DVM curriculum. The course is intended to teach literature search skills, organization of your own literature library, and critical evaluation of clinical reports and research literature. The format is lecture as well as small group and online discussion. Students are required to contribute to classroom and online discussions and to complete written assignments.

Typically Offered
Fall

VAP 891 - A&P Veterinary Medicine Elective Graded

Credits: .5-3

Special topics for veterinary students in the disciplines offered by the department.

Note:
Lecture or combination lecture with lab.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: 1st, 2nd, or 3rd year students in Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VAP 893 - Introduction to Nanomedicine

Credits: 1

This course is a brief introduction to nanomaterials and nanomedicine with a focus on clinical applications of nanotechnology. The course presents basic principles of nanotechnology; current clinical applications of nanomedicine; future horizons in nanomedicine.

Repeat for Credit
No

Typically Offered
Spring

VAP 894 - Comparative Embryology

Credits: 1

An overview of development anatomy as it relates to clinically important developmental defects and/or normal structure and function of common domestic animals.

Requisites:
Prerequisites: Enrollment in the One Year Master's (non-thesis M.S. in Veterinary Biomedical Science) program or permission of instructor.

Typically Offered
Fall

VCS 809 - Veterinary Clinical and Professional Skills I

Credits: 1

The course will be taught during the fall semester as a required introductory level course for first year veterinary students. This is the first in a series of foundational courses designed to introduce students to key clinical skills, including communication and critical thinking, that they will encounter in a clinical setting and to provide students with a problem-based approach to learning.

Requisites:
Prerequisite: First year standing in the College of Veterinary Medicine.

Typically Offered
Fall

VCS 816 - Veterinary Clinical Skills and Professional Skills II

Credits: 1

The course will be taught during the spring semester as a required introductory level course for first year veterinary students.

The primary objective of the course is to provide students with an opportunity to learn normal animal behavior for the most commonly evaluated large animal species in clinical practice (the horse and the cow); to safely handle and restrain them; and to practice basic physical examination skills. A secondary objective of the course is to introduce students to the basic principles of biosecurity, sterile technique, venipuncture, and intravenous catheterization.

In addition, students will build onto first-semester instruction in clinical communication, written

documentation within the medical record, and introductory surgical skills.

The course will include introductory lectures as well as structured and self-directed laboratory sessions that will involve both live animals and non-animal teaching models.

Note:
Two 1.5-hour laboratory sessions will occur weekly.

Requisites:
Prerequisite: VCS 809.

Typically Offered
Spring

VCS 820 - Topics in Global Veterinary Medicine

Credits: 1

An overview of the role of veterinarians around the world. Topics include international uses and attitudes about animals, problems the world faces pertaining to livestock production, and social tensions. One hour lecture each week.

Note:
One hour lecture each week.

Requisites:
Prerequisite: 1st or 2nd year standing in the College of Veterinary Medicine, or enrolled as a graduate student with instructor permission.

Typically Offered
Spring

VCS 821 - International Vet Study Tours

Credits: 1-4

Faculty-led trip for students to explore veterinary medicine in a foreign country. Prior to travel, students will learn about the country through lectures, research, presentations. During the trip they will interact with nationals in the veterinary profession and experience the culture.

Requisites:
Prerequisite: Enrolled as a 1st-3rd year or grad student in the College of Vet Med. Additional students admitted with discretion of faculty leading the tour.

Typically Offered
Fall, Spring, Summer

VCS 822 - Introduction to Sustainable Beef Systems

Credits: 1

This course provides the fundamentals of assessing sustainability in beef production systems through evaluation of aspects of sustainability pillars, people, planet and profit, in each sector of the beef value chain. The course focuses on principles of sustainable food systems, beef cattle production practices, systems thinking, and impacts of food choices.

Requisites:
Prerequisite: 1st, 2nd, or 3rd Year Standing in the College of Veterinary Medicine.

Typically Offered
Fall

Crosslisted:
CS 822

VCS 839 - Veterinary Clinical and Professional Skills III

Credits: 1

A continuation of Veterinary Clinical and Professional Skills II. Introduces how to perform common diagnostic tests in clinical practice and interpret them. Builds upon basic palpation skills to practice isolating specific tissues and organs. Applies surgical principles to the practice of advanced suture patterns.

Requisites:
Prerequisite: VCS 809 and VCS 816

Typically Offered
Fall

VCS 840 - Communication with the Agricultural Worker

Credits: 2

An elective course focused on improving communications between veterinarians and animal caretakers in production agriculture and equine industries. The course will use face

to face discussions and online seminars in KSOL to teach communications skills with a focus on common terminology and vocabulary necessary for effective communication. Audio-visual teaching utilizing immersion philosophy is utilized to provide the material course work.

Requisites:
Prerequisite: 2nd or 3rd year standing in the College of Veterinary Medicine or enrolled as a graduate student.

Typically Offered
Fall, Spring

VCS 845 - Radiology

Credits: 3

The theory and principles of x-rays, production and interpretation of radiographs and exposure factors, special radiographic methods, film storage and handling, processing, safety measures, and biologic effects of radiation.

Note:
Two hours lecture a week.

Requisites:
Prerequisite: Second-year standing in the College of Veterinary Medicine.

Typically Offered
Spring

VCS 846 - Veterinary Clinical and Professional IV

Credits: 1

A continuation of Veterinary Clinical and Professional Skills III. Introduces advanced organ-specific examination techniques including otoscopy and ophthalmoscopy. Expands the concepts of diagnostic testing and diagnostic test interpretation. Prepares students for surgical anesthesia and anesthetic monitoring through the use of non-animal teaching models.

Requisites:
Prerequisites: VCS 809, VCS 816, and VCS 839.

Typically Offered
Spring

VCS 860 - Medicine I

Credits: 4

Consideration of medical and pathophysiologic aspects of diseases affecting the urinary, endocrine, integumentary, respiratory, hemic, and
neuromuscular systems.

Note:
Four one hour lectures per week.

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine.

Typically Offered
Fall

VCS 861 - Food Animal Medicine

Credits: 4

A study of the etiology clinical signs, diagnosis, treatment and control of diseases which affect cattle, swine, and sheep.

Note:
Four hours lecture a week.

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine.

Typically Offered
Fall

VCS 862 - Theriogenology

Credits: 3

Consideration of prevention, diagnosis, and treatment of disease, and maintenance of health and productivity of the genital tract of domestic animals. Three hours of lecture a week.

Requisites:
Prerequisite: Third-year standing in College of Veterinary Medicine or graduate student.

Typically Offered
Fall

VCS 863 - Veterinary Surgery I

Credits: 4

Introduction to the basics of veterinary anesthesia, surgical techniques, and patient management by a systems design. Problems common to all species of domestic animals will be presented to provide foundations of surgical knowledge and experience.

Note:
Four hours of lecture.

Requisites:
Prerequisite: Satisfactory completion of all required second year veterinary courses.

Typically Offered
Fall

VCS 864 - Veterinary Surgery I Laboratory

Credits: 1

Introduction to the basics of veterinary anesthesia, surgical techniques, and patient management by a systems design. Problems common to all species of domestic animals will be presented to provide foundations of surgical knowledge and experience.

Note:
One lab per week

Requisites:
Prerequisite: Concurrent with or successful completion of CS 729

Typically Offered
Fall

VCS 865 - Exotic Pet Medicine

Credits: 2

Entry-level knowledge base for the species likely to be encountered in a private practice setting including snakes/small reptiles, caged birds, and small mammals (ferrets, gerbils, hamsters, chinchillas).

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine.

Typically Offered
Fall

VCS 866 - 3rd Year Clinical Skills I

Credits: .5

Demonstration, instruction and experience in physical examination and diagnostic skills necessary for routine veterinary practice.

Note:
Three hours lab a week.

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine.

Typically Offered
Fall

VCS 874 - Ethics and Jurisprudence

Credits: 1

Socratic ethics are discussed along with the American Veterinary Medical Association's Code of Ethics and practical situations with a fundamental ethical basis. The Kansas Practice Act is explored as an example of governance in veterinary medicine. The role of animals in humans' well being is addressed along with the philosophy of animal welfare. The law and the practicing veterinarian are discussed with emphasis upon professional liability.

Requisites:
Prerequisite: Third year standing in College of Veterinary Medicine.

Typically Offered
Fall

VCS 875 - Medicine II

Credits: 4

Consideration of the medical and pathophysiological aspects of diseases affecting the gastrointestinal, cardiovascular, and ophthalmic systems, oncology, and dentistry.

Note:
Four one hour lectures per week.

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine.

Typically Offered
Spring

VCS 876 - 3rd Year Clinical Skills II

Credits: .5

Demonstration, instruction and experience in physical examination and diagnostic skills necessary for routine veterinary practice.

Note:
DVM Course only

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine.

Typically Offered
Spring

VCS 877 - Clinical Nutrition

Credits: 2

A focus on practical aspects of nutrition as it relates to performance, health and animal well-being of food-producing animals and, programs designed for health and well-being of small animals including exotic animals. Nutritional aspects of the mechanisms of health and disease are taught primarily at the individual and population level with some molecular and cellular aspects included. Designed for all students to be able to properly nourish animals in their care during their career.

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine or graduate student.

Typically Offered
Spring

Crosslisted:
ASI 886 and AP 886

VCS 878 - Veterinary Surgery II

Credits: 3

A continuation of Veterinary Surgery I. Introduction to the basics of veterinary anesthesia, surgical techniques, and patient management by a systems design. Problems common to all species of domestic animals will be presented to provide foundations of surgical knowledge and experience.

Note:
Three hours lecture.

Typically Offered
Spring

VCS 879 - Veterinary Surgery II Laboratory

Credits: 1

A continuation of Veterinary Surgery I Lab. Introduction to the basics of veterinary anesthesia, surgical techniques, and patient management by a systems design. Problems common to all species of domestic animals will be presented to provide foundations of surgical knowledge and experience.

Note:
One lab per week.

Typically Offered
Spring

VCS 880 - Veterinary Business and Professional Development

Credits: 1

This course provides a foundation in business management and marketing to prepare veterinary students for success in private veterinary practice. Lectures include personal marketing, business organizational structure, gauging and monitoring production, management practice finance, recruitment, personnel management, effective practice marketing (internal and external), achieving better client satisfaction and retention, and the road to practice ownership.

Typically Offered
Spring

VCS 881 - Clinical Pharmacology

Credits: 2

Course focuses on the clinical application of drugs in veterinary species. Clinical pharmacologists and clinicians

from multiple clinical specialties will focus on commonly used drugs. Students will be expected to review and build upon their previous pharmacology and medicine courses. Emphasis will be placed on administration (including routes, dosing calculations, and methods), avoiding adverse drug reactions and interactions, evaluating patient response, written and verbal client communication, and utilizing reference resources to select and properly use veterinary therapeutics.

Requisites:
Prerequisite: Third-year standing in College of Veterinary Medicine.

Typically Offered
Spring

VCS 882 - Medicine III

Credits: 3

A study of the etiology, clinical signs, diagnosis, treatment, and control of common diseases which affect horses.

Note:
Three hours lecture a week.

Requisites:
Prerequisite: CS 709.

Typically Offered
Spring

VCS 891 - CS Veterinary Medicine Elective

Credits: .5-3

Special topics for veterinary students in the disciplines offered by the department. Topics include:

Beef Production Medicine: The role of the veterinarian in livestock production units, including interactions with producers, nutritionists, investors and others in decision analysis. Emphasis is on the professional services that veterinarians provide to beef production systems.

Emergency Medicine: Presentations of cases in the ICU or cases that were recently seen on emergency. Current literature that is relevant to the case will be discussed.

Advanced Exotic Pet Medicine: Advanced study of the diseases, medicine, and captive management of non-traditional species including companion birds, reptiles, rabbits, ferrets, and rodents.

The Basics of Bovine Theriogenology: This class is designed to provide students enrolled in the veterinary curriculum a very practical knowledge base regarding bovine reproduction.

Equine Medicine: This course is designed to be complementary to CS 710. The material presented in this class will focus on diagnostic procedures and case presentations that will not be covered in the core curriculum.

The Learning Curve of Equine Practice: Covers various aspects of equine practice, not usually covered in traditional didactic lectures, including: equine husbandry, communication issues and insurance, horse colors, genetics, and genetic related diseases, aspects of equine practice and practice management, drug and medication rules for performance horses, and preventative medicine.

Pain Management: Discussion of the mechanisms of pain, certain pain syndromes, and the drugs and techniques available to provide analgesia.

Surgical Skills: Manual surgical skills will be taught using surgical models and cadaver tissues. Students will be taught the following skills and techniques: instrument handling, speed and efficiency, hand ties, ligature under tension, suture patterns, closure under tension, anastomosis and enterotomy technique and excision of circular lesions.

Advanced Concepts in Veterinary Clinical Anesthesia: The lectures will be divided among topics to enhance student preparation for practical clinical application of anesthetic principles in both small and large animal environments. Topics: anesthetic implications for certain disease states, management of intraoperative complications, and special topics in large animal anesthesia.

Veterinary Management of Sheep and Goats: Topic content is delivered both as online seminars via KSOL and case-based discussions and problem solving exercises in the classroom on herd management, preventive health care, nutrition, medicine, diseases, reproduction, and surgery of sheep and goats.

Veterinary Ultrasonography: Topic content will be delivered both as online seminars via KSOL and case-based discussions. The physics, basic principles of use, and common artifacts of ultrasound will be covered as it relates to veterinary diagnostic imaging. Ultrasound imaging of the thorax (non-cardiac), abdomen, musculoskeletal system, and other areas (eye, thyroid/parathyroid) will be covered, predominantly in small animals. The course will cover both normal and pathologic ultrasound findings.

Applied Small Animal Behavior: Introduction to the commonly encountered canine and feline behavior topics in veterinary medicine. Students will learn how to address these behavioral concerns through behavior modification, desensitization, counter conditioning, and psychopharmacology. An additional goal of the course is to discuss practices that reduce fear in these patients during visits to their veterinarian.

Note:
Lecture or combination lecture with lab.

Requisites:
Prerequisite: 1st, 2nd, or 3rd year students in Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 892 - CS Veterinary Medicine Elective Cr/NC

Credits: .5-3

Special topics for veterinary students in the disciplines offered by the department. Topic Include:

Pre-Clinical Food Animal (Mixed) Practice Mentorship: Structured one week (45 contact hours) mentorship in a large animal (bovine) practice designed to promote clinical skills training in a private practice setting with practitioners who have expressed an interest in training and mentoring veterinary students.

Pre-Clinical Small Animal Practice Mentorship: Structured one week (45 contact hours) mentorship in a small animal practice designed to promote clinical skills training in a private practice setting with practitioners who have expressed an interest in training and mentoring veterinary students.

Practicing Veterinary Medicine in a Multicultural Society: Diversity in the broadest sense of the word (cultural, racial, sexual, gender, age, religious, etc.) will be explored in the context of the practice of veterinary medicine. Understanding diversity issues can positively affect the bottom line of nearly every veterinary practice.

Pre-Clinical Exotics/Zoological Practice Mentorship: Structured one week (45 contact hours) mentorship in an exotics/zoological practice designed to promote clinical skills training in a private practice setting with practitioners who have expressed an interest in training and mentoring veterinary students.

Note:
Lecture or combination lecture with lab.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: 1st, 2nd, or 3rd Year students in Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 900 - Veterinary Diagnostic Imaging I

Credits: 3

Radiographic, ultrasonographic and nuclear imaging in the clinical setting, with emphasis on making/identifying images of diagnostic quality, interpretation, indications for imaging, and radiation safety.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 901 - Clinical Externship and/or Programmed Study

Credits: 1-3

Provides the professional student with the opportunity to study with specialists not available at Kansas State University or in unique areas of veterinary medical practice or research.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine and the approval of the externship or program of study by the course coordinator.

Typically Offered
Fall, Spring, Summer

VCS 903 - Laboratory Animal Medicine

Credits: 2

The study of laboratory animal medicine or comparative

medicine to include colony health monitoring, preventive medicine, surgery, investigator support, and regulatory oversight.

Requisites:
Prerequisite: DMP 759 or requires coordinator approval. Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 904 - Clinical Anesthesia

Credits: 3

Practical instruction in the skills and techniques used in the practice of clinical veterinary anesthesia of both large and small animals.

Repeat for Credit
May be repeated once.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 905 - Exotic, Wildlife, and Zoo Animal Medicine

Credits: 3

Study of exotic, wildlife, and zoo animal medicine through participation in the clinical service in the Veterinary Medical Teaching Hospital. Problem solving, differential diagnosis, diagnostic procedures, and medical and surgical therapy of nondomestic animals will be emphasized.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 906 - Ophthalmology

Credits: 2

The study of the surgery and medical diagnosis and treatment of ocular disease in animals in the setting of the veterinary medical center. Problem solving, differential diagnosis, diagnostic procedures and medical and surgical therapy will be emphasized using veterinary patients.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 910 - Livestock Local Practice

Credits: 2

A study of the role of the veterinarian in the practice of clinical medicine in livestock production units. Students will work under faculty supervision in ambulatory and local practice settings.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 912 - Livestock Medicine & Surgery

Credits: 2

A study of individual livestock medicine and surgery. Students will work under faculty supervision in an in-house setting.

Requisites:
Prerequisite: Fourth-year standing in College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 913 - Advanced Feedlot Production Management

Credits: 2

Students desiring feedlot/stocker production training. Focus on effects of nutrition, preventative medicine, environment, personnel training and other issues on the health of growing/finishing cattle.

Requisites:
Prerequisite: Fourth-year standing in College of Veterinary Medicine.

Typically Offered
Fall, Summer

VCS 915 - Advanced Cow-Calf Production Management

Credits: 2

For students desiring in-depth cow-calf production training including management and assessment of production data, nutrition and ration balancing, reproductive strategies, quality assurance and economic and Standardized Performance Analysis of cow-calf enterprises.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Spring, Summer

VCS 917 - Advanced Rural Food Animal Business Management

Credits: 1

An elective course that incorporates economic and food animal practice management skills. Course will focus on business aspects of agricultural industries and skills to manage a food animal practice.

Requisites:
Prerequisite: Fourth-year standing in College of Veterinary Medicine.

Typically Offered
Fall, Spring

VCS 919 - Food Animal Reproduction

Credits: 2

Students will get hands-on experience and become competent performing a complete Breeding Soundness Exam. Other reproductive topics will be covered.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring

VCS 920 - Equine Medicine

Credits: 2

This course will offer general exposure to equine internal medicine and theriogenology. Students will be responsible for diagnoses, treatment and nursing care of out-patients, in-patients, and emergency duties.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 921 - Clinical Equine Theriogenology

Credits: 2

Students will participate in routine procedures that develop skills in handling horses, rectal exams, ultrasonography, semen collection, artificial insemination, uterine therapies and minor surgical procedures.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Spring, Summer

VCS 922 - Equine Surgery

Credits: 2

This course will offer general exposure to equine surgery and theriogenology. Students will be responsible for diagnoses, treatment, and nursing care of out-patients, in-patients, and emergency duties.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 923 - Advanced Equine Studies

Credits: 4

Students will have opportunities for routine and advanced clinical skills training and case management. Course discussions and case presentations will be targeted for the equine interested student and will therefore present advanced material; case discussion and rounds materials.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall

VCS 924 - Equine Field Service

Credits: 2

This course will offer general exposure to equine field service and theriogenology. Students will be responsible for diagnoses, treatment, and nursing care of out-patients, in-patients and emergency duties.

Requisites:
Prerequisite: Fourth-year standing in College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 925 - Supplemental Equine

Credits: 2-4

An opportunity for students to pursue additional equine studies (medicine, surgery, etc.) in depth and assume substantial responsibility for care of hospitalized cases. Or students will have option to conduct research and present a seminar on a medicine or surgical subspecialty and pursue a special problem.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 930 - Small Animal Internal Medicine

Credits: 3

The study of internal medicine in the setting of the Veterinary Medical Teaching Hospital. Students will be engaged in the diagnosis and management of complex cases referred to the internal medicine service.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 931 - Clinical Oncology

Credits: 2

The approach to diagnosis and treatment of cancer-bearing patients will be emphasized. Skills to master include fine needle aspirates and basic cytology, biopsy techniques (punch, wedge, pinch and tru-cut), bone marrow aspirate and core biopsy procedures and chemotherapy administration. A greater depth of understanding of the biologic behavior and treatment options of commonly seen tumor types (lymphoma, mast cell tumors, hemangiosarcoma, osteosarcoma, etc.) and chemotherapy safety will be emphasized. Medical management of cancer-related problems as well as treatment of therapy-induced side effects will also be covered.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 932 - Small Animal General Medicine

Credits: 3

The study of preventative medicine, general practice medicine, and specialty medicine. Students spend three weeks with the Pet Health Center learning the various aspects of outpatient services.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 933 - Dermatology/Medicine

Credits: 2

Designed to emphasize dermatology diagnostic work-up and management of dermatologic cases. May include proper techniques for performing procedures such as skin scraping, bacterial and fungal culturing, performing cytology, obtaining skin biopsies, ear clearing and trichography.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 934 - Clinical Small Animal Soft Tissue Surgery

Credits: 3

This course is designed to train senior or elective veterinary students in the diagnosis and treatment of small animal soft tissue and general surgical diseases through participation in the Small Animal Soft Tissue Service of the Veterinary Medical Teaching Hospital.

Requisites:
Prerequisite: Fourth-year standing in the KSU College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 935 - Comparative Cardiology

Credits: 2

Designed to expose students to the cardiovascular system of domestic animals, emphasizing clinical management and understanding of common congenital and acquired cardiac diseases.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 936 - Clinical Small Animal Orthopedic Surgery

Credits: 3

Course is designed to train senior or elective veterinary students in diagnosis/treatment of small animal orthopedic surgical diseases through the Orthopedic Service of the Veterinary Medical Teaching Hospital.

Requisites:
Prerequisite: Fourth-year standing in College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 937 - Shelter Medicine

Credits: 2

The rotation will be a combination of in-class and laboratory exercises in Manhattan, and hands-on experiences at regional shelters. Topics include population medicine, infectious disease recognition and control, surgical sterilization, behavioral testing, and legal issues common to shelter settings.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 938 - General Dentistry

Credits: 1

Skills and concepts common to general dentistry practice in the feline and canine, pre-operative exams, day-long wet lab to take and interpret digital intraoral radiographs, extract teeth, and perform dental nerve blocks. Also may participate in the evaluation, diagnosis, and treatment of primary care patients.

Requisites:
Prerequisite: Fourth-year standing in College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 939 - Supplemental Clinical Small Animal Soft Tissue Surgery

Credits: 3

Additional training in the diagnosis and treatment of small animal soft tissue and general surgical diseases through participation in the Small Animal Soft Tissue Service of the Veterinary Medical Teaching Hospital.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 940 - Small Animal Emergency Rotation

Credits: 2

Enhanced training in the management of small animal patients presented to the emergency service. Evaluation, management, and monitoring of small animal patients in the intensive care unit.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 941 - Supplemental Small Animal Internal Medicine

Credits: 3

Additional topics in internal medicine. The student may be required to participate in a special problem with a written or oral report.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 942 - Advanced Surgical Experience

Credits: 2

Designed to increase exposure to soft tissue surgical theories and techniques by providing both hands on surgical experience on cadavers and literature review skills.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring

VCS 943 - Supplemental Clinical Small Animal Orthopedic Surgery

Credits: 3

Additional training in the diagnosis and treatment of small animal orthopedic surgical diseases through participation in the Small Animal Orthopedic Service of the Veterinary Medical Teaching hospital.

Requisites:
Prerequisite: Fourth-year standing in the KSU College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 944 - Supplemental Small Animal Emergency

Credits: 2-4

An opportunity to pursue additional training in the management of small animal patients presented to the emergency services. Evaluation, management, and monitoring of small animal patients in the intensive care unit.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 945 - Supplemental Dentistry for Small Animals

Credits: 1

A one week course where students will be instructed through lecture, cadaver labs, and live animal care. Topics covered will include dental evaluation techniques, instrumentation, dental radiography, tooth extraction techniques and regional anethesia. Objectives of the course will be to provide 4th year students with additional training of basic dentistry knowledge and experience performing oral exams, dental probing, scaling, polishing, radiographs and tooth extractions.

Note:
Vet Course

Requisites:
Prerequisite: 4th Year Standing in the College of Veterinary Medicine and successful completion of CS 771 General Dentistry.

Typically Offered
Fall, Spring

VCS 946 - Shelter Operations Consultation

Credits: 1

This rotation will expose veterinary students to formal shelter consultation procedures. Students will learn how to take a critical look at the health of animal shelters to identify what is being done well and what needs to be improved. Students will also learn how to formulate recommendations in a way that does not overwhelm the administration of the shelters and can easily be implemented in a step-wise fashion.

Requisites:
Prerequisite: CS 781 Shelter Medicine and 4th Year Standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VCS 947 - Advanced Bovine Palpation

Credits: 2

Provide numerous opportunities for the student to learn how to identify the different structures of the bovine reproductive tract through rectal palpation and transrectal ultrasound, accurately diagnose pregnancy both manually and via ultraonography, and to identify various bovine reproductive abnormalities.

Note:
CS 811 - Topics in Bovine Palpation Techniques and Reproductive Evaluation Elective is strongly recommended and preference will be given to those students who have completed CS 811 - Topics in Bovine Palpation Techniques and Reproductive Evaluation.

Requisites:
Prerequisite: 4th Year standing in the College of Veterinary Medicine.

Typically Offered
Fall

VCS 948 - Supplemental Small Animal General Medicine

Credits: 3

Additional training in the study of preventative medicine, general practice medicine, and specialty medicine through participation in the Small Animal General Medicine Service in the Veterinary Health Center.

Requisites:
Fourth-year standing in the College of Veterinary Medicine

Typically Offered
Fall, Spring, Summer

VCS 950 - Problems in Medicine or Surgery

Credits: 1-9

The course provides for the study of medical or surgical problems. The student, in conference with the major professor, outlines the methodology and procedures, conducts the study, and prepares a detailed report.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VDMP 800 - Veterinary Career Development

Credits: 0

Introduction to career opportunities in veterinary medicine.

Note:
A required zero-credit class. No tuition is charged.

Requisites:
1st year standing in the College of Veterinary Medicine.

Typically Offered
Fall

VDMP 816 - Trade and Agricultural Health

Credits: 2

This course considers the multilateral trading system as it relates to food safety, food security, animal health, plant health, and international cooperation. The course content will be of value to students interested in food safety and security, epidemiology, public health, agriculture, food science, security studies, political science, agricultural economics, veterinary medicine, and international relations.

Typically Offered
Spring

VDMP 817 - Principles of Veterinary Immunology

Credits: 3

Innate and adaptive defense mechanisms in domestic animals. Topics include vaccinology, immunopathology, autoimmunity, immunodeficiency, and immunomodulation.

Requisites:
Prerequisite: BIOCH 521 and BIOL 455.

Typically Offered
Spring

VDMP 818 - Veterinary Epidemiology

Credits: 2

Introduction to the principles and methods of veterinary epidemiology: emphasizing how diseases affect populations (and associated implications for individuals), and application to disease diagnosis, treatment, prevention, and control.

Typically Offered
Spring

Crosslisted:
MPH 708

VDMP 832 - General Pathology

Credits: 4

Etiology, pathogenesis, lesions, and termination of processes of disease, including inflammation, necrosis, regeneration, oncology, and disturbances of metabolism, circulation, and growth.

Note:
Three hours lecture and four hours lab a week.

Requisites:
Prerequisite: AP 806, AP 816 and AP 810.

Typically Offered
Fall

VDMP 834 - Veterinary Parasitology

Credits: 4

Study of the helminth, arthropod, and protozoan parasites of companion and food animals. Emphases are on diagnosis, clinical signs, lesions, treatment, control epidemiology, and public heath aspects of parasitic disease.

Requisites:
Prerequisite: AP 810, AP 804, AP 818 and DMP 817 & DMP 818. Must be 2nd yr student in the Veterinary Curriculum.

Typically Offered
Fall

VDMP 836 - Cross-Course Integration III

Credits: 1

Vertical and horizontal integration among semester courses to improve student cognitive retention and understanding of course content. Structured-function relationships will be emphasized to facilitate student assimilation and provide clinical relevance to basic science content.

Requisites:
Prerequisite: Second-year standing in the College of Veterinary Medicine or consent of instructor.

Typically Offered
Fall

VDMP 838 - Veterinary Bacteriology & Mycology Lecture and Lab

Credits: 4

Morphology, biology and classification of pathogenic bacteria and fungi and their relation to the causes of disease.

Note:
Three hours of lecture and one hour lab each week.

Requisites:
Prerequisite: BIOL 455

Typically Offered
Fall

VDMP 847 - Cross-Course Integration IV

Credits: 1

The course activities will include interactive discussion sessions with pathologist, radiologist, clinical pathologist, and other veterinary specialists and will be aimed to integrate topics learned in courses taught during the first four semesters of the veterinary curriculum with special emphasis on the topics learned in the current (fourth) semester.

Requisites:
Prerequisite: Second-year standing in CVM or consent of the instructor.

Typically Offered
Spring

VDMP 848 - Clinical Pathology

Credits: 4

Principles, application, and interpretation of clinical laboratory procedures, and experience with applicable techniques.

Note:
Three hours lecture and four hours case discussion or lab a week.

Requisites:
Prerequisite: VDMP 817 and VDMP 832.

Typically Offered
Spring

VDMP 851 - Veterinary Virology

Credits: 3

Morphology, biology, and classification of viruses and their relation to the causes of disease.

Veterinary Virology is a 3 credit lecture course that is designed for veterinary students in the second year of the professional curriculum. The course provides basic and fundamental knowledge on the classification, pathogenesis, and diagnosis of viral pathogens affecting common veterinary species, including ovine, caprine, feline, canine, equine, bovine, avian, and porcine species. In addition, the course is designed to provide adequate knowledge and training for veterinarians in practice on the prevention and management of these viral diseases.

Note:
Two hours recitation and three hours lab a week.

Requisites:
Prerequisite: VDMP 817.

Typically Offered
Spring

VDMP 857 - Systemic Pathology

Credits: 5

Pathology of the organ systems of domestic animals including gross and microscopic study of lesions.

Note:
Three hours lecture and six hours lab a week.

Requisites:
Prerequisite: VDMP 832.

Typically Offered
Spring

VDMP 875 - Veterinary Public Health

Credits: 2

The linkages between human health and animal health and

production. Topics include zoonotic disease, emerging and exotic animal diseases, disaster preparedness, regulatory and community health issues focusing on the role of the veterinarian in all.

Note:
Two hours lecture per week.

Requisites:
Prerequisite: Third-year standing in the College of Veterinary Medicine and DMP 818.

Typically Offered
Spring

VDMP 888 - Globalization, Cooperation, & the Food Trade

Credits: 1

This course will focus on issues and topics including, but not limited to, disputes in the international agricultural and food trade, new concepts such as Food and Agriculture Security, and the food-related challenges faced by wealthy as well as economically poor societies. The course will also address such important topics as the roles played by innovation and investment in the agricultural and food system, the importance of cross-border cooperation in regulation and trade, and the accomplishments of public health and trade policy thought leaders across history.

Typically Offered
Fall, Spring

VDMP 891 - DMP Veterinary Medicine Elective

Credits: 1-3

Special topics for veterinary students in the disciplines offered by the department, including: Immunology, Parasitology, Microbiology, Toxicology, Pathology, Epidemiology, Biosafety and Biosecurity, Herd Disease Outbreak Investigation Techniques, Laboratory Animal Science, Laboratory Diagnosis, and Exotoxicology.

Note:
Lecture or combination lecture with lab.

Requisites:
Prerequisite: 1st, 2nd, or 3rd year students in Veterinary Medicine.

Typically Offered
Fall, Spring

VDMP 902 - Diagnostic Medicine

Credits: 2

Practical experience in necropsy procedures and laboratory findings.

Requisites:
Prerequisite: Fourth-year standing in the College of Veterinary Medicine.

Typically Offered
Fall, Spring, Summer

VDMP 911 - Dairy Production Medicine

Credits: 3

This course will be conducted using both in-class discussions and field experiences on Kansas dairies. The discussion portion will incorporate about 60% of class time, and field experiences 40%.

Requisites:
Prerequisite: 4th year standing in the College of Veterinary Medicine.

Typically Offered
Fall

WOEM 555 - Big Game Management

Credits: 3

Professional principles and practices associated with hunting North American Big Game to include: ethics, species habitat requirements, daily and seasonal activity of each species, methods of harvest, post-harvest handling, and clientele interactions.

Note:
Two hours lecture and two hours lab a week. Field trips required.

Requisites:
Prerequisite: BIOL 198, available only to students majoring in Wildlife & Outdoor Enterprise Management, Park Management & Conservation, or Biology.

Typically Offered
Spring

WOEM 560 - Upland Game Bird Management

Credits: 3

Application of practices to manage upland game birds in North America to include: harvest management, land management, ethics, laws, species' habitat requirements, daily and seasonal activities of each species, natural history, socioeconomic factors, and basics of managing a hunting operation.

Note:
One weekend field trip required. Two hours lecture and two hours lab a week.

Requisites:
Prerequisite: BIOL 198, available only to students majoring in Wildlife and Outdoor Enterprise Management, Park Management & Conservation, Fisheries, Wildlife, Conservation, and Environmental Biology or Biology.

Typically Offered
Spring

WOEM 561 - Waterfowl and Wetlands Management

Credits: 3

This course explores the natural history of waterfowl and wetland birds and habitat management. It includes basic information on the habitat requirements, management techniques, ranges, migration patterns, history, problems, diseases, and identification of the waterfowl resources of North America. Professional principles and practices associated with hunting waterfowl species in North America to include: ethics, laws, species' habitat requirements, and daily and seasonal activities of each species, methods of harvest, dog handling, post-harvest handling and clientele interactions. Includes the following success skills: Communicates Effectively and Maintains Professional Skills and Attitudes.

Note:
Restricted enrollment (cap at 50) specifically for Wildlife and Outdoor Enterprise Management majors at K-State. Two one hour lectures and one two hour lab per week.

Requisites:
Prerequisite: BIOL 198, available only to students majoring in Wildlife & Outdoor Enterprise Management, Park Management & Conservation, or Biology.

Typically Offered
Fall

WOEM 562 - Advanced Wildlife Habitat Management

Credits: 4

Theory and practice of managing terrestrial and aquatic vegetation for wildlife production.

Typically Offered
Fall

WOEM 570 - Internship for Wildlife and Outdoor Enterprise Management

Credits: 6-10

Intensive, paid practical experience with an approved hunting and/or shooting sports and/or fishing business. This is a three to seven month continuous experience.

Requisites:
Prerequisite: Available only to students majoring in Wildlife & Outdoor Enterprise Management. Senior standing. Available only to Wildlife and Outdoor Enterprise Management Majors.

Typically Offered
Fall, Spring, Summer

WOEM 590 - Problems in Wildlife and Outdoor Enterprise Management

Credits: 0-6

Independent study and/or research project development guided by faculty in Wildlife and Outdoor Management.

Typically Offered
Fall, Spring, Summer

WOEM 595 - Wildlife and Outdoor Enterprise Management Senior Seminar

Credits: 1

This course will be used as a capstone course for the Wildlife and Outdoor Enterprise Management curriculum; to include case studies and field experience reviews.

Note:
One hour recitation a week.

Requisites:
Prerequisite: Senior standing. Available only to Wildlife and Outdoor Enterprise Management Majors.

Typically Offered
Spring

WOEM 596 - Wildlife and Outdoor Enterprise Management Study Abroad

Credits: 3

Seminar and travel course designed to prepare students before an international study abroad experience focused on several facets of wildlife and conservation, natural resources, diseases, and land management research. Upon completion of travel, students will analyze, critique, and report their experiences. Course will focus on appropriate oral and written documentation of the experience.

Repeat for Credit
Repeatable

Requisites:
Prerequisite: Instructor permission.

Typically Offered
Fall, Spring, Summer

WOEM 620 - Human-Wildlife Conflicts

Credits: 3

This course explores the theory and practice of assessing and controlling damage done by wild and feral vertebrate animals, especially mammals and birds. Content covers the philosophical, biological, and practical basis for managing human-wildlife conflicts. It includes basic information on use of traps, toxicants, repellents, exclusion and other wildlife control methods. Emphasis is on protecting agricultural crops and livestock, forest resources, and property.

Requisites:
Prerequisite: BIOL 401

Typically Offered
Spring-Odd Years

Degrees & Certificates Offered

With 74 master's programs, 41 doctoral programs, 4 educational doctoral programs, 44 graduate certificates, and a variety of emphasis areas, Kansas State University offers preparation for a variety of scholarly and research careers as well as for a wide range of professional positions.

Since research is the mode of learning at the limits of knowledge, a common objective of all the graduate programs is to develop the capacities needed for independent study and research. All doctoral programs and most master's programs develop such capacities through both advanced course work and original research under the direction of faculty members who are experts in their fields.

A crucial part of the process involves the preparation and publication of a research study in the form of a thesis or dissertation and a defense of the study before the faculty. Some professional master's programs emphasize preparation for professional practice and consequently offer a nonthesis option, but in these, too, the student should gain a thorough understanding of research and research methodology.

Concurrent Degree Programs

- Concurrent B.S. in Accounting and Master of Accountancy
- Concurrent B.S./M.S. in Architectural Engineering
- Concurrent B.S./M.S. in Agricultural Economics
- Concurrent B.S./M.S. in Biochemistry
- Concurrent B.S./M.S. in Biological and Agricultural Engineering
- Concurrent B.S./M.S. in Biology
- Concurrent B.S./M.S. in Civil Engineering
- Concurrent B.S./M.S. in Computer Science
- Concurrent B.S in Computer Science and Master of Business Administration
- Concurrent B.S. in Economics/Master of Business Administration
- Concurrent B.S./M.S. in Horticulture and Natural Resources
- Concurrent B.S./M.S. in Hospitality Administration
- Concurrent B.S./M.S. in Nutrition, Dietetics, and Sensory Sciences
- Concurrent B.S./M.S. in Industrial Engineering
- Concurrent B.S./M.S. in Life Span Human Development
- Concurrent B.S./M.S. in Kinesiology
- Concurrent B.S./M.S. in Mathematics
- Concurrent B.S. in Business Administration/Master of Science in Data Analytics
- Concurrent B.S. Integrative Physiology / M.S. Kinesiology
- Concurrent Bachelors in Mechanical Engineering and Masters of Business Administration
- Concurrent B.A./B.S. in Political Science and M.A. in Security Studies
- Concurrent B.A./B.S. in Political Science and Master of Public Administration
- Concurrent Bachelor/Master of Public Health
- Concurrent B.A./B.S. and M.A. in Sociology
- Concurrent B.S./M.S. in Statistics

Dual Degrees

- Dual Degree: Master of Agribusiness and Professional Master of Business Administration
- Dual Degree: Master of Business Administration and MS in Hospitality Administration

Master Degrees

Master of arts:

- Communication Studies
- Drama Therapy
- Economics
- English
- History
- Modern Languages
- Political Science
- Security Studies
- Sociology
- Teaching - elementary
- Teaching - secondary
- Theatre

Master of science:

- Academic Advising
- Adult Learning and Leadership
- Agricultural Economics
- Agricultural Education and Communication
- Agronomy
- Animal Science
- Architectural Engineering
- Architecture
- Athletic Training
- Biochemistry
- Biological and Agricultural Engineering
- Biology
- Chemical Engineering
- Chemistry
- Civil Engineering
- Community Development
- Computer Science
- Counseling and Student Development
- Curriculum and Instruction
- Data Analytics
- Dietetics
- Educational Leadership
- Electrical and Computer Engineering
- Entomology
- Family Studies and Human Services
- Fashion Studies (M.S.)
- Food Science
- Genetics
- Geography
- Geology

- Gerontology
- Grain Science
- Horticulture and Natural Resources
- Hospitality Administration
- Industrial Engineering
- Kinesiology
- Mass Communications
- Mathematics
- Mechanical Engineering
- Nuclear Engineering
- Nutrition, Dietetics, and Sensory Sciences
- Operations Research
- Personal Financial Planning
- Physician Assistant
- Physics
- Plant Pathology
- Psychology
- Special Education
- Statistics
- Veterinary Biomedical Science

Master of Science Emphasis Areas

- Agricultural Economics – Concentration in Agribusiness
- Applied Family Science
- College Student Development
- Communication Sciences and Disorders
- Couple and Family Therapy
- Early Childhood Education
- Family and Community Services
- Horticulture - Urban Food Systems
- Life Span Human Development
- School Counseling
- Youth Development

Professional Master's

- Master of Accountancy
- Master of Agribusiness
- Master of Architecture (M.ARCH) (non-baccalaureate track)
- Master of Architecture (M.ARCH) (post-baccalaureate track)
- Master of Arts in Teaching (elementary track)
- Master of Arts in Teaching (secondary track)
- Master of Business Administration
- Master of Engineering Management
- Master of Industrial Design (M.I.N.D.D.) (non-baccalaureate track)
- Master of Interior Architecture (non-baccalaureate MIARC)

- Master of Interior Architecture (M.I.A.R.C.) (post-baccalaureate track)
- Master of Landscape Architecture (M.L.A.) (non-baccalaureate track)
- Master of Landscape Architecture (M.L.A.) (post-baccalaureate track)
- Master of Music
- Master of Public Administration
- Master of Public Health
- Master of Regional and Community Planning
- Professional Science Master's in Applied Biosciences

Terminal master's:

- Master of Fine Arts

Doctor of Education

Doctoral Degrees

- Adult Learning and Leadership
- Curriculum and Instruction
- Educational Leadership
- Special Education

Doctor of Philosophy

- Adult Learning and Leadership
- Agricultural Economics
- Agronomy
- Animal Science
- Biochemistry
- Biological and Agricultural Engineering
- Biology
- Chemical Engineering
- Chemistry
- Civil Engineering
- Computer Science
- Counseling and Student Development
- Curriculum and Instruction
- Economics
- Electrical and Computer Engineering
- Entomology
- Environmental Design and Planning
- Food, Nutrition, Dietetics and Health
- Food Science
- Genetics
- Geography
- Grain Science
- History
- Horticulture and Natural Resources
- Human Ecology

- Industrial Engineering
- Leadership Communication
- Mathematics
- Mechanical Engineering
- Microbiology
- Nuclear Engineering
- Pathobiology
- Personal Financial Planning
- Physics
- Physiology
- Plant Pathology
- Psychology
- Security Studies
- Sociology
- Statistics

Doctor of Philosophy Emphasis Areas

- Applied Family Science
- Counselor Education and Supervision
- Couple and Family Therapy
- Hospitality Administration
- Kinesiology
- Leadership in Academic Advising
- Life Span Human Development
- Student Affairs in Higher Education
- Sustainable Fashion Business (Ph.D.)

Graduate Certificates

- Academic Advising
- Adult Learning
- Advanced Financial Planning Graduate Certificate
- Advanced Horticulture
- Agricultural Biosecurity Research
- Air Quality
- Animal Health Management
- Applied Mathematics
- Applied Statistics
- Biobased Products and Bioenergy
- Business Administration
- Certificate in Quantitative Techniques of Data Science
- Community Development
- Complex Fluid Flows
- Conflict Resolution
- Data Analytics
- Dialogue, Deliberation, and Public Engagement

- Educational Technology
- Entomology
- Financial Therapy
- Food Safety and Defense
- Gender, Women, and Sexuality Studies
- Genetics, Genomics and Biotechnology
- Geoenvironmental
- Geographic Information Science
- Gerontology
- Grassland Management
- Horticultural Therapy
- Human Services
- Leadership Dynamics for Adult Learners
- Organizational Leadership
- Personal Financial Planning
- Professional Skills for STEM Practitioners
- Professional Interdisciplinary Sciences
- Public Administration
- Public Health Core Concepts
- Qualitative Research
- Regulatory Affairs in Animal Health
- Shelter Medicine Veterinary Certificate
- Social Justice Education
- Socially Responsible Information Science: Ethics in Data Sciences (Graduate Certificate)
- Stem Cell Biotechnology
- Sustainable Food, Energy, Water Graduate Certificate
- Teaching and Learning
- Teaching English as a Foreign Language
- Teaching Students with Autism Spectrum Disorders
- Technical Writing and Professional Communication
- Transportation Engineering
- Unmanned Aircraft Systems-Information Assurance
- Urban Food Systems Graduate Certificate
- Youth Development Professional

Online Programs

Kansas State University Online

Karen Pedersen, Dean
Debbie Hagenmaier, Assistant Director, Program Development and Management
Jo Maseberg-Tomlinson, Assistant Director, Program Development and Management
George Widenor, Director, Marketing
Pamela Erickson, Director, Student Success and Advising
Maleah Lundeen, Director, Recruitment
Linda Teener, Executive Director, UFM Community learning Center

Anderson Hall, 919 Mid-Campus Dr. North
Room 010
Manhattan, KS 66506
785-532-5575 or 1-800-662-2578
Email: online@k-state.edu
online.k-state.edu

K-State Online offers more than 100 degree academic programs to students around the world who need or want the added flexibility of learning online. Although your educational experience may not take place in a lecture hall, you'll be taught by the same quality instructors who teach on campus and your classes will follow the same rigorous academic standards that K-State has always maintained.

Classes are structured to increase interaction, and students are often surprised at the strong bonds they're able to forge with their classmates, advisors and faculty even when they live hundreds or thousands of miles apart. You'll also have access to the same support services on-campus students receive, such as tutoring, the Writing Center, library services and financial counseling.

Degrees offered online

Bachelor's degrees

- Animal Sciences and Industry, Animal Products Option; Product Management Option
- Applied Business and Technology
- Business Administration
- Dietetics
- Early Childhood Education
- Educational Studies
- Elementary Education
- Food Science and Industry, Food Business and Operations Management Option; Industry and Technology Option
- Hospitality Management (at K-State Olathe)
- Human Development and Family Science
- Nutrition and Health
- Personal Financial Planning
- Social Science

Master's degrees

- Academic Advising
- Accounting
- Adult Learning and Leadership offered online and at K-State Olathe
- Agribusiness (MAB)
- Agricultural Education and Communication
- Business Administration, Professional MBA
- Chemical Engineering
- Civil Engineering
- Community Development
- Computer Science
- Curriculum and Instruction: Educational Technology
- Curriculum and Instruction: English as a Second Language
- Curriculum and Instruction: Learning Skills/School Improvement
- Curriculum and Instruction: Mathematics Education
- Curriculum and Instruction: Reading Specialist

- Curriculum and Instruction: Teaching Civics and Government
- Data Analytics
- Dietetics
- Early Childhood Education
- Educational Leadership
- Electrical and Computer Engineering
- Engineering Management
- Family and Community Services
- Food Science
- Gerontology
- Hospitality Administration
- Industrial Engineering
- Mass Communications
- Mechanical Engineering
- Merchandising
- Music
- Nuclear Engineering
- Nutrition, Dietetics and Sensory Sciences
- Operations Research
- Personal Financial Planning
- Public Health
- Psychology with an emphasis in Industrial and Organizational Psychology (MIOP)
- Security Studies
- Special Education
- Teaching: Elementary Education (MAT)
- Teaching: Secondary Education (MAT)
- Youth Development

Doctoral degree

- Adult Learning and Leadership
- Curriculum and Instruction
- Leadership in Academic Advising
- Personal Financial Planning
- Student Affairs in Higher Education (coming soon)

Stand-Alone Minors

K-State's stand-alone minors are available to students working toward a bachelor's degree at any accredited institution, or to those who have already completed a bachelor's degree.

- Bakery Science
- Conflict Analysis and Trauma Studies
- Nuclear Engineering

Concurrent Minors

Concurrent minors are available to students currently enrolled in an on-campus or online bachelor's degree program at Kansas State University. Students should contact their K-State advisor to add one of the following concurrent minors to their undergraduate degree program.

- Animal Sciences and Industry
- Business

- Economics
- Financial Counseling
- Food Science and Industry
- Gender, Women, and Sexuality Studies
- Hospitality Management
- Human Development and Family Science
- Management
- Nutrition
- Personal Financial Planning

Certificates, endorsements, specialty programs, and teacher licensure

- Academic Advising Graduate Certificate
- Adult Learning Graduate Certificate
- Advanced Horticulture Graduate Certificate
- Animal Health Management Graduate Certificate
- Applied Statistics Graduate Certificate
- Business Administration Graduate Certificate
- Community Development Graduate Certificate
- Community Health Undergraduate Certificate
- Computer Science Undergraduate Certificate
- Conflict Resolution Graduate and Conflict Resolution Undergraduate Certificate
- Data Analytics Graduate Certificate and Data Analytics Undergraduate Certificate
- Dialogue, Deliberation and Public Engagement Graduate Certificate
- Educational Technology Graduate Certificate
- English as a Second Language Endorsement
- Financial Therapy Graduate Certificate
- Food Safety and Defense Graduate Certificate
- Food Safety and Quality Undergraduate Certificate
- Gerontology Graduate Certificate
- Gerentology Secondary Major
- Grassland Management Graduate Certificate
- Health Coach Undergraduate Certificate
- High Incidence Special Education Endorsement
- Human Services Administration Graduate Certificate
- K-12 Online Teaching Undergraduate Certificate
- Kansas Insurance Undergraduate Certificate
- Leadership Dynamics Graduate Certificate
- Low Incidence Special Education Endorsement
- Nonviolence Studies Undergraduate Certificate
- Organizational Leadership Graduate Certificate
- Personal Financial Planning Graduate Certificate
- Primary Texts Undergraduate Certificate
- Public Administration Graduate Certificate
- Public Health Graduate Certificate
- Qualitative Research Graduate Certificate
- Reading Specialist Endorsement
- Social Justice Education Graduate Certificate
- Teaching Students with Autism Graduate Certificate

- Technical Writing and Professional Communication
- Transportation Engineering Graduate Certificate
- Unmanned Aircraft Systems Information Assurance Graduate Certificate
- Web Development Technology Associate Degree
- Youth Development Professional Graduate Certificate

For information about noncredit programs visit the K-State Professional Development site.

Intersession

Intersession is conducted during the following three-week breaks in the academic calendar: late December to mid-January, late May to mid-June, and late July to mid-August. Annually, many existing and new or experimental credit courses are offered during Intersession, providing students with an opportunity to examine academic areas not scheduled in their current curricula and faculty members with a means to experiment with new ideas and formats for teaching. On-campus, study abroad, and online or distance classes are offered during Intersession. Students are encouraged to consult with their advisors to determine if a particular Intersession class will fulfill specific degree requirements. Intersession course information can be found online at https://online.k-state.edu/why-learn-online/flexibility/intersession.html.

UFM Community Learning Center

UFM Community Learning Center provides credit and noncredit educational opportunities for Kansas State University, the Manhattan area and communities across Kansas. More than 800 classes are available each year, with topics ranging from recreation, test preparation, health and wellness, recreation and fitness, living green, cooking and more. Many recreational classes are offered for K-State credit. UFM also sponsors the Lou Douglas Lecture Series on Public Issues, hosts the Manhattan Community Garden, coordinates a teen mentoring program and hosts Project EXCELL. For additional information about UFM and its programs and activities visit tryufm.org or email: ufm@k-state.edu.

Academic Calendar

For any date changes or additions since the online publication of the calendar, go to http://www.k-state.edu/registrar/calendar/.

All-University Regulations

Student Conduct

Philosophy of Student Conduct

At Kansas State University students have a direct and primary role in the establishment and enforcement of campus and living group policies and regulations. The basic philosophy of discipline is one of education and enforcement of community standards. Since that is the ultimate purpose, we focus on the growth and development of the student. Most efforts are directed at preventing problems, or at least correcting them, rather than concentrating on punishment. The responsibility for proper conduct is put upon the student, not the university, with the assumption that most students do not try to intentionally cause violations, and will generally respect the rights and property of others.

The following principles govern the disciplinary process. Every effort is made to bring about outcomes that are positive for all parties involved; students will be members of all Student Governing Association judicial bodies; formal hearing processes are fundamentally fair and respect the rights of the individuals involved; confidentiality will be respected; records of proceedings

will be released only on written authorization of the student(s) involved unless otherwise authorized by law or court order. The procedures are outlined in the SGA Judicial Code, included in the by-laws to the SGA Constitution.

Descriptions of the judicial structure and process, as well as university policies, are free and are available in the Office of Student Activities and Services in the K-State Student Union and on their web page.

Prohibited conduct

The following described conduct is prohibited by this Code and subject to sanctions by the University:

1. Acts of dishonesty, including but not limited to the following:
    1. Furnishing false information to any University official, faculty/staff member, or office.
    2. Forgery, alteration, or misuse of any University document, record, or instrument of identification.
    3. Tampering with the election of any organization or student governing body.
2. Disruption or obstruction of teaching, research, administration, disciplinary proceedings, or other University-sponsored activities.
3. Conduct directed towards another person(s) that is intended to and does substantially interfere with another's educational or employment opportunity, peaceful enjoyment of residence, or physical security.
4. Attempted or actual theft of property.
5. Intentional damage to property or vandalism.
6. Hazing, which is defined as an act which endangers the mental or physical health or safety of a student, or which destroys or removes public or private property for the purpose of initiation, admission into, affiliation with, or as a condition for continued membership in a group or organization. Consent by the person hazed shall be no defense to the hazing.
7. Telephone or Internet harassment, which shall include: (KSA 21-6206)
    1. Making calls containing or making or transmitting any comment, request, suggestion, proposal, image or text which is lewd or obscene remarks.
    2. Making or transmitting calls, whether or not conversation ensues, or any comment, request, suggestion, proposal, image or text with intent to substantially interfere with another person's educational or employment opportunity, peaceful enjoyment of residence, or physical security. Transmission of comments, requests, suggestions, proposal, images, or texts may include any transmission utilizing electronic means, including but not limited to sending text, picture, video, or audio messages over social media websites, social media applications, instant messenger or chat services, message boards or any other electronic format.
8. Failure to comply with directions of University faculty, staff, or law enforcement officers acting in performance of their duties or failure to identify oneself to these persons when requested to do so.
9. Unauthorized possession, duplication or use of keys, or other devices that provide access to any University property or services.
10. Unauthorized presence in or use of University premises, facilities, or property.
11. Use, possession or distribution of alcoholic beverages in an unlawful manner or otherwise in violation of a university policy.
12. Use, possession, distribution of a controlled substance in an unlawful manner or otherwise in violation of a university policy.
13. Possession or use of in violation of the University's Weapons Policy.
14. Intentionally initiating or causing to be initiated, any false report, warning or threat of fire, explosion or other emergency.
15. Participation in a campus demonstration which unreasonably disrupts the normal operations of the University included but not limited to the following:
    1. infringes on the rights of;
    2. inciting others to disrupt scheduled and/or normal;
    3. intentional obstruction which unreasonably interferes with freedom of movement, either pedestrian or vehicular;
    4. inciting another person to breach the peace.
16. Intentionally interfering with the freedom of expression of others.
17. Conduct that is disorderly, lewd, or obscene; breach of peace; or inciting another person to breach the peace.

18. Any violation of "KSU Information Technology Usage Policies."
19. Abuse of the SGA Judicial Program, including but not limited to:
    1. Falsification, distortion, or misrepresentation of information.
    2. Disruption or interference with the orderly conduct of a judicial proceeding.
    3. Knowingly initiating a complaint without cause.
    4. Attempting to discourage an individual's proper participation in, or use of, the judicial system.
    5. Attempting to influence the impartiality of a member of a judicial board prior to, or during the course of, the judicial proceeding.
    6. Verbal, written, phone, or physical harassment, and/or intimidation of a member of a judicial board.
    7. Failure to comply with the sanction(s) imposed under this Code.
    8. Influencing or attempting to influence another person to commit an abuse of the judicial program.
20. Any illegal or unauthorized taking, selling, or distribution of class notes.
21. Violation of University policies, rules, or regulations.
22. Violation of federal, state or local law that causes a substantial disruption to university operations.

Honor and Integrity System

Camilla Roberts, Director
K-State Honor and Integrity System
1800 Claflin Road, Suite 001
Manhattan, KS 66502 (see map)
785-532-2595
E-mail: honor@k-state.edu

The honor and integrity system uses the Faculty Senate approved definition of academic dishonesty found in the Faculty Handbook and at the honor and integrity system web page.

Students' rights are enumerated under Article XII of the Student Governing Association constitution.

The Honor Council constitution can be reviewed in the student handbook section of the campus phone book. The investigation and adjudication procedures can be reviewed on the web page.

Kansas State University's honor and integrity system is based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, each student's work is performed honestly and without unauthorized assistance. Students, by registering at K-State, acknowledge the jurisdiction of the honor system.

The policies and procedures of the graduate and undergraduate honor and integrity system apply to all full-time and part-time students enrolled in courses on-campus, off-campus, and via distance learning.

A prominent part of the honor and integrity system is the honor pledge, which applies to all assignments, examinations, or other course work undertaken by students. The honor pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work."

Honor Council

The honor and integrity system trusts students to perform their academic work honestly and with integrity. The honor and integrity system is based on trust and administered jointly by students and faculty members of the Honor Council. Having students equally share in the process increases the visibility of Honor Council procedures and promotes a community of trust.

The Honor Council is comprised of students and faculty who are appointed each spring for two-year terms. Students are nominated by the student body president or the associate provost for diversity; faculty are nominated by their respective dean or

the dean of student life. All nominations are subject to the approval of the provost. Members of the honor council adjudicate the honor system by serving as case investigators, advisors, and hearing panelists.

Reporting Academic Dishonesty

All members of the academic community, both students and faculty, are urged to report acts of academic dishonesty. To discuss or report an alleged violation, contact the director of the honor and integrity system.

Plagiarism

Plagiarism, taking someone else's intellectual work and presenting it as your own, covers unpublished and published sources. Borrowing another's semester paper, handing in a paper purchased from an individual or agency, or submitting papers from a living group, club, or organization files are all punishable as plagiarism. The current definition for plagairism is located in Section II of Appendix F in the university handbook.

The standard for attribution and acknowledgement of literary indebtedness is set by each discipline. Students should consult with their department or with recognized handbooks in their field if in doubt.

The guidelines apply to faculty and research assistants in their possible use of students' and colleagues' research and ideas, as well as to students' use of source materials and authorities, and student use of other students' ideas and work.

Other Forms of Academic Cheating

Other forms of academic dishonesty subject to penalties include, but are not limited to, consultation of books, library materials, or notes during a test; use of crib sheets or hidden notes during an examination or looking at another student's test; having a confederate supply of questions or answers from an examination to be given or in progress; having another person stand in on an exam or other graded activity; deliberate falsification of lab results; submission of falsified data; procurement or alteration, without permission, of examinations or other academic exercises; collaborating on projects where collaboration is forbidden; and other forms of academic dishonesty and fraud.

University Policies

Students, faculty, staff and administrators are members of a community dedicated to the growth and development of individuals.

Enrollment at K-State entails responsibilities as well as privileges. Acceptance of and adherence to University policies are necessary for the protection of the rights of others and the protection and health of the community.

Complete copies of these policies, some of which are excerpted below, are available in the Office of Student Activities and Services in the K-State Student Union and the Office of Student Life in 102 Holton Hall, unless otherwise indicated. The most current versions of these policies are available on the website.

Advertising, Sales, and Solicitation

Facilities of Kansas State University are not available for unrestricted use by non-university groups. University property may not be used for commercial purposes except when sponsored by a university-affiliated organization or department. The regulations governing fund-raising and the posting and distribution of literature are available in the Procedures and Policies Manual.

Alcohol and Cereal Malt Beverage Policy

The legal drinking age in Kansas for alcoholic beverages is 21. The Kansas Board of Regents policy permits the service and consumption of alcoholic beverages under authorized and appropriately controlled conditions and regulations. Included in the K-State policy is information on alcohol and cereal malt beverage service and consumption in residence halls, at athletic events, and for student organizations.

Drug-free Workplace Policy

In 1988 Congress passed the Drug-Free Workplace Act. This act applies to all institutions holding and applying for federal grants and contracts. K-State adopted the policy that the unlawful manufacture, distribution, dispensing, possession, or use of controlled substances is prohibited in its workplace. For more information go to the website.

Facilities Usage

K-State facilities are available for use by authorized groups for activities that complement the teaching, research, and service programs of the university. Policies and procedures for use of K-State facilities (other than the K-State Student Union) are available in the Division of Facilities in 109 Dykstra Hall or on their web page.

Policies and procedures for use of the K-State Student Union are available in the Union Reservations Office on the second floor or in the Source Handbook for Registered Organizations.

Gender

The university seeks to create an environment in which all students, faculty, and staff interact solely on the basis of individual strengths and characteristics without having those interactions shaped by generalizations, stereotypes, or valuations based on gender. Copies of applicable policies are available in the Center for Advocacy, Response and Education (CARE) in 206 Holton Hall and Office of Institutional Equity in 103 Edwards Hall.

HIV/AIDS University Guidelines

Under the direction of the Kansas Board of Regents, the university has developed guidelines to assist students, staff, and faculty members in the event that they are involved with situations involving acquired immunodeficiency syndrome (AIDS), or the causative agent, human immunodeficiency virus (HIV). Current copies of the guidelines are available upon request from the Department of Health Promotion, Lafene Health Center.

Political Activity Guidelines

All members of the university community are encouraged to take advantage of opportunities to educate themselves regarding the candidates and issues relating to national, state, and local elections. University guidelines related to political activities on campus are available in the Procedures and Policies Manual. In addition, a comprehensive collection of political activities laws, regulations and policies is available on the webpage.

Harassment

K-State prohibits harassment based a person or persons based on race, color, ethnic or national origin, sex, sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status in the work and on-campus housing environment that: (1) has the purpose or effect of: (a) creating an intimidating, hostile, or offensive work environment or non-campus housing environment for the person(s); or (b) unreasonably interfering with the work, or on-campus housing, of the person (s); and (2) is sufficiently severe or pervasive that it alters the terms, conditions, or privileges of a person's employment or use of on-campus housing.

In the academic environment, "harassment" is conduct toward a person or persons based on race, color, ethnic or national origin, sex, sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status that: (1) has the purpose and effect of: (a) creating an intimidating, hostile, or offensive educational environment for the person(s); or (b) unreasonably interfering with the academic performance or participation in any university-sponsored activity of the person; or (c) threatening the academic opportunities of the person; and (2) is sufficiently severe or pervasive that it alters the terms, conditions, or privileges of the person's academic opportunities or participation in university-sponsored activities.

Harassment under these definitions should be reported to the university administrator responsible for the department or unit or to the Office of Institutional Equity. Copies of the policy are also available from the Office of Institutional Equity in 103 Edwards Hall.

Religious Activities

Nonsectarian prayers, invocations, benedictions, or silent meditations are permitted at university functions to enhance mutual respect and awareness. Religious activities policy can be viewed at this web page.

Sexual Harassment

"Sexual harassment" is a type of harassment that involves unwelcome sexual advances, requests for sexual favors, disparagement of members of one sex, or other conduct of a sexual nature when: (1) (a) submission to or rejection of such conduct is made either explicitly or implicitly a term or condition of an individual's employment, education, on-campus housing, or participation in a university-sponsored activity or program; or (b) submission to or rejection of such conduct is used as the basis for or as a factor in decisions affecting that individual's employment, education, on-campus housing, or participation in a university-sponsored activity or program; or (c) such conduct meets either "harassment" definition above; and (2) the conduct is sufficiently severe or pervasive that it alters the terms, conditions, or privileges of the person's employment, use of on-campus housing, academic opportunities, or participation in university-sponsored activities or programs.

Sexual harassment should be reported to the university administrator responsible for the department or unit or to the Office of Institutional Equity. Students with complaints of sexual harassment by other students should contact the Office of Student Life, the Office of Institutional Equity, or the Center for Advocacy, Response and Education (CARE). Copies of the policy prohibiting sexual harassment are available from the Office of Student Activities and Services, departmental offices, the Center for Advocacy, Response and Education (CARE), Office of Student Life, or the Office of Institutional Equity.

Sexual Violence

No form of sexual violence will be tolerated or condoned at Kansas State University. This policy prohibits not only those acts commonly understood to constitute "sexual assault," but all attempts to coerce sexual activity as well. Although the university cannot assure protection from sexual violence, it can state expectations of conduct and impose sanctions on any university student who fails to meet those expectations. Copies of the policy prohibiting sexual violence are available in the Center for Advocacy, Response and Education (CARE) in 206 Holton Hall, Office of Student Life or the Office of Institutional Equity, 103 Edwards Hall.

Graduate Student Grievance Procedures

If a graduate student feels he or she has been unjustly treated in some aspect of academic work and has been unable to secure a remedy through consultation with the professor(s) involved, with the supervisory committee, and thereafter with the head of the department or chair of the program, it is the student's prerogative to take the matter to the Dean of the Graduate School. If the Dean is unable to arrive at a mutually acceptable solution with the persons concerned, at the student's request the dean will initiate the grievance procedures adopted by the Graduate Council and described in the Graduate Handbook.

Undergraduate Student Grievance Procedures

Undergraduate Student Grievance procedures can be viewed at: http://catalog.k-state.edu/content.php?catoid=40&navoid=7107#Under_Stud_Grievance_Policies.

Prayer at University Functions

Nonsectarian prayers, invocations, benedictions, or silent meditations are permitted at university functions to enhance mutual respect and awareness. Religious activities policy can be viewed at this web page.

Community Principles

Principles of Community

Kansas State University is a land-grant, public research university, committed to teaching and learning, research, and service to the people of Kansas, the nation, and the world. Our collective mission is best accomplished when every member of the university community acknowledges and practices the following principles:

We affirm the inherent dignity and value of every person and strive to maintain an atmosphere of justice based on respect for each other.

We affirm the value of human diversity for community.

We affirm the right of each person to freely express thoughts and opinions in a spirit of civility and decency. We believe that diversity of views enriches our learning environment and we promote open expression within a climate of courtesy, sensitivity, and mutual respect.

We affirm the value of honesty and integrity. We will operate with honesty in all professional endeavors and expect the same from our colleagues.

We acknowledge that we are a part of multiple communities, and we have an obligation to be engaged in a positive way with our civic partners.

We recognize our individual obligations to the university community and to the principles that sustain it. We will each strive to contribute to a positive spirit that affirms learning and growth for all members of the community.

Campaign for Nonviolence

www.k-state.edu/nonviolence

This campaign works to apply the principles of active nonviolence to problems associated with discrimination, harassment, violence, and other abuses of power.

Academic Policies and Procedures

Credit

Credit/No Credit Courses

Certain courses for which the learning experience is based primarily on participation and/or attendance may be offered on a Credit/No Credit basis. Courses in research numbered 898 (report), 899 (thesis), and 999 (dissertation) are offered only on a Credit/No Credit basis. Letter grades may not be given for any other such Credit/No Credit courses offered by the university. {*University Handbook, F13*}

For courses that are normally given for a grade, the designation Credit may be obtained in the case of credit by examination.

Course Level Key

In order to maintain a common system of classification of academic information for all state universities, course levels are to be identified by the first digit catalog course number as follows: {*University Handbook, F51*}

000-999	No credit courses.
100-299	Lower-division, undergraduate. Designed as freshman-sophomore courses.
300-499	Upper-division, undergraduate. Designed as junior and senior courses.
500-699	Upper-division, undergraduate. Primarily for juniors and seniors, with an enrollment of less than 50% master's students.

(Courses numbered 500 may be taken for graduate credit only in a minor field. Courses numbered 600 may be taken as part of a graduate student's major field.)

700-799	Graduate and upper-division. For master's students primarily; with an enrollment of less than 50% undergraduate students.undergraduate. Designed as freshman-sophomore courses.
800-899	Designed primarily for master's students.
900-999	Designed primarily for doctoral students.

Master's = Courses and thesis for master's students who will ordinarily have accumulated from 1 through 30 graduate hours and students enrolled in professional schools (Law, Veterinary Medicine, M.D., Architecture, etc.).

Doctoral = Courses for specialists and doctoral students who will ordinarily have completed more than 30 hours of graduate work.

The dual listing of courses may be permitted on a limited basis with the written approval of the graduate dean of each institution. A current list of such dually listed courses shall be maintained by each university.

The course numbering system for Kansas Regents institutions as defined in the Kansas Board of Regents' Policy and Procedures Manual, Chapter 2, Section A.2.

Definition of a Credit Hour

{*University Handbook, F115 & 115.1*}

One Credit Hour: the amount of effort required to attain a specific amount of knowledge or skill equivalent to three hours of effort per week for 15 weeks. Any combination of contact time and effort outside of class is allowed. Common practice is for one academic hour of credit to be composed of a lecture or class to meet for one hour (50 minutes) per week, with two hours per week of outside assignment and study effort expected each week for 15 weeks. A laboratory class period equivalent to an academic hour of credit would either meet for one three-hour period each week for 15 weeks with all effort by the student expected to be completed during the laboratory period; or one two-hour laboratory period with one hour of student effort expected outside the class period, each week for 15 weeks. Shortened academic sessions (including condensed semesters, intersession classes, or summer classes) and all other modalities (online, distance, etc.) are expected to maintain an equivalent amount of time (contact and outside of class time) as those classes in the 15-week semester. It should be noted that the judgment of the amount of academic effort that comprises one hour of credit for any
class is ultimately a faculty decision, from the development of the course syllabus to the approval through Faculty Senate. Additional time outside of class may be required for graduate coursework. For further detail please see Course Scheduling in the Department Head's manual. (addition, FS 2/14/12)

One-Half Credit Hour: the amount of effort required to attain a specific amount of knowledge or skill equivalent to 22.5 hours of effort. Any combination of contact time and effort outside of class is allowed. Academic sessions, including full or condensed semesters, intersession classes, summer classes, or other defined periods of time, as well as all other modalities (e.g., online, distance, etc.), are expected to maintain an equivalent amount of time (contact and outside of class time). It should be noted that the judgment of the amount of academic effort that comprises a one-half hour of credit for any class is ultimately a faculty decision, from the development of the course syllabus to the approval through Faculty Senate. Additional time outside of class may be required for graduate coursework.

Enrollment

Enrollment Definition

Enrollment is defined as consisting of three major components:

> **Application:** Students provide the information requested by the University for purposes of establishing and administering academic and financial relationships that exist between the University and its students.
>
> **Registration:** Students register for a course(s) and provides information needed to assess fees and tuition.
>
> **Payment of Fees:** Students must pay all assessed tuition and other special fees and satisfy all due and/or delinquent amounts payable to the University.

Students who withdraw will be considered no longer enrolled at the time of withdrawal.

Certification of Enrollment

Kansas State University reports enrollment status based on the definitions listed below. Information on enrollment is reported through the National Student Clearinghouse (NSC) and is available for the semester beginning the first week of classes.

- Students participating in internships are not automatically considered full-time for the semester of their internship. The number of hours for an internship is based upon the credit hours granted for the internship.
- Non-degree students' enrollment status is reported based on the level of the non-degree program.
- Students enrolled in a dissertation, thesis, or cooperative education are considered full time regardless of the hours enrolled.
- Students who withdraw are not considered enrolled in the course once the withdrawal has been processed, and enrollment status will be adjusted as of that time.
- Students receiving Financial Aid should confirm requirements for financial aid eligibility.

The following tables detail the units (credit hours) that are used to verify full-time, three-quarter time, and half-time enrollment status for students at Kansas State University. Term units can be any combination of undergraduate, graduate, and veterinary medicine units.

Fall/Spring Terms

Status	**# of Undergraduate term units**	**# of Graduate term units**	**# of Grad Assist (0.4-0.9) term units**	**# of Vet Med term units**
Full Time	12 or more	9 or more	6 or more	9 or more
Three Quarter Time	9-11	7-8	5	7-8
Half Time	6-8	5-6	3-4	5-6
Less Than Half Time	1-5	1-4	1-2	1-4

Summer term

Status	**# of Undergraduate term units**	**# of Graduate term units**	**# of Grad Assist (0.4-0.9) term units**	**# of Vet Med term units**
Full Time	12 or more	6 or more	1 or more	9 or more
Three Quarter Time	9-11	5	-	7-8
Half Time	6-8	3-4	-	5-6
Less Than Half Time	1-5	1-2	-	1-4

Revised: 10/9/2019

- Undergraduate Student-Veterans receiving V.A. Educational Benefits enrolled in a (non-standard) part of term will have their training time determined by the Veteran Affairs Administration.
- Graduate Student-Veterans receiving V.A. Educational Benefits enrolled in a (non-standard) part of term will have their training time reported according to the length of a session as defined by the Veteran Affairs Administration.

Grades

Grading System

Per the *University Handbook, F80-82* – grades will be reported in the following manner:

Grade	Description	Grade Point
A	Excellent Work	4.00
B	Good Work	3.00
C	Fair Work	2.00
D	Poor Work	1.00
F	Failure	0.00
XF	Honor Code Violation	0.00
EP	Exam Pass of Standardized National Exams	N/A
I	Incomplete	N/A
IH	Incomplete Hold	N/A
NH	Non-reported Hold	N/A
P	Grades of B, C, or D in course taken A/Pass/F courses	N/A
CR	Credit in courses for which no letter grade is given (non-graded courses)	N/A
NC	No credit in courses for which no letter grade is given (non-graded courses)	N/A
NR	No Grade Reported	N/A
W	Withdrawn	N/A

Grade points are assigned to determine graduation requirements, academic warning and dismissal levels, and scholastic honors.

Beginning in Spring 2012, all grades of "F" (Fail) and/or "NC" (No Credit) will require a Yes/No statement as to the student's participation in Academicrelated activity. This statement is required due to the federal mandate regarding the issuance of federal financial aid.

Grade changes are submitted directly in the student information system (KSIS). Grade Change Rosters will remain open for five years from the original posting date to submit changes. On-line changes to certain grades such as "W" and "XF" will not be allowed, nor to grades related to a completed program of a graduated student. Any changes not accommodated by KSIS must be handled by submitting a Grade Change Memorandum form to the Dean of the College.

Courses in which a CR or P grade is received may be used in fulfilling graduation requirements. Only the grades A, B, C, D, and F are used in calculating resident grade averages.

Incomplete Grade Policy

{*University Handbook, F83*}

The instructor will make an appropriate report on any student who does not complete a course in accordance with these definitions:

- If a drop in a full-semester course occurs in the first 36 calendar days, no grade is reported. The deadline for other courses will be pro-rated based on the course length.
- If a student drops a full-semester course after the first 36 calendar days, but before the start of the eleventh week, a withdrawn (W) is reported. The deadline for other courses will be pro-rated based on course length. See Registrar's website for details.
- After the tenth week of classes, a course may not be dropped.
- The grade of incomplete is a temporary grade given at the discretion of the faculty upon request of the student. An incomplete grade is appropriate when verifiable circumstances beyond the student's control prevent completion of course requirements by the grade submission deadline, and the student was engaged and participating in the class prior to the circumstances that prevented completion of course requirements. The grade of incomplete is not to be used to avoid assigning a poor grade that results from unsatisfactory academic work.

In most instances, the requirements for completion of a course are detailed in the original course syllabus. It is in the student's best interest to confirm in writing with the faculty member the remaining requirements to be completed in order to replace the grade of incomplete. If the faculty member requires anything other than the syllabus requirements or chooses to have a time frame for completion other than the end of the next regular term, the faculty member must provide written notification to the student. A sample notification form is available on the Registrar's website. Typically, requiring student participation in the entire course in a subsequent semester without enrolling is not an appropriate means to satisfy requirements for the incomplete.

Incompletes are expected to be finished by the conclusion of the next regular academic term (fall or spring), or the student's graduation term – whichever is earlier. Any incomplete remaining after the next regular term is reassigned to an F (regardless of student's enrollment status) and will be computed in the student's GPA, weighted at 0 points per credit. In extreme cases, a student may be granted an extension of an incomplete beyond the next regular term. To request such an extension, the student must complete with appropriate signatures the Incomplete Extension Request Form. The incomplete extension form can be found on the Registrar's website.

Undergraduate research courses, internship courses, theses, dissertations, directed research courses, and other courses with the "IH" grading option are exempt from the one regular term limit for completion.

A student with incompletes will only be cleared for graduation if receiving Fs in every incomplete class earned Fall 2018 or later will satisfy the requirements for graduation. Upon approval for graduation, all grades of incomplete earned Fall 2018 or later remaining on the record will be changed to grades of F.

Auditing

Auditing is participating in a class regularly without submitting classwork and without receiving credit. Permission to audit is granted by the instructor, with the approval of the dean of the college in which the class is offered. Laboratory and activity courses may not be audited. Audits are not recorded on the permanent record. Students should not enroll in courses they plan to audit. {*University Handbook, Section F66.1*}

Any Kansas resident 60 years of age or older upon the presentation of sufficient proof of age shall be permitted to audit courses at state universities on a space-available basis with no requirement for payment of tuition and fees required of every student as a condition of enrollment. A person meeting these requirements shall be considered a non-degree seeking student for purposes of K.A.R. Articles 88-29, 29a, and 29b. Special academic fees shall be paid by the student. All determinations as to residency, the age of the applicant, and the space available for the auditing of courses by such persons shall be made by the state university involved. {*University Handbook, Section F66.2*} - For more information, see the Kansas Board of Regents Policy Manual.

Non-Permissible Changes to the Academic Record after Degree Posting

Grade changes may not be made after a degree has been posted, for courses taken prior to that degree posting. In addition, backdated withdrawals will not be processed after a degree has been posted, for any term prior to that degree posting.

Release of Grades

A student's grades may be accessed only by the student through KSIS or by ordering an academic transcript. {*University Handbook, F43*}

Report of Grades

Academic progress reports for new freshmen are available in KSIS to students and deans' offices approximately six weeks into the spring and fall semesters.

The instructor reports final term grades, based on examinations and course work, to the Office of the Registrar via the KSIS grade roster.

In case of absence from the final examination, the instructor reports a mark of I for incomplete or computes the grade on the basis of zero for the final examination. If an Incomplete is reported, a reasonable time, usually not over one month, is allowed in which to take the examination.

Grade Appeals/Grievances

Grievances involving a change of grade (but not academic dishonesty). {*University Handbook, Appendix V: 1.3*}

1. All efforts will be made by the student and instructor involved in any grievance to settle all disputes that may arise. Grade appeals must be initiated within six months following the issue date of the grade in question.
2. If a grade-change grievance is not resolved by the student and instructor, the student may appeal in writing to the department head concerned, who will act as a mediator in the dispute. This appeal should be made within two weeks of the date of the decision of the instructor. At this time, the student may petition the dean of his college for an ombudsperson. The duties of the ombudsperson are to arrange meetings of all concerned parties and report actions taken at each level to the appropriate persons or groups. The role of the ombudsperson is to expedite the process and to ensure a fair hearing.

3. If the grievance has not been settled to the student's satisfaction at the department level, written appeal may be made to the dean of the college in which the course is taken. This appeal should be made within two weeks of the date of decision of the department head.
4. If the student does not feel that an adequate solution has been reached in the grade appeal dispute, he or she may appeal in writing to the Undergraduate Grievance Board which will arbitrate the dispute. This appeal should be made within two weeks of the date of decision of the dean. Appeals received during the summer will be heard the following fall term. Appeals should be addressed to the Undergraduate Grievance Board, c/o Chair (whose name is listed under Committee 3030 at http://www.ksu.edu/provost/committeehb/).
5. The two-week time limits given in the sections above are intended to move the grievance process along at a reasonable rate. The limits may be modified for reasons such as illness, scheduled academic holidays, or mutual consent of both parties.

Academic Standing

Master's Degree

{*Graduate Handbook, Chapter 2, section F: Probation & G: Dismissal/Reinstatement*}

Probation

Students may be placed on probation as a condition of their admission to graduate programs if warranted by their academic record.

In addition, students who fail to make satisfactory progress in their graduate programs will be placed on probation. Either of the following conditions will warrant probation:

a. A grade point average lower than 3.0,

b. The recommendation of the major professor or student's committee that the student's progress is unsatisfactory.

Removal from Probation

Students on probation as a condition of admission will acquire good standing if they achieve a cumulative GPA of 3.0 in the first 9 credit hours of graduate-level course work.

Students placed on probation for deficient grades will be restored to good standing if they achieve a cumulative GPA of at least 3.0. This must be achieved within 2 semesters for full-time students and within 12 credit hours for part-time students.

Students placed on probation after recommendation by the major professor or supervisory committee may be restored to good standing only following the notification by the major professor and supervisory committee that the students are making satisfactory progress.

Dismissal and Reinstatement

Dismissal

A graduate student will be denied continued enrollment at Kansas State University for any of the following reasons:

a. Failure of a student admitted on probation to achieve a minimum cumulative GPA of 3.0 in the first 9 credit hours of graduate coursework, or failure of a student to meet other conditions specified in the admission letter.

b. Failure of a student placed on probation for deficient grades to achieve a cumulative GPA of at least 3.0 within 2 semesters for full-time students and within 12 credit hours for part-time students (see section F.3)

c. Failure to meet published departmental or University requirements.

d. Failure to maintain satisfactory progress toward a graduate degree.

e. Failure in the final degree examination(s) (see section J.3).

f. Failure to acquire mastery of the methodology and content in a field sufficient to complete a successful thesis or dissertation.

g. Qualifying for placement on probation a second time, except when the first period of probation is a condition of admission (Chapter 1, section C) or when the second period is a condition of reinstatement (section G.2).

h. A recommendation for suspension or expulsion by the Honor Council.

Reinstatement

A student who has been denied continued enrollment may petition for reinstatement to the same program or for admission to a different one. The procedures for reinstatement are described in Appendix C Graduate Student Reinstatement Procedure.

Students whose petitions are granted are readmitted on probation as a condition of readmission. In such cases, the Readmission Committee usually stipulates enrollment in a specific number of hours or courses, as well as other conditions for probation. To regain regular status, the student who has been reinstated must satisfy conditions described in section F.3 for removal from probation.

Doctoral Degree

{Graduate Handbook, Chapter 3, section F & G}

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Students may be placed on probation as a condition of their admission to graduate programs if warranted by their academic record (Chapter 1, section C).

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c. Failure to meet published departmental or University requirements.

d. Failure to maintain satisfactory progress toward a graduate degree.

e. Failure in the preliminary examination (see section I) or the final examination (see section L).

f. Failure to acquire mastery of the methodology and content in a field sufficient to complete a successful thesis or dissertation.

g. Qualifying for placement on probation a second time, except when the first period of probation is a condition of admission (Chapter 1, section C) or when the second period is a condition of reinstatement (see section G.2).

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Registration

Assignment of Classes

In addition to consulting with their advisor, students should be familiar with the current undergraduate and graduate catalogs regarding assignments and curricula. The catalogs are the official source of information and are maintained on the university's academics website. {*University Handbook, F8*}

Registration

{*Graduate Handbook, Chapter 1, section D*}

Students who have been admitted to the Graduate School must register and pay their fees during the regular registration periods. Changes in enrollment must be approved by an advisor and the Dean of the Graduate School.

All graduate students who have matriculated at Kansas State University and are using faculty time or University facilities for research or other academic pursuits must be enrolled. Enrollment is defined as at least one credit hour and should reflect, as accurately as possible, the demands made on faculty time and the use made of University facilities. Further, a graduate degree candidate must be enrolled during the semester in which the degree requirements are completed.

{*University Handbook, F10-F12*}

No student is officially enrolled in courses or for private lessons in music or other subjects until a formal course assignment is completed. For more information see enrollment services.

Registration and assignment to classes take place on specific dates as shown on the academic calendar. No student may add a full-semester course after the seventh calendar day of the semester without the permission of the instructor. Students should enroll during the regularly scheduled registration periods in order to avoid late fees. More registration details, including dates for classes that run less than a full semester, can be found on the registrar's website.

Dropping and Adding Courses; Changing Colleges; Withdrawing from the University

{University Handbook, F64.1 to F64.7}

During the regular session, if a student wants to drop or add a course or if an instructor recommends a change, the student should confer with an advisor.

No student may add a course with 70 or more calendar days (10 or more weeks in length) after the 7th calendar day of classes without the consent of the instructor.

An instructor may drop a student from any or all components (e.g., lecture, recitation, lab, etc.) of a course if the student is absent at the beginning of the first class period of any component of the course. Students who cannot be in attendance should arrange prior permission from the instructor in order to avoid being dropped. For purposes of this procedure, enrollment in and payment of fees for a course do not constitute sufficient notification of intent to take a course.

The last day for dropping courses with 70 or more calendar days (10 or more weeks in length), without a "W" being recorded is at the 36th calendar day of the term. After the 68th calendar day of the term, courses may not be dropped. For courses less than 70 days (10 or more weeks in length), the drop dates are prorated. For more information see the Academic Policy.

A student may transfer from one college to another with permission from the dean or the dean's representative of the college into which the student proposes to transfer. For more information see the Academic Policy.

Students who decide to withdraw from Kansas State University must begin the official withdrawal process at the dean's office of their college. Note that dropping all classes requires withdrawing. For more information see Dropping All Classes or Withdrawing from K-State.

If a student withdraws during the first 36 calendar days of a 70 or more calendar day course (approximately 10 or more weeks in length), no mark will be recorded on the student's transcript. Thereafter, a mark of "W" is recorded; a course less than 70 calendar days (approximately 10 or more weeks in length), is prorated. The deadline for withdrawing is the end of the 68th calendar day of the term; for a course less than 70 calendar days (approximately 10 or more weeks in length), the withdrawal date is prorated.

Retake Policy

{Graduate Handbook, Chapter 2, section E.4 and Chapter 3, section E.4}

If the student received less than 3.0 in a course, the student may retake the course with approval of the major professor and the supervisory committee. If the course is retaken by the direction of the major professor and the supervisory committee, the original grade is noted as retaken and removed from the grade point average. The retake grade will always be used in computing the grade point average regardless of whether it is higher or lower than the original grade. A student may retake a course with

subsequent removal of the prior grade only once for each course and for a total of two courses in the program of study. An approved program of study must be on file in the Graduate School at the time the retake request is submitted. Retake requests must be made prior to enrolling in the course.

Examinations

University Handbook, F70-74

Semester final examinations are scheduled by the Committee on Academic Policy and Procedures. Once the final examination time for a course is published in the Course Schedule it may be changed only with the concurrence of the Provost and Executive Vice President. Faculty members may assign take-home examinations, projects, papers or other media in lieu of a written final examination. In such instances, the deadline for submittal of the alternative assessment may not be earlier than the end of the scheduled final examination period for the course. Course schedules can be found on the university's academics website.

Except for honors, problems, seminar, reports, research, laboratory practical, language, 8-week evening college, studio and fine arts performance classes, the last examination (either unit or comprehensive) must be given during the final examination period. No examination (unit or final) may be scheduled seven calendar days prior to the first scheduled day of semester examinations. (FSM 5/13/03)

Faculty members may not give the final examination at a time other than that published in the class schedule. The final examination may be given to an individual student under special circumstances at another time during final examinations. In particular, students who have more than two examinations scheduled in a 24-clock hour period (a 24-hour period starting at any time) and students who have conflicting exam times may petition the instructor(s) of the highest numbered non-group exam course(s) and schedule an alternate time for taking the final examination(s) at some other time during final examinations. If a student is unable to arrange the necessary rescheduling through the instructors involved, then the dean will resolve the overload problem, if all the scheduled examinations are within the same college. If the examinations in question are within the jurisdiction of different colleges, decisions regarding rescheduling shall be made by the Provost and Executive Vice President. (FS 2/12/08, revised)

University-sponsored events, on- and off-campus (such as extracurricular events, social activities, athletic events, and field trips) shall not be scheduled between 24 hours before the first scheduled final examination and the end of the last scheduled final examination. In addition, off-campus events shall not be scheduled to prohibit a student from being on campus between 24 hours before the first scheduled final examination and the end of the last scheduled final examination.

Exceptions to the scheduling restrictions for university events can be made under the following conditions:

- Approval for events must be obtained from the Provost and Executive Vice President and President of the Faculty Senate.
- For events scheduled well in advance, the approval must be obtained at least 18 weeks in advance.

Consideration may be given to approval of events whose scheduling is not known as long as 18 weeks in advance.

Students who plan to participate in approved events which conflict with final examinations may obtain from the Office of the Provost and Executive Vice President a statement certifying their participation in the event. Faculty may choose to make special arrangements for final examinations for students who are involved in such approved events.

Master's Student

{*Graduate Handbook, Chapter 2, Section J*}

Nature

A culminating experience is required to earn a master's degree. The culminating experience should verify the student's competence to synthesize information across the student's program of study. The culminating experience will occur after the

student has completed the program of study and other requirements or during the term in which the candidate intends to complete them. The Supervisory Committee is responsible for administering the culminating experience and must include at least 3 graduate faculty members. The majority of the Supervisory Committee must vote in favor for the student to pass his/her defense (a tie vote is a failure). The major professor is responsible for returning the signed ballot to the Graduate School.

For students pursuing a thesis or report option, the culminating experience shall be a defense of the thesis or report.

For students pursuing a coursework only degree, the experience may be an interpretation of scholarly work, a test of the student's understanding of the field or other culminating experiences. It is the responsibility of the academic unit to provide culminating experience guidelines for each coursework-only master's degree that the department offers. Examples could include concerts, portfolios, final written or oral examinations, case studies, or whatever the program deems appropriate.

Scheduling

In the case of a candidate writing a thesis or report, the examination cannot be scheduled until the supervisory committee certifies that a satisfactory copy of the thesis or report has been presented. The candidate must file with the Graduate School an Approval for Final Examination Form signed by each member of the committee. By signing this form, the faculty member indicates only that the form of the thesis or report is acceptable for review and that a final examination may be scheduled. Signing does not imply that the content of the thesis or report is satisfactory. When the examination has been scheduled, the Graduate School will send a final examination ballot and an ETDR ballot to the major professor and notify in writing all members of the committee regarding the time and place.

Final examinations should also be scheduled so as to give the supervisory committee at least two weeks to review the thesis.

Failure and Repetition

At least 2/3 of the supervisory committee must approve the candidate's performance before he or she is deemed to have passed the final examination. A refusal to vote by the major professor or any member of the supervisory committee shall be recorded as a negative vote. With permission of at least 2/3 of the supervisory committee, a candidate who fails a master's examination may take a second examination no sooner than two months nor later than 15 months after the failure, unless an extension is granted by the Dean of the Graduate School. A third defense is not allowed.

At least 2/3 of the members of the supervisory committee must sign the final ETDR before the ballot can be processed and the thesis or report submitted to K-REX.

Competency Revalidation of Courses

If a student's program of study includes any course credits more than six years old at the time the student is about to complete all degree requirements, the final master's examination will normally include an examination over the body of course work listed on the program of study.

The form and content of this competency examination is determined by each master's program which may impose additional requirements for revalidating the student's competency in the supporting course work. In a master's program for which such a revalidation examination may be inappropriate, an exception to this policy may be sought from the Dean of the Graduate School.

Doctoral Student:

{*Graduate Handbook, Chapter 3, Section I and Section L*}

Preliminary Examination

A student must be in good academic standing to take a preliminary examination. The required written preliminary examination may be supplemented by an oral examination as prescribed by the supervisory committee. These are designed to test the student's breadth and depth of knowledge in the proposed field of specialization, as well as the student's ability to explore problems on the boundaries of knowledge. Satisfactory performance in the examination is an indication that the student is prepared to perform independent work toward the doctoral degree and results in the student being classified as a doctoral candidate upon affirmative recommendation by the supervisory committee. The examination may be scheduled after the program of study is filed and at a time deemed appropriate by the supervisory committee. The preliminary examination must be completed at least 7 months before the final oral examination.

Once the supervisory committee and the student decide when the examination is to be taken, the student should notify the Graduate School one month before the scheduled date. A ballot is sent to the major professor by the Graduate School. Copies of the examination are filed with the academic unit and made available on request to any graduate faculty member for a period of two years from the date of examination. Students must enroll in at least one credit hour during any and all semesters in which they are actively engaged in the preliminary examination process.

The results of the preliminary examination are indicated on the ballot by the signatures of those members of the departmental or program examining committee responsible for administration and grading of the examination. The format of the examination and the structure of the examining committee may differ among doctoral programs, and in some programs, the examining committee will differ from the supervisory committee. Within one week following the completion and determination of the results of the preliminary examination, including those of any oral portion, the supervisory committee must sign the ballot indicating that the preliminary examination has been completed and recommending approval or disapproval of the student's admission to candidacy for the doctoral degree. The student is considered to have passed the examination and to be recommended to candidacy if at least three fourths of the supervisory committee voted to approve candidacy.

In case of failure of the first preliminary examination, the supervisory committee may approve a second examination with no more than one dissenting vote. A second examination can be taken no sooner than three months following the initial failure. Once the supervisory committee and the student decide when the second examination is to be taken, the student should notify the Graduate School one month before the scheduled date. The composition of the supervisory committee shall not be changed before a final decision is reached on admission to candidacy. A second failure constitutes denial of admission to candidacy for the doctoral degree in the field of study of the graduate program. As with the first examination, the signed ballot must be returned to the Graduate School within one week of the determination of the results of the examination.

Student Records

University Handbook, F41-42 & F44

Student Records

Kansas State University is in compliance with the Family Educational Rights and Privacy Act (FERPA) of 1974, as amended; this law established specific guidelines concerning the release of information and the students' privileges to inspect and review their own educational records. The Kansas State University student records policy can be found on the Registrar's website. For additional information about student records see Student Confidentiality.

Directory Information

Certain information concerning students is considered to be open to the public upon inquiry. This public information is called directory information. See the Student Records Policy.

Restriction of Records

In the case of a student who is delinquent in an account to the university, including unpaid traffic or parking violations, or about whom official disciplinary action has been taken, the appropriate university official may request that the student's record not be released. The effect of this action is that transcripts are not released, and registration forms are withheld. In order for the action to be rescinded, the hold must be cleared via KSIS, indicating that the student has met the obligation. For more information about when records may be withheld, see the Student Records Policy.

Disclosures

State Authorization Information

In accordance with the U.S. Department of Education's new regulation (34 C.F.R. § 600.9) regarding legal authorization to provide postsecondary education through distance or correspondence education in a state in which it is not physically located or in which it is otherwise subject to State jurisdiction as determined by the State, Kansas State University abides by the relevant authorization within each state.

Students seeking to enroll in a Kansas State University distance education program residing outside the state of Kansas, but within the United States, District of Columbia, and U.S. Territories (excludes International locations), should check the University's authorization status below or contact the K-State Global Campus at global@k-state.edu or (785) 532-5575 or toll free at 1-800-622-2578.

National Council for State Authorization Reciprocity Agreements:

On February 9, 2015, Kansas State University became an institutional participant in the National Council for State Authorization Reciprocity Agreements (NC-SARA) initiative. Kansas State University programs are automatically available to students who reside in 49 participating states. The only states that are not part of the NC-SARA agreement are listed below, which also shows K-State's status to operate in those states.

The NC-SARA agreement does not apply to students enrolled at one of K-State's physical campuses (Manhattan, Salina, Olathe, or other approved locations).

California

As an out-of-state public institution, Kansas State University is exempt from the California Private Postsecondary Act of 2009, Section 94858, of the California Bureau for Private Postsecondary Education, which only requires private postsecondary educational institutions to obtain state approval prior to operating. [November 10, 2011] In addition, California does not regulate programs that are 100% online, unless they are physically located in the state.

For a full list of statements and disclosures at K-State, please refer to the statements and disclosures page.

Tuition and Fees

Division of Financial Services Office

The K-State Division of Financial Services Office maintains all tuition and fee information on their website. Links to specific items are listed below:

- Current tuition and fee rates
- Electronic billing statement (eBill) general information

- How to check your billing statement online

Late Enrollment

A $65.00 Late Enrollment Fee (non-refundable) will be assessed for any student who enrolls in their first class on or after the first day of the term. See the Academic Calendar for official term dates.

Student Account

Students can access their account balance in the student information system, KSIS by clicking on the "Pay Now/Direct Deposit" link in the Student Center.

Glossary and Abbreviations

A/Pass/F: A grading option in which a student earning a grade of A in a course will have an A recorded for that course; a grade of B, C, or D will be recorded as a Pass; and a grade of F will be recorded as an F.

Academic good standing: (as displayed on enrollment verification form)

- YES = Student is in good standing; eligible to re-enroll; not dismissed
- NO = Student is not in good standing; not eligible to re-enroll; dismissed

Academic load: The total number of credit hours enrolled in during one term.

Academic warning: (Warning) An indication that a student is in academic difficulty which could lead to dismissal from the university.

Add/Drop: Changing the student's course schedule by adding and/or dropping a course.

Advanced standing: Having credit awarded for previous work or testing.

Advisor: A department or college-based faculty member who helps a student achieve her or his educational goals by providing guidance on courses, program requirements, prerequisites, programs of study, and policies and procedures.

Audit: Auditing is participating in a class regularly without submitting class work and without receiving credit. University Handbook, Section F: Instruction: Academic Procedures F66.1 and F66.2.

Bachelor of arts degree: (B.A.) Courses selected from a variety of disciplines with concentrations in one or two areas. A modern language is required for a B.A. degree.

Bachelor of science degree: (B.S.) A specified program of required courses with fewer electives than the B.A. A modern language is not required.

Baccalaureate: Refers to the bachelor's degree.

Certificate programs: A non-degree credential designed to provide students with specialized knowledge that is less extensive than, and different from an undergraduate or graduate degree program. A certificate program represents a focused collection of courses that, when completed, affords the student some record of coherent academic accomplishment in a given discipline or set of related disciplines.

Classification: Level of progress toward a degree with classifications of freshman, sophomore, junior, or senior, depending on the number of term hours completed.

College: An academic unit of the university. Kansas State University has nine colleges.

Cooperative education (co-op): The integration of academic experience with planned employment experiences that relate to a student's academic major or career goals. The work experience supplements and complements the curriculum.

Concurrent enrollment: (Conc.) This term usually means the student is enrolled in High School and is taking college credit at the same time.

Course: A unit of study a student enrolls in during a term.

Credit by examination: Credit received when a student takes an oral or written examination without enrolling for a course.

Credit hour: (Cr.) The amount of effort required to attain a specific amount of knowledge or skill equivalent to three hours of effort per week for 15 weeks. Any combination of contact time and effort outside of class is allowed (University Handbook: Section F115).

Credit/No Credit: (C/NC) A grading option with successful completion of a course recorded as Credit and failure as No Credit. No other grades are given for such courses and they are not figured into the grade point average.

Cross-listed course: The same course offered by two or more academic units and identified by the same course number and course name, but with different course prefixes (Ex: KIN 635 and HN 635 Nutrition & Exercise). Cross-listed courses are noted in the catalog, and are subject to the retake policy as repeated courses.

Curriculum: A program of courses that meets the requirements for a degree in a particular field of study, also referred to as a major.

Degree program: Courses required for completion of a particular degree.

Department: A unit within a college representing a discipline.

Discipline: An area of study representing a branch of knowledge, such as mathematics.

Dismissal: (Dismissed) A student who neglects his or her academic responsibilities may be dismissed on recommendation of an academic dean.

Double major: A student may elect to pursue two majors at one time.

Drop/Add: Changing the student's course schedule by adding and/or dropping a course, or both.

Dual degrees: A student may elect to pursue two degrees at one time.

Ed.D.: Doctor of Education degree. A post-baccalaureate degree awarded upon completion of at least three years of full-time specialized study, together with a major research contribution to the field of education that demonstrates independence as a scholar. The degree culminates with a formal dissertation.

Electives: Courses chosen by a student that are not required for the major or minor. The number of hours of electives required varies according to a student's major.

Enrollment: The process of selecting courses and having courses reserved.

Equivalent course: (Equiv.) Courses offered by the same academic unit with different course numbers and course names, but the same course prefix (Ex: STAT 325 Introduction to Statistics, STAT 340 Biometrics, STAT 350 Business & Economic Statistics). Equivalent substitute courses are noted in the catalog that they cannot be taken for credit if credit has been received in specified equivalent course(s). Equivalent courses are subject to the retake policy as repeated courses.

Extracurricular: Activities such as band or debate for which a student may earn credit toward graduation. Extracurricular activities are counted as electives.

Financial aid: Help for a student to pay for college. Aid is available from grants, loans, scholarships, and work/study employment.

Grade point average: (GPA) A measure of scholastic performance. A GPA is obtained by dividing the number of grade points by the hours of work attempted, where an A = 4 points, a B = 3 points, a C = 2 points, a D = 1 point, and an F = 0 points.

Graduate student: A student who has completed a bachelor's degree and has met all the requirements for admission to the Graduate School.

Intersession: Courses offered between terms.

Lecture: (Lec.) A course wherein the teaching is done primarily through oration.

M.A.: Master of arts degree. A post-baccalaureate degree awarded upon completion of at least 30 term hours of graduate credit, usually in the humanities or social sciences. May or may not include research and a thesis, depending on the field of study.

Major: A program of courses that meets the requirements for a degree in a particular field of study.

Minor: A systematic program of study in an area of emphasis outside a student's major.

M.S.: Master of science degree. A post-baccalaureate degree awarded upon completion of at least 30 term hours of graduate credit, usually in the sciences or professions. Research and a thesis are required in most of the sciences.

Non-Degree seeking student: A student taking courses at K-State, but not admitted to a program leading to a degree.

Non-Standard Course: A course that does not meet the guidelines of a Regular Session course.

Option: An approved group of courses creating a specialty within a major field of study.

Orientation: Activities designed to help new students become acquainted with the university.

Ph.D.: Doctor of philosophy degree. A post-baccalaureate degree awarded upon completion of at least three years of full-time specialized study, together with a major research contribution to the discipline that demonstrates independence as a scholar. The degree culminates with a formal dissertation.

Prerequisite: (Pr.) A requirement, usually credit in another course, which must be met before a particular course can be taken.

Probation: Probation is an academic warning that a student in is academic difficulty which could lead to dismissal from the university.

Recitation: (Rec.) A small section usually taken in conjunction with a lecture.

Regular Session Course: A course that meets for the first time during the first 7 calendar days of the semester and that has its last class meeting during the final 7 calendar days of the semester.

Repeatable Course: A course that may be taken multiple times without being subject to the retake policy. There may be a credit hour or course count limit associated with a repeatable course.

Scholastic honors: An award an undergraduate receives based on the excellence of K-State academic work.

Secondary major: Interdisciplinary major which must be completed along with a primary major course of study.

Special student: An undergraduate student taking courses at K-State but not regularly enrolled in work toward a degree.

Transcript: An official copy of a student's permanent academic record.

Transfer student: A student who terminates enrollment in another college or university and subsequently enrolls at K-State.

Undergraduate student: A university student who has not received a bachelor's degree.

Variable: (V/Var.) The credits earned in some courses may vary.

Graduate School Admission

- Admission Categories
- Admission Procedures
- Entrance Requirements
- Graduate Assistants
- Graduate Study by Seniors and Undergrad Special Students
- Graduate Work by Faculty and Staff
- Registration and Enrollment
- Standardized Tests

For more information please contact:

Kansas State University
Graduate School
119 Eisenhower Hall
Manhattan, KS 66506-1103
Voice: (785) 532-6191 or (800) 651-1816
Fax: (785) 532-2983
www.k-state.edu/grad
grad@ksu.edu

International Programs

304 Fairchild Hall
785-532-5498
Fax: 785-532-6550
E-mail: oip@k-state.edu
www.k-state.edu/oip

The mission of the Office of International Programs is to lead the internationalization of Kansas State University by supporting and collaborating with faculty, students, and scholars in international education and research worldwide.

Building upon several decades of international involvement, K-State provides a range of programs that link the campus with other parts of the world. Many of these are coordinated through individual departments or colleges; others serve the whole university.

The Office of International Programs supervises the Study Abroad Program, the English Language Program, the International Undergraduate Recruiting Office, and the International Student Center, and provides a range of services and support to faculty and students.

Education Abroad Program

Joe Milostan, Director
Brent Holliday, Assistant Director

304 Fairchild Hall
785-532-5990
Fax: 785-532-6550
www.k-state.edu/studyabroad/

The Study Abroad Office is the first stop for students planning to study, volunteer, intern, or research abroad. We offer a variety of academic programs that prepare students for success in an increasing global society. Programs range from short term faculty-led and group programs to individual summer, semester, and academic year opportunities. Programs are available in Africa, Asia, Australia, Europe, North America, and South America. With over sixty individual exchange programs and several hundred affiliation agreements worldwide students are able to find a program that matches their needs and interests. Exchange programs involve reciprocal partnerships with universities abroad that allow students to attend partner universities while paying K-State, in-state tuition and study abroad fees to K-State. Additional program options are available through direct enrollment and affiliated program providers. Faculty-led programs are study abroad courses taught internationally by K-State faculty and are coordinated by the Study Abroad Office in cooperation with the academic departments.

Federal Financial Aid and most scholarships can be used towards study abroad. The Study Abroad Office encourages students to apply for local and national study abroad scholarships in addition to the scholarships available through the Study Abroad Office. Select scholarships for foreign study are listed below:

Education Abroad Scholarships

Scholarships available through the *Office of International Programs/Study Abroad* include:

- Goss Discovery Scholarship
- Megan E. Taylor Czech Republic Student Award
- Duane and Shirley Acker International Scholar Award
- The Catherine Joyce Memorial Scholarship
- Doris Hays Fenton Memorial Scholarship
- Elfrieda Nafziger Scholarship
- The Heather Stewart Memorial Scholarship
- Mary Lynn Manning Study Abroad Scholarship
- Rodolfo J. Montes de Oca/Costa Rica Small Town International Scholarship
- The Vernon Larson Study Scholarship
- Veronica Bonebrake International Scholarship
- API, ISA, and USAC KSU Scholarships
- Noble-McCants Study Abroad for Northern Ireland Scholarship

Scholarships available through *other offices* include:

College of Agriculture International Study Scholarship
117 Waters Hall

College of Business Administration - Larry and Patricia Kendall Study Abroad Scholarship
1001 College of Business Building

College of Engineering International Experience Grant
1046 Rathbone Hall

College of Human Ecology International Study/Service Scholarships
119 Justin Hall

Blue Key
103 Leadership Studies

Department of Modern Languages Scholarships (language majors only)
104 Eisenhower Hall

Gilman, Boren, Fulbright, and Critical Languages Scholarship
Jim Hohenbary
215 Fairchild Hall

International Admissions and Recruiting

Kristin Oberheide, Director
203A Fairchild Hall
785-532-7277
Fax: 785-532-4311
E-mail: intladmit@k-state.edu
www.k-state.edu/oip/intladmit

International Admissions and Recruiting is a sub-unit within the Office of International Programs at Kansas State.

We help prospective students around the world with the processes of applying to and attending Kansas State University. We also help our K-State faculty, staff, and student family understand unique aspects of international student admissions and academic credentials. Finally, we help bring great students to campus to increase our global diversity.

We are: Two Admissions Specialists, Two International Recruiters, One Senior Administrative Assistant, one Assistant Director, and one Director, as well as three student employees and one graduate student intern.

We provide the following services:

1. Provide detailed information about K-State's English Language Program and Undergraduate programs, and general information about Graduate programs that are offered at K-State
2. Represent K-State at recruitment fairs and international high schools around the world
3. Answer questions about the application process as well as the status of submitted applications
4. Evaluate educational credentials and admit English Language Program and Undergraduate international applicants
5. Evaluate financial documentation and process immigration documents for visa purposes and provide basic immigration information
6. Send acceptance documents and communicate important pre-arrival information to students
7. Help students make a decision to study at Kansas State University
8. Meet students at the Manhattan, KS airport at the start of the semester and assist with new student orientation programming

International Student and Scholar Services (ISSS)

Sara Thurston, PhD, Director
104 International Student Center
785-532-6448

Fax: 785-532-6607
E-mail: isss@k-state.edu
www.k-state.edu/isss

The staff at International Student and Scholar Services (ISSS) provide vital services for K-State's around 2,500 international students, scholars, and their families. This includes advice on U.S. immigration regulations, support during their stay in the U.S., and cultural programs. The staff assists them with visa and passport issues, work authorization, entry and exit documentation, certification of status forms, housing, programming and personal concerns. ISSS also offers assistance to faculty and departments wanting to bring international scholars to the United States. Additionally, the staff serves the entire campus as a resource on international student and scholar issues. The office operates under the Office of International Programs and works with all facets of the University to implement and support both the goals of each student and scholar and the goals of the University in international education. Staff members provide leadership and support for a variety of programs that promote global awareness and understanding.

ISSS is housed in the International Student Center which is composed of three building that have been completely funded by private gifts to K-State. The Taiwan Wing houses most of the staff. The Korean Room houses the director's office and office meeting space. The Center provides a comfortable relaxed atmosphere where people can meet or attend various programs. It includes a multipurpose meeting room, kitchen, reading lounge, and small classroom. Rental of the facilities is available.

Admission Information for Graduate International Students

Admission Information for Undergraduate International Students

International Student and Scholar Services

English Language Program

Mary Wood, Director
Ketty Reppert, Associate Director of Academics
Leena Chakrabarti, Associate Director of Student Services

Instructors: Ben-Itzhak, Brunner, Carel, Chappell, Climenhaga, Darnell, Gramp, Iagosz, Kelly, Law, McConnell, and Peverill
Emeritus: Cocke, Franchitti, Ossar, and Williams
205 Fairchild
785-532-7324
Fax: 785-532-6550
E-mail: elp@k-state.edu
www.k-state.edu/elp

The English Language Program offers intensive English courses primarily for international students who plan to enter degree programs at K-State. However, it also accepts students who wish to come for English instruction only.

The program offers five levels of full-time intensive English. It also offers advanced part-time courses specifically for students who need support in English while taking classes in their degree field (DAS 176, 177, and 178).

International undergraduate applicants do not have to submit a TOEFL score. They can be admitted on their academic credentials only. Once they arrive at K-State, if students do not provide other evidence of English proficiency, they must take the English Proficiency Test (EPT). If their test scores place them in English classes, they must enroll in them. This is the condition for beginning academic work. The admission policy follows below:

If you meet academic requirements, Kansas State University can admit you with no proof of English proficiency. Once you arrive, you will be required to take the English Proficiency Test (EPT). The results of the EPT will determine if you need to study

English, either full-time or part-time, or if you are ready to begin full-time university classes. This is to make sure that you have the necessary English skills to be successful in your career here at K-State.

The program also screens the English proficiency of incoming non-native speakers of English. For other information and a brochure, write or e-mail the English Language Program at the addresses above.

International Curricula

Students seeking to enrich their college experience and enhance their personal and professional development may take advantage of several interdisciplinary international education opportunities.

College of Agriculture

Don Boggs
117 Waters Hall
785-532-6151
Fax: 785-532-6897
E-mail: dboggs@k-state.edu
www.ag.k-state.edu

The College of Agriculture offers opportunities for international travel through faculty-led study tours, summer exchange programs, semester abroad program, and summer internships in other countries. Scholarship or grant support is provided for all College of Agriculture students who travel internationally to study topics related to their major. A minor in international agriculture is available to students with agricultural majors. The minor requires a combination of language, international course work, and experience abroad.

College of Agriculture International Scholarships

Contact: Don Boggs 785-532-6151

- Boggs International Agriculture Scholarship
- Brown International Travel Award
- Galle International Agricultural Scholarship
- Lewis International Study Scholarship
- Morgan Family International Study Scholarship
- Stunkel International Travel Award Honoring Fred Cholick
- Wolfe International Scholarship

College of Arts and Sciences

Robert Clark, Director International and Area Studies
014A Eisenhower Hall
785-532-1988
Fax: 785-532-7004
E-mail: ias@k-state.edu
www.k-state.edu/ias

The College of Arts and Sciences offers two international, interdisciplinary secondary majors and two minors to undergraduates in any college: International Studies secondary major and Latin American Studies secondary major, East Asian Studies minor and African Studies minor. For more information, reference to these programs select either or find them listed in Colleges and Departments.

College of Business Administration

Student Services
107 Calvin Hall
785-532-6180
Fax: 785-532-7809
E-mail: cbastusv@k-state.edu
www.cba.k-state.edu

The College of Business Administration offers several opportunities to its students to learn about global business issues and practices as they prepare to meet the future challenges in the global marketplace. In addition to study abroad programs and faculty-led trips abroad, business students can earn a Certificate in International Businessoffered by the College of Business Administration or earn a secondary major in International Studies offered by the College of Arts and Sciences. Scholarships are often available for business students who travel internationally to study topics related to their major.

International Service Teams

Kaitlin Long, Program Coordinator and Instructor
1300 Mid-Campus Drive N
Manhattan, KS 66502
785-532-6085
Fax: 785-532-6896
E-mail: KaitlinL@k-state.edu
http://www.k-state.edu/leadership/programs/serviceteams/internationalteams/

Since 1989, K-State has supported interdisciplinary teams of undergraduate students in service-learning experiences abroad. These teams work alongside community partners on locally organized and run community initiatives. The International Service Teams, a program of the Staley School of Leadership Studies, currently partners with community organizations in South Africa, the Dominican Republic, Kenya, Paraguay, and The Gambia. Participants apply and are selected in the fall semester prior to the summer experience; they enroll in a spring semester preparatory course before departing for an eight to ten week engaged service-learning experience during the summer. Students work with local community partners and are involved with ongoing reflection during their time abroad. Upon return to Kansas State, they participate in a reflection course to process their learning experience and plan for future action.

K-State Research and Extension

J. Ernie Minton, Director, K-State Research and Extension and Dean College of Agriculture
Martin Draper, Associate Dean for Research and Graduate Programs
Gregg Hadley, Associate Director for Extension

113 Waters Hall
785-532-6147
www.ksre.k-state.edu

K-State Research and Extension is dedicated to a safe, sustainable, and competitive food and fiber system and to strong, healthy communities, families, and youth through integrated research, analysis, and education.

K-State Research and Extension provides practical, research-based information and educational programs to address critical issues facing individuals, families, agricultural producers, business operators, and communities.

K-State Research and Extension is organized into the following core mission themes; agricultural industry competitiveness; food, nutrition, health, and safety; natural resources and environmental management; youth, family and community development.

One K-State Research and Extension partner, the Kansas Agricultural Experiment Station (KAES), conducts original research both on and off campus. Twenty-four departments in five colleges are involved. K-State Research and Extension is also strongly allied with the Graduate School in training graduate students; interested graduate students are encouraged to seek research assistantships. Many undergraduate students work for K-State Research and Extension, which greatly adds to the classroom experience. Off-campus research is centered at two research-extension centers, two research centers, and 10 experiment fields in various parts of the state.

The other K-State Research and Extension partner, the Cooperative Extension Service, provides an important learning bridge between the university and the people of the state. It applies scientific knowledge, principles, and practices to the grassroots problems of Kansans. At the same time, this unique information delivery system brings back requests for new knowledge to the research staff at the university.

The Cooperative Extension Service staffs four area offices (two operate as part of a Research/Extension Center) and helps maintain local extension offices, staffed by off-campus K-State faculty members, in all 105 Kansas counties.

Extension agents are responsible for conducting educational programs in the core mission themes. The agents serve as a local source of information regarding programs of many states and federal agencies, and then help people apply this information to their specific situation.

Information is published in scientific journals; in station bulletins, extension bulletins, national and international conferences; and in popular journals and news releases to the press and radio and television stations. Requests for station publications should be sent to the Distribution Center, Umberger Hall.

Agricultural Experiment Station

Western Kansas Agricultural Research Centers: Colby-Garden City-Hays
Robert L. Gillen, Head and Professor

Agricultural Research Center-Hays
Professors: Martin, Seifers, and Stahlman
Associate Professors: Harmoney and Kofoid
Assistant Professors: Jaeger and Michaud

Investigations are primarily related to plant and animal systems specific to western Kansas, where rainfall is limited. They include beef grazing, feeding, and breeding studies; crop improvement, with special emphasis on wheat and sorghum; soil management; weed control; plant disease; and insect management.

Northwest Research-Extension Center-Colby
Professor: Lamm; **Associate Professor:** Aiken

Major areas of research are crop improvement; soil management; irrigation; weed control; and horticulture.

Southwest Research-Extension Center-Garden City and Tribune
Professors: Klocke and Schlegel
Associate Professors: Buschman and Currie

Current investigations involve irrigation research; dryland soil and crop management; crop improvement; weed control; insect and other pest control in crops; soil management; and environmental management for livestock operations.

Southeast Research-Extension Center
J.D. McNutt, Head
Professors: Moyer and Sweeney; **Associate Professor:** Kelley; **Assistant Professor:** Long

Research focuses on soil and water conservation; crop improvement; weed control; beef cattle grazing investigations; and forages.

Experiment fields
The Kansas Agricultural Experiment Station includes 11 experiment fields: North Central Kansas (Belleville), Irrigation (Scandia), Sandyland (St. John), South Central Kansas (Hutchinson), Harvey County (Hesston), East Center (Ottawa), and Kansas River Valley Irrigation (Rossville and Silver Lake).

Experimental work is devoted to horticultural and forest crops at three fields: John Pair Horticultural Research Center (Wichita), Pecan Experiment Field (Chetopa), and East Central Horticulture Field (Olathe).

Affiliated agencies

Kansas Water Resources Research Institute
Cooperating with the Water Resources Institute, University of Kansas

The Kansas Water Resources Research Institute conducts basic and applied research on water use and to train scientists in water resources. Representatives of K-State and the University of Kansas participate in institute policy making and research. Research is focused on finding the most effective ways of conserving, using, and distributing available water.

Food Science Institute
Jeanette Thurston, Director

The Food Science Institute facilitates training of undergraduate and graduate students; basic and applied research initiatives; and technical and scientific information transfer to academia consumers, food industry, and governmental agencies. More than 40 faculty are members of the food science graduate faculty. Faculty are located in the Departments of Agronomy; Animal Sciences and Industry; Biochemistry; Chemical Engineering; Communications; Diagnostic Medicine/ Pathobiology; Entomology; Grain Science and Industry; Hotel, Restaurant, Institution Management and Dietetics; Human Nutrition; and Journalism and Mass Communications.

Center for Applied Statistics
George A. Milliken, Director

The Center for Applied Statistics provides consulting services for scientists associated with the Agricultural Experiment Station.

Kansas Center for Agricultural Resources and the Environment
Dan Devlin, Director

The Kansas Center for Agricultural Resources and the Environment (KCARE) is an interdisciplinary research and education unit of K-State Research and Extension whose purpose is to provide focus on environmental issues related to agriculture. The center works with faculty from academic departments to provide coordination and support for research and educational activities in natural resources and environmental management. The center also works to garner financial support for programs and serves as a single point of contact for agencies and organizations outside K-State who have interest in natural resource and environmental issues.

Kansas Center for Sustainable Agriculture and Alternative Crops

KCSAAC is an interdisciplinary center that supports family farms in Kansas through research, education, and outreach programs focusing on production, storage, processing, and marketing technologies that boost small farm profitability, protect natural resources, and enhance rural communities. Examples of activities include evaluating production and marketing of new crops for Kansas, providing educational programs on value-added processing and niche marketing, and providing educational programs on whole farm planning and environmental assessment. KCSAAC was created by the 2000 Kansas Legislature out of concern for the survival of family farms.

Plant Biotechnology Center
John Leslie, Director

The Plant Biotechnology Center links scientists in several colleges and departments who use molecular biology and cell and tissue culture to modify the plant genome. The center's mission is to use biotechnology to add quality and value to Kansas products.

The major emphasis is to develop systems, approaches, linkages, and a knowledge base to apply biotechnology to plant improvement. The goals are to enhance yield and product quality for traditional uses and to explore value-added uses for novel markets.

Projects include activities that are immediately important to Kansas agriculture and that have a high probability of success in a relatively short period of time. They also include a component of basic research that will reach application at a later time. An important consideration is work on Kansas plants and plant products that could be designed to better meet the demands of national and international markets.

Extension Agriculture and Natural Resources

Faculty in the Colleges of Agriculture and Engineering conduct educational programs and provide technical assistance through the county extension network to citizens throughout the state.

Interdisciplinary educational programs are conducted in water quality; natural resource use and conservation; community and economic development; value-added processing and production; food, feed, forage; animal production and utilization; and farm business and financial management.

Agricultural Economics

David Lambert, Head
Glynn Tonsor, State Leader

Farm management
The extension educational program in farm management is divided into two areas: Kansas Farm Management Association programs and area and state farm management programs.

In the Kansas Farm Management Association program, the 23 farm management agricultural economists conduct an intensive educational program with approximately 3,000 Kansas farm families in the six farm management associations.

The extension farm management program is conducted by state specialists and area economists. It is done with in-depth educational programs in cooperation with the county extension agents. The area specialists conduct in-depth workshops in farm business management with farm families, provide a nearby reference resource for agents, and develop educational materials for agent use.

Agricultural policy
The public affairs extension educational program provides educational information on policy issues of current interest. Problems are analyzed, alternatives and consequences examined, and the people are challenged to reach decisions.

The economic information program provides current data on factors affecting farming, business and industrial operations, labor supply and demand, and family living costs.

Extension marketing
The main projects of marketing include marketing information, agribusiness, and commodity marketing activities. News releases, monthly teleconferences, publications directed to the general public, and special information directed toward specific agricultural audiences are used to disseminate information.

Extension economic development
Extension economic development assists communities and businesses in development efforts. News releases, publications, and seminars are offered.

Extension local government
The extension local government programs provide direct educational assistance in the areas of structure, management, finance, and policy. The Office of Local Government serves as the primary unit providing outreach programming in this area.

Extension Agronomy

William Schapaugh, Interim Head

Extension agronomy conducts a statewide educational program in agricultural crop production and natural resource conservation. The program is focused on conservation and protection of natural resources through education and technology transfer that results in improved, stable crop production efficiency. The breadth of the program is in understanding the dynamics of crops, weeds, soils, and water on crop and grazing lands, management, and production.

Extension Animal Sciences and Industry

Michael Day, Head
Joel DeRouchey, State Leader

Extension specialists in animal sciences and industry provide leadership for state programs in beef cattle, dairy cattle, horses, poultry, sheep, swine, meats, dairy products, value-added food products, food safety, and wildlife damage control.

Extension Biological and Agricultural Engineering

Joseph P. Harner, Department Head and State Leader
Professors: Harner, Murphy, and Rogers; **Associate Professor:** Taylor; **Assistant Professor:** Wolf; **Emeriti Professor:** Clark, Jepsen, Koelliker, Powell, and Wendling.

Extension agricultural engineering conducts an educational program which relates to engineering principles to agricultural concerns including water management, water quality, waste management, crop and grain management systems, food processing, ag safety, pesticide application equipment, and livestock production facilities.

Community Vitality

Associate Specialist: Menon, Steen, Daniels, Rice; **Emeritus Associate Specialist:** McAdoo.

The Kansas PRIDE Community Improvement Program is a cooperative effort between government, education, and private industry to develop an organizational and leadership structure for community-wide volunteer action. The Kansas PRIDE program is jointly administered by the Kansas State University Cooperative Extension Service and the Kansas Department of Commerce and Housing.

Extension Entomology

Brian McCormack, Interim Head

Extension entomology is concerned with integrated insect and mite management or control for Kansas citizens. Pilot pest management projects are used to introduce and validate integrated approaches to managing pest populations.

Extension Grain Science and Industry

Gordon Smith, Head

Educational efforts target all sectors of the grain industry and include people involved with wheat breeding, production, grain handling, merchandising, processing, baking, feed manufacturing, and regulatory compliance. Two thrusts of this program include grain utilization and processing quality; and flour mill, feed mill, and grain elevator management. Subjects include wheat quality as it relates to milling and baking properties, commercial and on-farm grain storage and quality maintenance techniques, on-farm feed manufacturing, commercial feed processing, grain industry safety and regulatory compliance, plant sanitation, food safety, and grain grading.

Extension Horticulture, Forestry, and Recreation Resources

Steven Keeley, Interim Head
Jason Griffin, State Leader

Programs in extension horticulture and landscaping serve persons interested in fruits, nuts, vegetables, flowers, turf, shrubs, ornamental and shade trees, and forest and riparian management.

Extension Plant Pathology

Meghan Kennelly, Interim Head
Douglas J. Jardine, State Leader

Plant pathology extension specialists provide information about the occurrence and nature of plant diseases and the economic means for their control.

Youth, Family, and Community Development

Community Development

VACANT, Extension PRIDE Program Coordinator
Associate Specialists: Rice; **Emeritus Professor:** Frazier; **Emeritus Associate Specialist:** McAdoo.

An educated and knowledgeable citizenry is the foundation of our state's economic productivity, democratic charter and social system.

K-State programs inform and help people through research and extension build strong, healthy communities.

4-H Youth Development

Professor: Weber; **Associate Professor:** Potter, Jepsen, Sea, Van Horn; **Associate Specialist:** Wiebers; **Extension Associate:** Hecht; **Emeriti: Professors:** Apel, Bates, Busset, Eyestone, and Redman; **Emeriti Associate Professors:** Borst and Salmon.

The 4-H youth development program is a community of young people across Kansas who are learning leadership, citizenship and life skills. Utilizing a variety of delivery methods and trained volunteers, young people ages 7-19 are involved in hands-on learning experiences. Program priorities include science and technology, healthy lifestyles, and youth citizenship.

Family and Consumer Sciences

Family Studies and Human Services

Sonya Lutter, Head
Assistant Professor: Johannes; **Emeritus Professor:** Bradshaw.

Extension programs address a wide range of issues that help strengthen families and youth across Kansas. Programs teach families about financial planning, parenting, family communication, health, and aging issues.

Food, Nutrition, Dietetics, and Health

Mark Haub, Head
Tanda Kidd, Extension State Leader
Professor: Medeiros; **Associate Professor:** Higgins; and **Assistant Professor:** Kidd.

Healthy eating and physical activity education across the lifespan is available through local extension offices in Kansas. Human nutrition faculty lead programming for nutrition for pregnancy, infants, children and youth, adults, and seniors. All of these include programming for limited resource families and individuals.

Services and Facilities

Communications

Jason Ellis, Head

In addition to its teaching and research program, the Department of Communications provides comprehensive communications and computer-based technology support and consultation for all offices, departments, and centers in K-State Research and Extension and the College of Agriculture.

Our faculty have professional experience in editing and producing publications, creating graphic design, writing news releases, producing radio and television news and features, managing information systems, training to enhance communication and technology software skills, and duplicating and distributing educational materials.

Extension Field Operations

James L. Lindquist, Associate Director
Professor Emeriti: Cox and Van Meter; **Associate Professor Emeriti:** Albright and McReynolds.

The Extension Field Operations office provides leadership as a resource and support to the area director team. It provides leadership for organizational guidelines, policy and centralized functions in support of out-state local operations, and professional development of effective boards and councils.

Northeast Regional Office

Chris Onstad, Regional
Professor: Duncan; **Instructors:** Andres, Boyer, Flaming-Jackson, Graber, and Mack; **Instructor Emeriti:** Christian and Domsch.

Northwest Research-Extension Center

Aliesa Woods, Regional Director
Associate Professors: Barker, Johnson, O'Brien, and Olson; **Instructors:** Falk; **Assistant Professor Emeriti:** Mikesell and Overley; **Director Emeritus:** White.

Southeast Research-Extension Center

J. D. McNutt, Director
Professor: Price; **Instructor:** Hinshaw; **Assistant Professor:** Shoup; **Professor Emeriti:** Brazle, Kilgore, Lippert, Robbins, and Westmeyer; **Associate Professor Emeritus:** Appleby; **Instructor Emeriti:** George and Stephens.

Southwest Research-Extension Center

Mary Sullivan, Director
Professor: Sloderbeck; **Assistant Professors:** Martin and Waggoner; **Instructors:** Dumler and Sollock; **Professor Emeriti:** Mann, Hartman, and Young; **Instructor Emeriti:** Frisbie.

Local Extension Offices

There are extension offices in each of the 105 counties.

Services for Students

101 Holton HallAcademic Assistance Center

785-532-6492
www.k-state.edu/aac

The Academic Achievement Center seeks to empower students through useful resources, motivate through positive encouragement, and inspire hard work and dedication. AAC's services are open to all Kansas State University students and are met with understanding, encouragement, and the resources to generate success now and in the future.

Academic Coaching

Free Academic Coaching provides one-on-one support to empower students. Academic Coaches help students work through academic and social transitions, goal-setting, and progress at K-State. Students benefit from the individualized approach that includes building community, engaging coursework, and developing skills to be successful at K-State and beyond.

Tutoring Center at Holtz Hall

The AAC provides free tutoring to all enrolled students in a variety of classes at three convenient locations. The Holtz Hall Tutoring Center assists with course content and learning strategies, including weekly scheduled sessions that meet in a small group with a peer tutor and online tutoring for distance learners. Additionally, walk-in-tutoring is available in a select number of subjects and is offered during the daytime and evening hours.

Supplemental Instruction

Supplemental Instruction consists of weekly, peer-facilitated study sessions that complement students' learning in a specific, large lecture course. Through collaboration with peers in the course and an SI leader, students work to compare notes, discuss challenging concepts, share study and test-taking strategies, and demonstrate learning.

For further information about the services offered by the Academic Achievement Center, please visit www.k-state.edu/aac or Holton 101.

Kansas State Testing Center

102 Unger Complex

785-532-2957

testing@k-state.edu

www.k-state.edu/testing

Credit for Prior Learning

Kansas State University offers academic credit for prior learning through the successful completion of exams accepted under the Credit for Prior Learning Program. The Kansas State Testing Center, a part of the Academic Achievement Center, is the campus service agency for the College-Level Examination Program (CLEP) and the DANTES Subject Standardized Tests (DSST) exam program. The Center will also provide consultation and conduct utility studies for academic departments interested in implementing credit for prior learning. Information and registration for the CLEP and DSST programs are available from the Kansas State Testing Center.

Entrance and Professional Examinations

The Kansas State Testing Center administers the following examinations, which are often required to enter selected undergraduate, graduate, or professional programs. Contact the Kansas State Testing Center to obtain further information concerning these and other examinations.

American College Test (ACT)
Engineering and Land Surveying Examination Services (ELSES) Fundamentals of Engineering
Graduate Record Examination (subject exams only)

Miller Analogies Test (MAT)
Pharmacy College Admission Testing (PCAT)
Praxis Series Assessment
Scholastic Aptitude Test (SAT)
Test of English as a Foreign Language (TOEFL)

Certification and Licensure

The Kansas State Testing Center administers a number of certification and licensure examinations for students seeking careers in business, finance, health care and health administration, information science and technology, personal fitness, and teaching. Contact our office to obtain further information concerning these and other licensure examinations

Proctoring Services

The Kansas State Testing Center provides proctoring services. Fees may apply.

Career Center

Kerri Day Keller, Director
148 Berney Family Welcome Center
705 N. 17th Street
785-532-6506
Fax: 785-532-3696
E-mail: careercenter@k-state.edu
www.k-state.edu/careercenter/

The Career Center facilitates the career readiness for of all students throughout the K-State community. The Career Center offers an extensive career library, free assessments for exploring major/careers, job search training, career advising, employer connections, and a staff dedicated to assisting students in the career development process. Gain an advantage by attending K-State career fairs, interviewing on-campus with employers or enrolling in our credit-based courses for major/career decision-making and internship experiences.

Stop by the Career Center to:

- Schedule an appointment for personalized major exploration or job search assistance.
- Take a free career assessment to explore interests and to help decide on a major.
- Shop our Career Closet and prepare for interviews.
- Research employers, K-State curriculum guides, or graduate school information.
- Drop in to get a resume critique or ask a quick question.
- Find job listings online (part-time, internship/co-op, and full-time).

Additional resources include employment profiles, salary information, career reference books, K-State curriculum guides, graduate school information, and career planning workshops.

Your Handshake account is a free service for students to search employment and internship opportunities, make their resume visible to employers, sign up for on-campus interviews and find employer contact information to enhance their professional network.

Alcohol and Other Drug Education Service

Chaz Mailey, Psy.D., Coordinator
214 English/Counseling Services Building
785-532-6927
Fax: 785-532-3932
E-mail: cmailey@k-state.edu
Web page

The Alcohol and Other Drug Education Service offers timely and accurate information on the physical effects and social issues related to alcohol and other drug use and abuse. Campus services provided include individual counseling regarding alcohol and other drug issues; alcohol/drug information; basic assessment and intervention assistance; educational presentations; professional referral resources; and a variety of special alcohol/drug related programs and services for individuals, small groups and organizations.

Center for Advocacy, Response, and Education (CARE)

206 Holton Hall
785-532-6444
Fax: 785-532-6457
E-mail: ksucare@k-state.edu
www.k-state.edu/care

The Center for Advocacy, Response and Education (CARE) is a safe space for any member of the K-State community who has been affected by dating, domestic, and sexual violence, stalking or harassment to receive confidential services. CARE collaborates across identities and sheds light on the realities of psychological emotional, financial, physical and sexual forms of violence. CARE challenges the campus community to join us in advocating for positive social change while addressing the influences and social patterns that lead to interpersonal violence and other forms of oppression.

Cooperative Houses

Smurthwaite Leadership/Scholarship House

1500 North Manhattan Avenue
Manhattan, KS 66502-4695
785-532-6453
E-mail: housing@k-state.edu
www.housing.k-state.edu

The Smurthwaite Leadership/Scholarship House is a unique cooperative living option for women interested in a focused leadership experience. Smurthwaite is located on the east side of campus and houses 46 women. This vibrant community emphasizes academics, leadership, campus involvement and community service — the four pillars of Smurthwaite.

Smurthwaite residents pay a lower rate for room and board while assisting with the day-to-day operation of the house, such as kitchen and phone duty. Residents are required to maintain a 3.0 cumulative GPA, be involved in on-campus clubs, participate in philanthropy and volunteer activities, and attend Smurthwaite-sponsored programs and house meetings.

Those who wish to live in Smurthwaite simply complete the online residence hall application and contract with alternate preferences in addition to the Smurthwaite application. Residents will sign a contract addendum after they are officially selected.

Counseling Services

1105 Sunset, Rm. 101
Phone: 785-532-6927
Fax: 785-532-3932
E-mail: counsel@k-state.edu
www.k-state.edu/counseling and www.universitylifecafe.k-state.edu/

OFFICE HOURS: When school is in session - Monday-Friday 8 am-5 pm. During school breaks–including summer - Monday-Friday, 8 am-12 pm and 1 pm-5 pm.

WHAT WE DO: Kansas State University Counseling Services, in support of the overall mission of the University, provides the highest standard of professional services to help students reach their full potential–personally, academically, and socially. We see students with a wide range of problems from normal adjustment concerns to more serious emotional/mental health issues. Our range of services aim to alleviate concerns, facilitate problem solving, promote well-being, and enhance success. When students' needs are beyond the scope of our services, we will help with referral options.

At Counseling Services we value our multicultural campus community and, thus we provide culturally sensitive and relevant services. Welcoming diversity in culture, in sexual orientation, religion, and other factors of difference. Our agency is a supporter of the SAFE ZONE Program on campus.

While appropriately protecting confidentiality, we work collaboratively with other entities, both on and off campus, to foster a safe and healthy environment. During times when a critical event occurs, we are ready to offer timely response to campus through consultation, outreach, and follow-up to lessen trauma and promote resolution. In addition, we offer: a variety of free programs online to enhance personal growth and skill development; in-person presentations, such as the Kat Chats series; topics may include stress management, body image, navigating finals, and relationship enhancement; workshops on various topics; and we also teach a Career Life Planning course for academic credit.

OUR STANDARDS: The Counseling Services staff, and the APA-accredited internship training program in psychology, adheres to the ethical code of the American Psychological Association and licensing/legal standards for our professions.

Confidentiality means that your contact with this office does not go on your academic record and that clinical materials will not be disclosed to any other office or individual unless you have signed a written release for this to occur or there is a legal mandate to do so. It is important to note that our staff members are exempt from Title IX and therefore they do not report crimes that include sexual violence (including rape, sexual assault, and sexual harassment) to university officials.

FEES: Counseling Services is funded in part by the student privilege fee. Students receive some initial individual sessions without charge per year. A nominal fee is charged for additional services. See our website for details.

Adrian Rodriguez, Associate Vice President for Student Life for Diversity & Multicultural Student Affairs
785-532-6237
E-mail: adrianr@ksu.edu
www.k-state.edu/diversity

Diversity & Multicultural Student Affairs (DMSA) provides leadership in building an inclusive campus community through multicultural programs and services, diversity and multicultural student life experiences for students, and intercultural learning for the entire K-State community. Diversity & Multicultural Student Affairs provides support and services through the DMSA Office on the 2nd floor of Anderson, the Vice President of Student Life suite on the first floor of Anderson Hall, the LGBT Resource Center in Holton Hall, the Multicultural Student Office in the Student Union, and at the new Morris Family Multicultural Student Center, east of the Kansas State Student Union.

Multicultural Programs and Services

Mirta Chavez, Senior Director
785-532-6276
E-mail: mirta@ksu.edu
www.k-state.edu/diversity/programs

Multicultural Programs and Services leads Project IMPACT -- a suite of interdisciplinary recruitment, retention, and career placement pipeline programs through Leadership Conferences, College-for-a-Day Institutes, Urban Gardening, MAPS six-week summer bridge program, KOMPASS three-day orientation program, Career development, Corporate Industry tours and Leadership lessons. These programs provide holistic well-being components through Encuentro and BSU Leadership conferences while College-for-a-Day provides prospective students the tools and information to help navigate the university admissions process and connects them with critical on-campus faculty/staff/administrative resource personnel. Urban gardening provides life lessons through gardening -- teaches students how to be self-sustainable in urban areas and areas with food desserts, provides Health/Wellness/Nutrition educational lessons, teaches the positive effects of exercise and how these healthy foods provide fuel for energy, and provides intercultural learning in developing and learning about identities and roles in everyday college life experiences, and finally, the benefits of being true to yourself.

Multicultural Programs and Services provides additional counseling, academic support services, college level mentorship as well as $200,000 scholarship funds for multicultural, first-generation, and students in financial need.

Diversity & Multicultural Student Life

Trumanue Lindsey Jr, Director
785-532-6284
E-mail: tlindse@ksu.edu
www.k-state.edu/diversity/life

Diversity & Multicultural Student Life (DMSL) enriches the K-State student experience by promoting a holistic approach to student success and development. We strive to affirm the diverse identities of students through:

- Supporting historically marginalized and underrepresented students and their organizations such as:
    - Asian American Student Union (AASU), African Students Union (ASU), Black Student Union (BSU), Hispanic American Leadership Organization (HALO), Native American Student Body (NASB), United Black Voices (UBV) and other cultural & academic interest organizations
- Providing culturally relevant student programming that promotes and celebrates multiculturalism
- Offering opportunities for intercultural student learning & engagement
- Fostering an environment where ALL students have a sense of belonging

Morris Family Multicultural Student Center

Trumanue Lindsey Jr, Director
785-532-6284
E-mail: tlindse@ksu.edu
www.k-state.edu/diversity/life

The Morris Family Multicultural Student Center (MFMSC) is a space dedicated to developing a welcoming, supportive and inclusive campus culture across the boundaries of culture, identity, and discipline. Celebrating unity in diversity, the MFMSC serves as the home to our multicultural student organizations while fostering opportunities to develop and build community for all Kansas State University students, faculty, staff, administrators, alumni, and members of the Manhattan community. Through culturally responsive departmental and student led activities and programs, individuals from varying backgrounds and identities, have the opportunity to engage in meaningful cross cultural interactions, dialogue and experiences that will broaden their perspectives and contribute to the overall K-State learning experience.

Intercultural Learning and Academic Success

Dr. Debra Bolton, Director
224 Anderson Hall

785-532-6536
E-mail: dbolton@ksu.edu

Intercultural Learning and Academic Success promotes equitable representation of under-represented and historically excluded student populations in higher education by providing workshops, publications and events with other training opportunities that advance inclusive policies and best practices that address the academic, social, and emotional needs of students. Introduces students, faculty, and staff to the varying ways humans form their identities including race, ethnicity, color, national origin, tribal citizenship, class, sex, sexual orientation, gender identity, genetic information, age, religion, spiritual beliefs, political beliefs, or status as a veteran. Intercultural learning and development occurs through assessments, coaching, classroom teaching, and publications.

LGBT Resource Center

Dr. Brandon Haddock, Coordinator
224 Anderson Hall
785-532-6536
E-mail: bhaddock@ksu.edu

The Center provides support, workshops, scholarships, events, and representation of the LGBTQ campus community to engage in multiple platforms to advance learning around intersectional identities through educational presentations, student supports, and committee representation. The Center provides support to students and their organizations, such as the Sexuality and Gender Alliance (SAGA), Gender Collective, and oSTEM at K-State.

K-State DREAMZone

Madaí Rivera, Assistant Director for Student Engagement
122 Anderson Hall
785-532-6237
E-mail: madai@k-state.edu
www.k-state.edu/diversity/dreamers

The K-State DREAMZone offers support to students with various immigration statuses: undocumented, DACA recipients, asylum-seekers, mixed-family immigration status and others who may seek additional resources to complete their educational goals. In addition, the DREAMZone offers private appointments, a website presence which includes numerous university resources -- student financial assistance, counseling and health services. Resources and training are also available to faculty and staff.

Educational Supportive Services Manhattan and Student Support Services Salina

Kathleen Greene, PhD, Director
201 Holton Hall
785-532-5642
Fax: 785-532-6457
E-mail: ess@k-state.edu
www.k-state.edu/ess

Income limited students and first-generation college students are assisted in setting and attaining realistic educational goals and are provided information about graduate-level educational opportunities. Students admitted and enrolled at K-State are offered educational supportive services including study skills and academic enrichment program courses, academic pre-advising, individualized tutorial assistance, and a variety of referral services. Both programs are funded through a federal TRIO grant.

Graduate Student Council

Graduate Student Council (GSC) is the student organization representing graduate students from all academic disciplines at Kansas State University. Any organization with graduate student membership is invited to participate in the council and council activities are open to all graduate students.

GSC is a highly active student governing board for graduate students. GSC provides students with professional development, networking and leadership opportunities. GSC awards students travel grants to present their research and scholarly work at professional meetings and to attend conferences. Students participate in a variety of networking events sponsored by GSC and other graduate student organizations.

- The council meets on the first Monday of every month.
- The Graduate Student Council is funded mainly the Student Governing Association from the Graduate Student Activity Fee. Access the GSC constitution (PDF).
- You must register your organization each year to remain active with the Graduate Student Council.

Leadership Opportunities

There are various ways to get involved with Graduate Student Council. Every council member is encouraged to serve on a committee, including the Allocations Committee, GRA/GTA/GA Affairs Committee, International Affairs Committee, Research Forum Planning Committee, and Ice Cream Social Planning Committee. Members also publicize GSC events and help maintain the website. Council officers are elected during the spring semester. Officers include the president, president-elect, secretary, and treasurer. All graduate students are encouraged to participate in the council activities. Membership in the standing committees are open to all graduate students.

Professional Development

GSC strives to provide informational meetings, workshops and forums that enhance the professional development of graduate students. The council promotes interdisciplinary activities to enrich graduate students' education beyond their own disciplines. The council also sends out information on various seminars held across campus every week to the Council members, to be shared with their graduate student groups.

If you have any questions, contact the GSC officers: egsc@k-state.edu.

Housing and Dining Services

Derek Jackson
Director of Housing and Dining Services
Assistant Vice President for Student Life
104 Pittman Building
1-888-568-5027 (toll free)
785-532-6453
Fax: 785-532-6855
E-mail: housing@k-state.edu
www.housing.k-state.edu

The university encourages all new K-State students to live in an organized group. As part of a residential community, students have a sense of belonging and an avenue for involvement, as well as many opportunities for interaction with other students and university staff. Furthermore, the opportunity to participate in organized social, athletic, and educational events contributes to overall academic success.

More than 5,000 students call our campus home. With ten residence halls, one leadership/scholarship house for women, a house for honors students and a large apartment community to choose from, Housing and Dining Services has something for everyone.

Residence Halls

K-State residence halls have a long-standing tradition of providing a living and learning environment that encourages personal growth and academic success. It is for this reason that residence hall living is recommended for a student's first one or two years at K-State, and that many upper-division students decide to remain in the halls.

In this ideal transition from home to school, students benefit from direct access to helpful staff, dining service, tutoring programs, technical support, on-site laundry facilities, leadership opportunities and more. They're close to classes, and living among fellow students provides many opportunities to develop lifelong friendships.

After Housing and Dining Services receives a student's online residence hall application and nonrefundable fee, the student is notified that he or she can complete the online residence hall contract process. The cost of the contract is determined annually, and following an initial down payment, it can be applied to the student's KSIS account.

Jardine Apartments

Jardine Apartments provides on-campus apartment living for students who are upper division, graduate, nontraditional, married (with or without children) or single parents.

This unique apartment community offers a wide variety of floor plans to choose from. Different price points include options in modern, highly renovated, renovated and traditional apartments. Also in Jardine is the Hybrid Option, which allows students to rent space at Jardine by the bedroom. Activities help residents get involved and stay connected, and a trained professional staff-including a 24-hour maintenance crew-is available to assist residents. Residents have the benefit of an on-site sports grill, coffee shop, and laundry facilities.

There is a nonrefundable application fee due at the time of application. Assignments are made on a first-come, first-served basis, and early application is recommended. On assignment, a deposit is required. Learn more and/or apply.

Smurthwaite Leadership/ Scholarship House

The Smurthwaite Leadership/Scholarship House is a unique cooperative living option for women interested in a focused leadership experience. Smurthwaite is located on the east side of campus and houses 46 women. This vibrant community emphasizes academics, leadership, campus involvement and community service — the four pillars of Smurthwaite.

Smurthwaite residents pay a lower rate for room and board while assisting with the day-to-day operation of the house, such as kitchen and phone duty. Residents are required to maintain a 3.0 cumulative GPA, be involved in on-campus clubs, participate in philanthropy and volunteer activities, and attend Smurthwaite-sponsored programs and house meetings.

Those who wish to live in Smurthwaite simply complete the online residence hall application and contract with alternate preferences in addition to the Smurthwaite application. Residents will sign a contract addendum after they are officially selected.

Honors House

Honors House is a coeducational community for members of the University Honors Program. It houses 52 students in residence hall just west of campus.

The house provides a focused living environment for students with a passion for learning. Amenities include wireless internet, study space, free laundry and free printing. On-site parking is free, but limited.

Learn more about the house and the qualifications for living there at the Housing and Dining website. To apply complete the regular residence hall application and indicate a preference for Honors House.

Academic Initiatives

On-campus living environments offer individualized academic support to residents through trained staff, programming and faculty involvement. Computer stations, study spaces, workshops and more help improve academic skills and make the residence halls a great environment for learning and academic success.

Residential CAT Communities

Residential Connecting Across Topics (CAT) Communities are a set of learning communities specifically created for first-year students. A group of 22 students with similar interests takes classes, lives, eats and studies together in a residence hall. The communities offer mentoring from a professor and an advanced undergraduate Residential Learning Assistant who also lives with the students. This is a great way for students to make connections and quickly become an active part of life on campus.

Leadership and Involvement Opportunities

Hall Governing Boards, the Jardine Residents' Council, and floor governments plan and implement intramural events; community service projects; educational, cultural and social programs and more. Judicial boards provide an opportunity for students to address one another regarding policy violations that impact the community. The Kansas State University Association of Residence Halls plans hall-related events and works closely with hall representatives to develop and implement policies that promote respect and acceptance among all residence hall students. The Little Apple Chapter of the National Residents Halls Honorary recognizes the top 1 percent of residents who have contributed outstanding service and leadership in the residence halls while demonstrating academic excellence.

International Student and Scholar Services (ISSS)

Sara Thurston, PhD, Director
International Student Center
785-532-6448
Fax: 785-532-6607
E-mail: isss@k-state.edu
www.k-state.edu/isss

The staff at International Student and Scholar Services (ISSS) provide vital services for K-State's around 2,500 international students, scholars, and their families. This includes advice on U.S. immigration regulations, support during their stay in the U.S., and cultural programs. The staff assists them with visa and passport issues, work authorization, entry and exit documentation, certification of status forms, housing, programming and personal concerns. ISSS also offers assistance to faculty and departments wanting to bring international scholars to the United States. Additionally, the staff serves the entire campus as a resource on international student and scholar issues. The office operates under the Office of International Programs and works with all facets of the University to implement and support both the goals of each student and scholar and the goals of the University in international education. Staff members provide leadership and support for a variety of programs that promote global awareness and understanding.

ISSS is housed in the International Student Center which is composed of three building that have been completely funded by private gifts to K-State. The Taiwan Wing houses most of the staff. The Korean Room houses the director's office and office meeting space. The Center provides a comfortable relaxed atmosphere where people can meet or attend various programs. It includes a multipurpose meeting room, kitchen, reading lounge, and small classroom. Rental of the facilities is available.

Kirmser Language Center (KLC)

01 Eisenhower Hall
785-532-6762

Making learning enjoyable...if you are a faculty, or a student enrolled in a language course, come on in! You are invited to the Kirmser Language Center. We will provide you audio, video, and computer multimedia services for both undergraduate and graduate level courses within the Department of Modern Languages. The KLC currently servies about 1,250 students each semester, and offers a variety of resources. The Kirmser Language Center is the location for students to have their language skills tested prior to enrolling in most language courses.

K-State Student Union and Union Program Council (UPC)

William Smriga, Director
K-State Student Union
Director's Office, 2nd Floor
785-532-6591
Fax: 785-532-6565
E-mail: union@k-state.edu
union.k-state.edu

Union Mission Statement: **The K-State Student Union** is the host of the campus community and plays an integral role in the educational mission of the university. It provides products, services, and programs to enhance the quality of life of its students, faculty, staff, alumni, and guests, with particular emphasis on students. It fosters an environment that promotes respect for all peoples and values diversity, leadership development, and the free exchange of ideas.

Since 1956 the Union has served the university and surrounding community with a variety of social, recreational, educational, and cultural activities. The Union and its diverse programs and services are supported by student fees and generated revenue. The Union is the exciting hub of campus life. Often referred to as the "living room" of the campus, the Union provides a gathering place and a common ground for students, faculty, staff, alumni, university departments and the greater community. All revenues generated at the Union assist in funding program, opportunities, and services for our campus community.

BOOK A SPACE

The Union can accommodate all meeting and catering needs with a large variety of meeting rooms, banquet facilities and state-of-the-art technology. Rooms are offered at a discount to students, faculty, staff and registered student organizations. The Union provides the highest quality of catering services, from a simple coffee break to extravagant receptions and dinners. Whether it's for an executive retreat for 12 or an annual conference for 1000, the Union has a place for you.

FOOD AND FUN

Union restaurants offer a variety of food choices and seating locations. Complementary venues designed to appeal to students; faculty and staff alike were chosen to provide different experiences from grab-and-go options, quick service selections or casual dining with table service.

- Union Station by JP's

Through a partnership with K-State Housing and Dining Services, Union Station by JPs brings the campus and the Manhattan community together around a table filled with excellent food. A K-State original modeled after JP's in the Jardine Complex, Union Station menu items are locally sourced when possible, including Weber Hall meats and homemade pretzel buns.

- Radina's Coffeehouse and Roastery

Simple, delicious food and handcrafted coffee are the foundations of Radina's. Locally owned and operated, Radina's is committed to quality items made by caring hands.

- Qdoba Mexican Eats

Qdoba restaurants serve up mouthwatering bites that are both chef-inspired and customizable, with fan favorites like burritos, 3-Cheese Queso, Loaded Tortilla Soup and Knockout Tacos.

- Chick-fil-A

Recognized for its original chicken sandwich and waffle fries, Chick-fil-A serves a full menu of fresh, handcrafted food.

- Panda Express

Panda Express is best-known for its wide variety of original recipes including its Original Orange Chicken™, SweetFire Chicken Breast®, award-winning Honey Walnut Shrimp and Shanghai Angus Steak

- Just Salad

Just Salad provides quality, healthy food in a fast, responsible, yet affordable way. The menu focuses on organically grown, locally sourced balanced recipes curated by a registered dietitian that include nutrient-rich flavor combinations with fiber, protein and calories in mind.

- Call Hall Ice Cream at the Union

Bringing a beloved K-State tradition home to the Union, Call Hall uses high quality products from the university dairy farm; the shop showcases long-time favorite Purple Pride, customary flavors and seasonal selections.

Subway, in the Union Bowling Center, is ready to serve you great tasting sandwiches and breakfast seven days a week. Subway is open longer hours and later than any other food venue in the Union.

The Cats' Den Convenience Store is the best place to pick up a drink or a tasty snack between classes. ReFresh-ReThink-ReFuel at the Cats' Den alternative snack area featuring gluten-free, vegan, organic, natural and energy/power options. We stock a variety of soft drinks, juices, energy drinks, snacks and sandwiches, as well as our freshly-popped popcorn.

Not in the building? The Union provides options around campus, including food trucks on Bosco Student Plaza, Einstein Brothers Bagels in Hale Library, and Radina's Coffeehouse and Roastery locations in the Staley School of Leadership Studies, the Engineering Complex and the College of Business Administration building. Whatever your palette craves, your Union has the fix.

Einstein Brothers Bagels, on the lowest level in Hale Library, provides a great mid-campus stop to refresh between classes, over lunch, during your study breaks or anytime. High-quality food is the standard here, with a diverse menu ranging from gourmet coffee drinks, to baked goods, salads, made-to-order sandwiches, and decadent desserts.

The Union Bowling Center, located on the Union's lower level, is the best place for relaxing on campus. Whether it's something fun to do between classes or an evening with friends, the Union Bowling Center is the place to be. The center is equipped with 16 bowling lanes, 14 billiard tables, two air hockey tables, a video arcade, and a Subway Sandwich Shop. Student bowling leagues are always very popular and billiard leagues are also available. The recreation center is also available for group gatherings.

SHOPPING AND SERVICES

The official K-State Campus Store is located on the Union's ground floor, is not only the most convenient place to get your textbooks, but also has a great selection of K-State merchandise and apparel. Textbook options ranging from new to used, rental to digital are designed for student savings. The official K-State booklist is available online at kstatecampusstore.com. Textbook information (including ISBN, Author, Title, Publisher and Copyright data) is available at courses.ksu.edu. When viewing a course, click on the textbook icon for textbook details. For more information, contact 785-532-6583.

Cat Tech, the Union computer store, is a full-line computer store and an Apple authorized educational reseller. Students can receive discounts on Apple computers, Microsoft and Adobe products, as well as other academic software. Cat Tech carries an

extensive inventory and variety of computer supplies, including MacBooks, iPads, the complete line of Apple iPods, and a large selection of iPod accessories. Online shopping is offered 24/7 at kstatecampusstore.com. Stop by the new location on the Union's ground floor or give us a call at 785-532-7319.

All students, faculty and staff can get their official university ID card, the Wildcat Card, at the ID Center, located on the ground floor of the Union. Wildcat Cards can be used as a photo ID, access/entry card, library card and Cat Cash on-campus debit account. Cat Cash is ideal for anyone who carries a Wildcat ID and spends time on campus. The ID Center can assist with card replacements, Cat Cash deposits and Union gift card purchases. If you have any questions, contact 785-532-6399 or wildcatcard@k-state.edu.

GET INVOLVED

Union Program Council (UPC), K-State's premier student-led event planning organization, provides entertainment to the K-State community and an opportunity for students to gain leadership skills. UPC sponsors over 180 programs each year. UPC's student volunteers determine the films you see on weekends, select the comedians that make you laugh, choose the art exhibited in the William T. Kemper Art Gallery, decide which controversial issues speakers address, expose you to different cultures with their multicultural programming and organize a substance-free **After Hours** every Friday night during the semester.

All students are encouraged to get involved with UPC and its various committees. Students help create and plan the exciting events that are the talk of the campus. UPC volunteers receive valuable experiences that complement both their academic pursuits and future job skills. Students who want to get involved should contact **UPC** on the web, by phone 785-532-6571, or follow them on Facebook and Twitter.

The Union is also the home of many student offices: the Student Governing Association (SGA), the Office of Student Activities and Services (OSAS), Greek Affairs, Multicultural Student Organization, Union Program Council (UPC), Union Governing Board (UGB), Union Ambassadors, and the campus radio station, Wildcat 91.9.

Lafene Health Center

Jim Parker, Director
1105 Sunset Avenue
Manhattan, KS 66502-3761
785-532-6544
Fax: 785-532-6627
E-mail: lafene@k-state.edu
www.k-state.edu/lafene

The Lafene Health Center is a modern ambulatory health care facility designed to provide for most student outpatient health needs. The health center is fully accredited by the Accreditation Association for Ambulatory Healthcare. Students who have paid the health fee as a part of their "privilege fees" are eligible for care. Non-student spouses, university conference participants, and other campus visitors may receive care upon payment of a special fee.

Lafene Health Center provides, through a full complement of medical and other professional personnel, a range of services that include special clinics for sports-related injuries, women, and allergies and immunizations, as well as a clinic for general care. Also included are services in health education, nutrition, and physical therapy. The services of a pharmacy, laboratory, and x-ray are available at reduced rates.

The center is staffed by full-time physicians with medical support personnel. When necessary, the student is referred to specialists for treatment at the student's expense.

After regular clinic hours, a student who is ill or injured may receive medical care at a local hospital, at the student's expense. Home visits are not made. The local ambulance service is available, when needed, to transport patients to the appropriate health care facility.

Insurance

It is strongly recommended that all students at K-State carry medical insurance, either through the parents' plan at home or through the university-sponsored student health insurance plan available at special rates. It is mandatory for International Students to carry medical insurance. This latter plan covers most services provided at Lafene Health Center and allowed claims for medical expenses if the student requires care away from the campus.

Tuition Insurance is coming for this Fall! Reach out to Fran Wilbrandt for information and a write up!

Medical History

K-State encourages all students (new and transfer) to provide complete medical history, including a current immunization record. This history must be completed on the Kansas State University Lafene Health Center Medical History Form and is required prior to provision of non-emergency treatment at the health center. A physical examination is not required, but encouraged, and a copy of this examination assists the staff in evaluating illnesses. If a student has a continuing medical problem, a summary from the attending physician is helpful should treatment at the center be needed. Students requesting allergy injections must furnish instructions from their allergist before injections can be administered at the Health Center.

Tuberculosis Screening

International students from countries with a high incidence of tuberculosis and domestic students who have spent more than three months in such a country are required by state law to be tested for tuberculosis prior to enrolling at K-State. Testing may be done at Lafene Health Center or another healthcare provider. Proof of testing and the results are required if not done at Lafene Health Center.

Incoming Students Residing in University-owned Housing

State of Kansas Board of Regents requires all incoming students residing in university-owned housing to be vaccinated against meningitis or sign a document waiving the vaccination. The vaccine can be obtained at Lafene Health Center or the student's private physician. Meningococcal Vaccine Documentation Forms may also be obtained at the Health Center or the university housing office.

McNair Scholars Program

Kathleen Greene, PhD, Director
201 Holton Hall
785-532-6137
E-mail: mcnair@k-state.edu
www.k-state.edu/mcnair

The McNair Scholars Program, named for the African American astronaut who died in the 1986 space shuttle explosion, encourages and prepares academically promising students to pursue doctoral degrees. McNair Scholars are from income-limited and first-generation college educated backgrounds or are from minority groups who are underrepresented in graduate study.

Staff will assist McNair Scholars in selecting an appropriate graduate school for their career goals, in preparing for the Graduate Record Examination, and in applying for graduate admittance and financial assistance. Each year McNair Scholars will be matched with a faculty mentor and will work on research projects for which they will receive a stipend. The McNair Scholars Program is funded through a federal TRIO grant.

New Student Services

Emily Lehning, Associate Vice President for Student Life and Director of New Student Services
Berney Family Welcome Center
705 N. 17th Street
785-532-6318
Fax: 785-532-6108
E-mail: nss@k-state.edu
www.k-state.edu/nss

New Student Services works with prospective and new students and their families. Admissions representatives meet with high school students during school visits, college fairs, and special events. Transfer staff visit Kansas community colleges and help transfer students successfully make the transition to K-State.

New Student Services coordinates campus visits, orientation and enrollment, Wildcat Warm-up, the K-State Parents and Family Association, SHIELD Scholars program and the Presidential Lecture Series. The department collaborates with many campus programs and departments to provide services to prospective, new and current undergraduate students.

Non-Traditional & Veteran Student Services

K-State Veteran Center
2nd Floor Student Union
Room 217
785-395-8387

Non-Traditional Student Services
Office of Student Life
201 Holton Hall
785-532-6434

E-Mail: nontrad@k-state.edu
www.k-state.edu/nontrad/veteran/

Non-Traditional & Veteran Student Services assists undergraduate and graduate students who meet one or more of the following criteria:

- 25 years of age or older
- Married
- Parent
- Veteran
- Returning to school after an absence of 3 or more years

Non-Traditional & Veteran Student Services provides assistance and advocacy for students before, during, and after their admission to K-State. Staff members assist students in obtaining information and/or providing referrals in many areas, including: admission, scholarships, childcare, housing, tutoring, refresher and study skills courses, student health insurance, campus activities and community programs, non-traditional student networking opportunities, and many other student questions/concerns.

Off-Campus Housing

The Off-Campus Housing Office is located at the Office of Student Life, 201 Holton Hall, 785-532-6432. The coordinator of off-campus housing helps students resolve issues or answers questions regarding landlord problems or rental contracts. Student can also find information about rental units, with information on cost, size, restrictions, etc., and other housing options.

Office of Fraternity and Sorority Life

Jordan Kocher, Director
Brianna Hayes, Assistant Director
4 K-State Student Union
785-532-5546
Fax: 785-532-5341
E-mail: greek@k-state.edu
www.k-state.edu/greek

K-State is home to more than 3,500 fraternity and sorority members. The fraternity and sorority community consists of 40 many of who own and control their own residential facility. The average Panhellenic sorority size is 66, and the average IFC fraternity size is 60.

Panhellenic sororities select their members during Fall Formal Recruitment which happens the week prior to the start of the fall semester. Women who wish to participate in the Formal Recruitment process must register on the Office of Fraternity and Sorority Life website and pay a participation fee by no later than August 1.

Most new members live in a residence hall during their first year of membership, and may move into the sorority house their second year of membership. Additional opportunities to join may be available in the continuous open bidding process. More information can be found about this process on the website.

Interfraternity Council fraternities select new members through an informal, chapter-driven process. This process mainly occurs beginning in the spring and continuing through the summer. Most new members live in their fraternity house during the first year of membership if the chapter owns a property. Men may fill out an interest form on the website and find contact information for chapter recruitment chairs.

Complete information regarding fraternities and sororities including costs, how to register, recruitment dates and methods, the recruitment week schedule for sororities, and a list of K-State fraternity and sorority chapters can can also be found on the website.

Information about NPHC fraternities and sororities and other national organizations that select new members via the intake process can also be found on the website.

Office of Nationally Competitive Scholarships

Jim Hohenbary, Director
215 Fairchild Hall
785-532-3422
E-mail: jimlth@k-state.edu
www.k-state.edu/nationalscholarships

The Office of Nationally Competitive Scholarships assists K-State students as they compete for nationally competitive awards such as the Rhodes, Marshall, Truman, Goldwater, Udall, and Fulbright.

The office helps students identify awards that might suit their accomplishments and goals, advises students as they prepare their applications, and manages the campus selection process for scholarships and fellowships that require applicants to be nominated by their university.

A strong academic record and active résumé are essential for applications. Students interested in competing for major awards are encouraged to consult with the office as early as possible in their college career.

The office website provides a much larger listing of national and international scholarships and fellowships. Note that the office primarily advises students regarding major award competitions that are external to the university. Students seeking information about K-State scholarships should consult the Office of Student Financial Assistance and their academic departments.

Office of Student Life

Andy Thompson, Senior Associate Dean & Director of the Office of Student Life
Justin Frederick, Assistant Dean & Director of the Office of Student Life
Laurel Moody, Assistant Dean & Director of the Office of Student Life

201 Holton Hall
785-532-6432
Fax: 785-532-5307
E-mail: stulife@k-state.edu
www.k-state.edu/studentlife

The mission of the Office of Student Life is to enhance the K-State student experience and promote student success in the classroom and in life. Student Life helps when problems arise, working with students and with other campus services to find the most appropriate and effective solutions. The Office of Student Life is also a resource for parents who may have concerns or questions. The Office of Student Life administers the judicial programs for non-academic misconduct and works closely with the student judicial system.

Powercat Financial

Jodi Kaus, Director
302 K-State Student Union, Third Floor
785-532-2889
E-mail: powercatfinancial@k-state.edu
www.k-state.edu/powercatfinancial

Powercat Financial assists students with financial decisions including budgeting, saving, student loan repayment, and understanding credit. The center is free to K-State students and uses a peer mentor program where students studying in a finance related curriculum provide one-on-one peer financial counseling and education to fellow students. In addition to individual confidential counseling, the center provides free workshops to campus groups and organizations about various financial topics. The goal of Powercat Financial is to improve the financial literacy and success of all K-State students. Visit the Powercat Financial website to schedule an appointment, to request a financial workshop presentation, or to learn more about financial issues.

Recreational Services

Steve Martini, Director
Chester E. Peters Recreation Complex
1831 Olympic Drive
785-532-6980
Fax: 785-532-4983
E-mail: recservices@k-state.edu
www.recservices.k-state.edu

Recreational Services oversees the programming and administration of intramurals, fitness/wellness programs, climbing wall, K-State challenge course, and free time use of the Peters Recreation Complex, outdoor recreation area and the K-State natatorium.

Chester E. Peters Recreation Complex

fully accessible and includes:

- 8 racquetball courts
- five performance zones
- two squash courts
- two wallyball courts
- three gyms that include:
    - 13 basketball courts
    - 15 volleyball courts
    - 5 badminton courts
    - 2 pickleball courts
- multi-activity court (MAC) gym provides for indoor soccer, in-line hockey, basketball, volleyball and tennis
- three weight rooms
- two cardio areas
- combatives room
- four group fitness and studios
- one multipurpose room
- private personal training studio
- 40-ft climbing wall and bouldering rock
- Quik Cats Cliffside snack/juice bar
- game lounge offering video game stations, pool tables, foosball and electronic darts
- two indoor tracks
- table tennis area
- locker rooms with saunas
- southside parking lot exclusively for students
- pickleball courts

Natatorium

located adjacent to the Ahearn Sports Complex and is fully accessible offering

- two 25-yard pools
- one diving pool
- sun deck

Outdoor Recreation Area

- lighted playfields for football, soccer, softball, ultimate
- four sand volleyball courts
- six tennis courts
- three basketball courts
- two 3-wall handball/racquetball courts
- running/walking trails

Outdoor Rental Center

offers equipment rentals to the K-State community during spring, summer and fall seasons

- camping equipment
- canoes, kayaks, and stand-up paddle boards
- tents and sleeping bags
- hammocks

Intramural Sports

scheduled competitive activities offering

- team, individual, and meet sports for students, faculty, and staff
- over 50 different intramural activities for men, women, and co-rec competition

Fitness Services

programming designed to promote health and wellness

- group fitness sessions offering a wide variety of formats such as cardio, yoga, and cycling
- personal trainers providing fitness assessments, and exercise program planning
- educational outreach presentations/workshops

Climbing/bouldering Area

providing a variety of ever changing climbing routes ranging from beginner to advanced

- 40-ft rock wall with 11 top ropes
- 12-ft freestanding boulder

K-State Challenge Course

team building, experiential activities available by reservation to K-State students and organizations, as well as the Manhattan community offering:

- low elements consisting of ropes, wires, poles and other wooden objects
- high elements using ropes and belay systems providing activities 30-40 feet in the air

Cooperative programs

- **Wildcat Wellness Coalition:** a cooperative wellness program with Recreational Services, Lafene Health Center, Center for Advocacy, Response and Education (CARE), LGBT, Housing and Dining, Academic Assistance Center, Human Capital Services, K-State Libraries, Powercat Financial, and Counseling Services offering classes, workshops, seminars, and activities designed to promote the eight dimensions of wellness: physical, environmental, occupational, social intellectual, emotional, spiritual, and financial wellness.
- **Sports medicine:** athletic trainers from Lafene Health Center provide on-site evaluation and treatment of sports-related injuries plus first aid.

Student Employment

positions for lifeguards, sports officials, building supervisors, group fitness leaders, personal trainers, facilitators, maintenance, and office assistants.

Additional information and a complete schedule of hours and events is available on the Recreational Services home page.

Student Access Center

Jason Maseberg-Tomlinson, Director
Holton Hall 202
785-532-6441
Fax: 785-532-6457
VP: 785-370-0431
E-mail: accesscenter@k-state.edu
www.k-state.edu/accesscenter/

Student Access Center appreciates disability as an integral part of the K-State experience. We are dedicated to providing equal educational opportunity and access to students by providing a broad range of services to meet the needs of students with disabilities.

Students may require accommodations in areas such as attention, autism, learning, mobility, medical, psychological, and sensory. Services provided may include adaptive technology, alternative text, note-taking, sign-language interpreters, residential life, and test-taking. Literacy software, called Read and Write Gold, is available to all students and includes features such as text-to-speech, scanning, and a read-aloud dictionary. Additional services include assistance with writing and peer tutoring. Transportation is available to students with either a temporary injury or a permanent disability.

Through collaboration and support of the entire campus community, the Access Center promotes disability pride, program accessibility, and universal design principles so that everyone has full access to university life.

Student Activities and Services

Bill Harlan, Director
Office of Student Activities and Services
K-State Student Union
785-532-6541
Fax: 785-532-7292
E-mail: osas@k-state.edu
www.k-state.edu/sga

The Office of Student Activities and Services helps students identify campus activities and avenues of campus and community involvement. The office houses the Student Governing Association, Student Judicial System, Student Legal Services, Off-campus Housing Support, and the Student Organization Budget Office. The office also assists individuals and groups who wish to organize and register their organization on the K-State campus and maintains the OrgSync website for student organizations and K-State.

Student Organizations

More than 500 organizations are available to students, faculty members, staff, and community members.

Any organization desiring to become a registered organization must register with the Office of Student Activities and Services. Registered groups have the opportunity to request funds from SGA, hold fund-raising activities on campus, and schedule rooms and tables in the K-State Student Union as well as most campus facilities. Registered student organizations may also post notices in university buildings and on campus bulletin boards.

Student Government

Heather Reed, Executive Branch Advisor
Bill Harlan, Legislative Branch Advisor
Andy Thompson, Judicial Branch Advisor

K-State Student Union
785-532-6541
Fax: 785-532-7292
E-mail: osas@k-state.edu
www.k-state.edu/osas/sga

The purpose of the Student Governing Association is to help students voice concerns, suggestions, or grievances. Every student is a member of SGA and is represented by student senators from their college, and by the student body president and vice president. The student senators, student body president, and vice president are elected by the K-State student body.

SGA is divided into three branches: legislative, judicial, and executive. Student Senate makes up the legislative branch. It is composed of standing committees including allocations committees, student engagement, governmental relations, privilege fee, and senate operations.

The judicial branch is composed of the judicial council, student review board, student tribunal, parking citations appeals board, and the housing and dining services judicial boards.

The student body president, vice president, and cabinet make up the executive branch. The president has the responsibility to promote the general welfare of the students and acts as the official voice of the student body to the faculty, administration, and public.

Upward Bound Program

Upward Bound at K-State Polytechnic Campus

Upward Bound K-State Polytechnic Campus
2310 Centennial Road
785-826-2640
www.sal.ksu.edu/upwardbound

Upward Bound is a federally funded campus-based TRiO program designed to assist low income and underrepresented students with college potential who need additional academic preparation, advisement, and encouragement to succeed in high school and later, in college. The Upward Bound program participants are involved in the program from the time they are selected for participation until they graduate from high school. The program offers a six-week summer residential component and academic advising sessions during the academic year.

The mission of the Upward Bound program at K-State at Salina is to promote enrollment and persistence in post-secondary education for program participants and their families by providing academic, social and emotional support. The Salina Upward Bound program serves students from Ell-Saline, Clay Center, Lincoln, and Newton high schools.

Student Financial Assistance

Robert Gamez, Director
104 Fairchild Hall
785-532-6420

877-817-2287
E-mail: finaid@k-state.edu
www.k-state.edu/sfa

Kansas State University administers an extensive financial aid program to bridge the gap between family contribution and the cost of attending the university. Detailed information concerning financial aid is available on request from the Office of Student Financial Assistance, 104 Fairchild Hall.

The Free Application For Federal Student Aid (FAFSA) should be used by students applying for all federal and state aid programs. Students may obtain the FAFSA from any high school counselor or from K-State. The priority date for submitting the FAFSA is March 1 before the fall semester in which the student intends to enroll.

Programs

Scholarships

Each year nearly 4,000 Kansas State University undergraduate students receive more than $7 million of scholarship assistance based on their academic records, financial need, and/or leadership qualities. Freshmen are encouraged to meet K-State's early application deadline of November 1 of their senior year. All students should meet the final application deadline date of February 1 each year for the following academic year. To apply for K-State scholarships, go to the website. Applications and scholarship information are available from high school counselors, the Office of Student Financial Assistance, and the various colleges at K-State.

Grants

Approximately 5,000 students are assisted through the Federal Pell Grant and the Federal Supplemental Educational Opportunity Grant.

Assistance exceeds $12 million. The Free Application for Federal Student Aid is the application for these programs and should be filed by March 1.

Teaching and Research Assistantships for Graduate Students

The principal objective of a graduate student is to pursue a concerted program of study that will normally lead to an advanced degree in the chosen academic discipline. To assist students to pursue their studies full-time, the University makes available financial assistance through a limited number of graduate teaching assistantships (GTA), graduate research assistantships (GRA) and graduate assistantships (GA). These assistantship appointments carry with them a service requirement, typically directed at improving professional skills in their academic fields. Award of an assistantship is based on the student's ability and promise and is usually made for either nine or twelve months. The maximum appointment is 0.5 full-time equivalent (FTE), but appointments for lesser fractions may be made. Continuation of appointments is subject to academic performance and the availability of funds. Information on applying for graduate assistantships may be obtained from the department concerned.

Students holding GTA, GRA, or GA appointments from September 1 through November 17 receive tuition benefits for the fall term, and students holding GTA, GRA, or GA appointments from February 1 through April 17 receive tuition benefits for the spring term. If a graduate appointment does not begin by these dates or terminates before these ending dates, all tuition benefits will be lost. The student then is responsible for the total tuition payment.

GTAs, GRAs, and GAs on a 0.5 FTE appointment are eligible to participate in the Kansas Board of Regents GTA/GRA/GA health insurance plan. Information about enrollment in the health insurance plan is available from Human Resources.

The maximum number of credit hours in which a graduate student employed on an assistantship can enroll is 12 hours for the fall and spring terms and 9 hours during the summer. Students desiring to enroll in credit hours exceeding the maximum number permitted should be in good academic standing and obtain permission from their advisor and forward the permission to the Graduate School for final approval. To fulfill the obligation that students pursue studies full-time, graduate assistants must be enrolled for a minimum of 6 hours of credit during fall and spring terms. The Graduate School does not require that graduate students be enrolled during the summer. Individual departments may require minimum enrollment in any term. Information pertaining to minimum enrollment during the summer may be obtained from the department concerned.

Tuition responsibilities for graduate students appointed for 0.5 FTE depend on the nature of the appointment. Students holding a 0.4 FTE GRA, GTA, or GA appointment (or any combination of these appointments) are assessed tuition at the resident rates according to an established schedule.

Graduate students appointed as a GTA are eligible for a tuition waiver. Graduate students appointed on a full-time GTA appointment (0.5 FTE) receive a tuition waiver for a maximum of 10 hours in the fall and spring terms and 6 hours in the summer term. Hours taken during January intersession are counted in the total number of hours for the tuition waiver paid in the spring term. Hours taken during May and August intersessions are counted in the total number of hours for the tuition waiver paid in the summer term. Graduate students holding a 0.5 total FTE appointment during the fall, spring, or summer terms but an appointment of less than 0.5 FTE as a GTA are eligible to receive a partial tuition waiver based on the proportion of the teaching appointment. For example, a graduate student with a 0.2 GTA and 0.3 GRA for all three terms will receive a tuition waiver of 4 hours in each of the fall and spring terms and 2 hours tuition waiver for the summer term. Graduate students with a 20% (.1) GTA and 80% (.4) GRA appointment will be eligible to receive a tuition waiver of 2 hours in the fall and spring terms. Those with an 80% (.4) GTA and 20% (.1) GRA appointment will be eligible to receive a tuition waiver of 8 hours in the fall and spring terms. In all cases, the student will be responsible for paying the remainder of the tuition at the resident rate. GTA tuition waivers are provided for tuition benefits only; students will be responsible for campus privilege fees (student health, activity fees, etc).

The Kansas Board of Regents requires all prospective GTAs who are non-native speakers of English to achieve a:

minimum score of 50 on the TSE (Test of Spoken English)
OR
minimum score of 50 on the Speaking Proficiency English Assessment Kit (SPEAK)
OR
minimum score of 22 on the speak section of the Internet-based Test of English as a Foreign Language (TOEFL iBT)

Disputes concerning graduate assistants (GTA/GRA/GA) are employment matters that should be originated with the appointing department and be addressed through normal supervisory channels. The student should begin addressing the concern with the assigned supervisor of the assistantship and, if necessary, proceed to the department or unit head. If the matter is not resolved at the department or unit level, the student may present it to the Dean of the College in which the (GTA/GRA/GA) is employed. Formal grievance procedures do not apply to these appointments.

Individuals should contact the Office of Institutional Equity or the Office of Student Life regarding employment disputes believed to constitute discrimination or harassment, as defined in the "Policy and Procedure for Discrimination and Harassment Complaints" section of the University Handbook.

Traineeships for Graduate Students

The university has a number of traineeships available. Several departments also have federally supported traineeships available under the programs of the National Institutes of Health and other agencies. Contact individual departments for information

Loans

K-State participates in the Federal Family Education Loan Program, the Federal Perkins Loan, and the Health Professions Student Loan Programs. The university also manages three institutional loan programs: the alumni loan, the foundation loan, and the emergency student loan.

The Federal Family Educational Loan program is comprised of three separate loan types: the subsidized, unsubsidized, and parent loan. The subsidized loan is considered need-based aid, while the unsubsidized loan and PLUS are considered non-need-based aid.

The interest rates for each of these loan programs are variable and are set on July 1 of each year. The subsidized and unsubsidized loans have a capped interest rate of 8.25 percent, and the PLUS has a cap at 9 percent. The federal government pays the interest on the subsidized loan until the student enters repayment. The student borrower is responsible for the interest on the unsubsidized loan from the time the loan is disbursed until it is paid in full. The parent borrower is responsible for the interest on the PLUS loan from the time the loan is disbursed until it is paid in full.

Repayment of the subsidized and unsubsidized loans begins six months after the student drops below half-time status. Repayment of the PLUS begins 60 days after the loan has been disbursed in full. Borrowers can choose a repayment plan (standard, extended, graduated, or income-contingent) by contacting their lender.

The Federal Perkins Loan and the Health Professions Student Loan programs have a fixed interest rate of 5 percent. The interest on the loans begins when the student goes into repayment. Repayment on the Perkins Loan begins nine months after enrollment drops below half-time status. Repayment on the HPSL begins one year after enrollment drops below half-time status.

The alumni loan and the foundation loan charge six percent interest payable annually from the date of the loan, with $50 monthly payments beginning six months after the borrower is no longer a student at K-State. The emergency student loan is a short-term loan available to enrolled students who have exceptional circumstances. The loan must be repaid by the end of the semester in which it was taken.

Employment

Kansas State University provides services for students seeking part-time employment to help offset educational, living, and social expenses. K-State has two categories of jobs: college work-study program jobs and campus payroll jobs. In addition, students are frequently employed in off-campus positions. Available jobs are listed online.

To be employed on the hourly student payroll, a student must be enrolled in at least 6 resident semester credit hours at K-State during a fall or spring semester, and at least 3 resident semester credit hours at K-State during a summer semester, or have been enrolled in at least 6 resident semester credit hours at K-State during the preceding spring semester.

Services for veterans

The university maintains a veterans' service to aid veterans, children, and spouses of deceased or 100 percent disabled veterans from a military services-connected disability or death in securing educational benefits.

Veterans who entered the military on or after July 1, 1985; have served at least two years; had their pay reduced or contributed $1,200 for education; and received an honorable discharge may be eligible for educational benefits if they are within 10 years from their final discharge date. Veterans who entered the military prior to January 1, 1977; received an honorable discharge; and are less than 10 years from their final discharge date may be eligible without any contribution. Veterans who entered military service between January 1, 1977, and July 1, 1985; have an honorable discharge; and contributed to the GI Bill may also be eligible. Certain conditions or restrictions may apply.

Montgomery GI Bill-Selected Reserve consisting of reservists and National Guard who have after June 30, 1985, signed a six-year agreement and completed their initial active duty for training; have a high school diploma or GED; and are in good standing in a drilling reserve unit are eligible for educational benefits. Certain restrictions may apply.

Children of veterans with 100 percent service-connected permanent disability or deceased and identified as service-connected may receive educational benefits until age 26. Spouses have 10 years from the time the veteran was classified with the service-connected condition to be eligible to receive educational benefits. Certain restrictions may apply.

A new benefit makes certain reservists or National Guard members who were activated after September 11, 2001, either eligible for education benefits or eligible for increased benefits while in an approved training program for a contingency operation and serving at least 90 consecutive days or more. Certain conditions or restrictions may apply.

Information may be obtained from your nearest Veterans' Administration Office or the Office of Student Financial Assistance (Veteran's Office).

Satisfactory Academic Progress

A) Overview/Responsibilities

Federal student financial assistance regulations require Kansas State University, as an institution offering federal, Title IV, forms of student financial assistance, to measure Satisfactory Academic Progress (SAP) of each attending student on a regular basis. SAP, as assessed by K-State's Office of Student Financial Assistance (OSFA) is separate and distinct from a student's academic standing as determined by his/her college or academic unit at K-State. SAP is a method of measuring a student's progress toward program completion. To be eligible for Title IV aid, a student must maintain satisfactory academic progress. SAP is measured through the use of qualitative and quantitative tests. **Qualitative** tests reference a student's grades (e.g. cumulative GPA) and **quantitative** tests reference a student's pace to the successful completion of his/her program of study.

Students who are placed on SAP *exclusion*, as detailed below, are ineligible to receive federal, Title IV, forms of student financial assistance. Examples of Title IV assistance include: Federal Pell Grant, Federal Supplemental Educational Opportunity Grant (FSEOG), Federal Perkins Loan, Federal Work Study, Federal Direct Loan (subsidized and/or unsubsidized), Federal Direct Graduate PLUS Loan, Federal Direct Parent PLUS Loan, Teacher Education Assistance for College and Higher Education (TEACH) Grant, and the Iraq and Afghanistan Service Grant.

In addition, students placed on SAP *exclusion* may also become ineligible for non-Title IV forms of student financial assistance. Examples of such non-Title IV forms of assistance include: Health Professions Student Loan Program, K-State's Spouse/Dependent Grant, State of Kansas Scholarship Program, etc..

K-State's Office of Student Financial Assistance is responsible for measuring SAP for the purposes of monitoring federal, Title IV, student aid eligibility. To that end, several office staff members assist at various stages of the SAP monitoring process.

The Satisfactory Academic Progress standards outlined in this policy are as strict as or stricter than K-State's institutional academic progress policies for students pursuing an educational credential. Specifically, K-State's degree requirements do not impose a set time frame in which a student must have successfully completed his/her academic program.

B) SAP Evaluation Increments

In view of final program integrity regulations, published October 29, 2010 on the topic of SAP by the U.S. Department of Education, K-State's OSFA has elected to measure SAP at the conclusion of each regularly scheduled semester/term. At K-State the semester/term represents a student's payment period for federal, Title IV, financial assistance. Consequently, SAP will be measured in **increments** of single terms i.e. at the conclusion of each fall, spring, and summer term.

C) Quantitative Measure

K-State's Office of Student Financial Assistance utilizes three quantitative tests to measure a student's pace as well as maximum time frame toward his/her degree completion. These quantitative tests are:

- **Maximum Attempted Units Test**

- **Ratio of Attempted to Completed Units Single Term Test**
- **Ratio of Attempted to Completed Units Cumulative Test**

Maximum Attempted Units Test

The **Maximum Attempted Units Test** is employed for all three categories of students at K-State, undergraduate, graduate, and professional (veterinary medicine) students.

Undergraduate Programs of Study

For students pursuing an undergraduate degree the maximum attempted units may not exceed 150% of the published length of the educational program. Consequently, the Office of Student Financial Assistance attempts to set the threshold for the **Maximum Attempted Units Test** applied to undergraduate students so that the student will fail this test at a point in time where he/she has attempted in excess of 100% units but is likely to have not yet reached the 150% attempted units mark.

For example: Undergraduate students pursuing a typical four-year degree (requiring the successful completion of 124 credit hours), will fail the **Maximum Attempted Units Test** when the student has surpassed 154 attempted units without having completed his/her program of study. Allowing the student in this example to fail this SAP test at the 155 or more units attempted mark allows the OSFA to communicate to the student the necessity to complete the program of study before the 150% mark of 186 attempted units has been reached.

Professional Programs of Study (Veterinary Medicine)

For students pursuing a doctor of veterinary medicine degree the maximum attempted units may not exceed 150% of the published length of the educational program. Consequently, the Office of Student Financial Assistance attempts to set a threshold for the **Maximum Attempted Units Test** applied to students pursuing a doctor in veterinary medicine degree so that the student will fail this test at a point in time where he/she has attempted in excess of 100% units but is unlikely to have reached the 150% attempted units mark.

For example: Students pursuing a doctor in veterinary medicine degree (requiring the successful completion of 169 units), will fail the **Maximum Attempted Units Test** when the student has surpassed 210 attempted units without having completed his/her program of study. Allowing the student in this example to fail this SAP test at the 211 or more units attempted mark allows the OSFA to communicate to the student the necessity to complete the program of study before the 150% mark of 254 attempted units has been reached.

Graduate Programs of Study

For students pursuing a graduate degree the maximum attempted units may not exceed 200% of the published length of the educational program. Consequently, the Office of Student Financial Assistance attempts to set the threshold for the **Maximum Attempted Units Test** applied to graduate students so that the student will fail this test at a point in time where he/she has attempted in excess of 100% units but is likely to have not yet reached the 200% attempted units mark.

For example: Graduate students pursuing a typical Ph.D. graduate degree (requiring the successful completion of 90 units), will fail the **Maximum Attempted Units Test** when the student has surpassed 162 attempted units without having completed his/her program of study. Allowing the student in this example to fail this SAP test at the 162 or more units attempted mark allows the OSFA to communicate to the student the necessity to complete the program of study before the 200% mark of 180 attempted units has been reached.

Ratio of Attempted to Completed Units - Single Term Test

The Ratio of Attempted to Completed Units - Single Term Test is utilized as an additional quantitative measurement of SAP for K-State's undergraduate and professional (veterinary medicine) student populations. As the name implies, this test is specific to a student's most recently completed term of enrollment. The test sets a threshold that requires a student to successfully complete 75% of his/her attempted units for a given term.

Examples of the **Ratio of Attempted to Completed Units - Single Term Test:**

Example #1 – Undergraduate Student A attempts 15 units for the fall term. At the conclusion of the fall term, Student A has successfully completed 10 units. Since Student A failed to meet the 75% threshold of successfully completing at least 12 units (15 x .75 = 11.25 = 12 rounded up), Student A fails this SAP test.

Example #2 – Veterinary Medicine Student B attempts 20 units for the spring term. Student B successfully completes 18 units for the term. Since Student B surpassed the 75% threshold of completing a minimum of 15 units (20 x .75 = 15), Student B passes this SAP test.

Ratio of Attempted to Completed Units - Cumulative Test

The **Ratio of Attempted to Completed Units - Cumulative Test** is utilized as an additional quantitative measurement of SAP for K-State's undergraduate and professional (veterinary medicine) student populations. As the name implies, this test measures a student's cumulative pace toward degree completion by referencing the ratio of cumulative attempted units to the cumulative successfully completed units. The test sets a threshold that requires a student to successfully complete 75% of his/her cumulative attempted units.

Example of the **Ratio of Attempted to Completed Units – Cumulative Test:**

Example # 3 – Student C attempts 18 units for his first term (fall) at K-State. Student C successfully completes all 18 units for the fall term. Since the student completed 100% of his cumulative units attempted, he passes this test when evaluated at the conclusion of the fall term. Next, Student C attempts 15 units for the following spring term. This time, however, the student completes only 7 units. Since this test is cumulative, the total units attempted for the student's entire career (fall and spring) will be compared to the total units successfully completed for the student's entire career under this test at the conclusion of the spring term. Cumulative attempted units is equal to 33 (18 + 15) and the cumulative successfully completed units is equal to 25 (18 + 7). Since Student C completed 25 units (slightly higher than the 75% threshold of 24.75), the student still passes this SAP test at the conclusion of the spring term.

Where a student has successfully transferred course credits from other post secondary institutions to K-State, those credits are included in the **Maximum Attempted Units Test** noted above. More specifically, each credit successfully transferred to K-State is considered to represent one attempted unit which was successfully completed.

Both the **Ratio of Attempted to Completed Units Single Term Tes**t and the **Ratio of Attempted to Completed Units Cumulative Test** allow K-State to monitor the quantitative progress toward the completion of a degree program for students with various enrollment status i.e. full-time and part-time.

D) Qualitative Measure

K-State's Office of Student Financial Assistance utilizes two qualitative tests to measure a student's academic standing necessary to complete his/her degree program. These qualitative tests are:

- **Two Year Cumulative GPA Test**
- **Minimum Cumulative GPA Test**

Two Year Cumulative GPA Test

The **Two Year Cumulative GPA Test** is utilized by K-State's Office of Student Financial Assistance to measure the qualitative component of SAP for its undergraduate student population. To pass this test, undergraduate students must maintain a cumulative GPA of 2.000 or higher after having completed two terms.

Minimum Cumulative GPA Test

The **Minimum Cumulative GPA Test** is utilized by K-State's Office of Student Financial Assistance to measure the qualitative component of SAP for its graduate and professional (veterinary medicine) student population.

- To pass this test, a student pursuing a graduate degree must maintain a cumulative GPA of 3.000 or higher beginning with the first term evaluated.

- To pass this test, a student pursuing a professional (veterinary medicine) degree must maintain a cumulative GPA of 2.000 or higher beginning with the first term evaluated.

E) SAP Statuses and Implications

As students' SAP is evaluated at the regularly scheduled increments, K-State's Office of Student Financial Assistance will typically confer one of five differing SAP statuses upon a student. They are:

Meets – This status is indicative that a student has successfully passed all of the applicable quantitative and qualitative tests that were deployed in evaluating his/her SAP status. The student has passed the SAP eligibility criteria to receive federal, Title IV, forms of student financial assistance.

Warning – Since K-State's Office of Student Financial Assistance endeavors to evaluate student SAP at the conclusion of each regularly scheduled term (fall, spring, summer), a student may be placed on SAP *warning*. A student who has been placed on *warning* from a previous status of *meets* retains his/her federal Title IV student aid eligibility for one subsequent term of enrollment. A student on *warning* status is not required to successfully appeal his/her SAP status to receive federal, Title IV, student financial assistance.

Typically, a status of *warning* will be conferred on a student when his/her SAP status of *meets* is downgraded at a subsequent evaluation where the student fails to pass one or more of the applicable SAP tests outlined above.

Exclusion – This status indicates that the student is no longer eligible to receive federal, Title IV student financial aid.

Typically, a status of *exclusion* will be conferred on a student where he/she failed to pass all of the deployed SAP tests following a term in which his/her status had been determined to be *warning*.

Less frequently, a student may be placed on *exclusion* from a previous status of *meets* if the margin of failing to pass one of the above noted SAP tests is significant. To illustrate:

- For undergraduate and professional (veterinary medicine) students, a status of *exclusion* may be conferred from a previous status of *meets* if the Maximum Attempted Units Test indicates that the student has reached the 150% mark for attempted units.
- For graduate students, a status of exclusion may be conferred from a previous status of meets if the Maximum Attempted Units Test indicates that the student has reached the 200% mark for attempted units.
- For undergraduate students, a status of *exclusion* may be conferred from a previous status of *meets* if the Two Year Cumulative GPA Test indicates that the student has failed to obtain a 2.000 cumulative GPA after the completion of four (4) terms.
- For graduate students, a status of *exclusion* may be conferred from previous status of *meets* if the Cumulative GPA Test indicates that the student has failed to obtain a 3.000 cumulative GPA.
- For professional (veterinary medicine) students, a status of *exclusion* may be conferred from a previous status of *meets* if the Cumulative GPA Test indicates that the student failed to obtain a 2.000 cumulative GPA.

A student may also be placed on *exclusion* from a previous SAP status of *Probation – Single Term* or *Probation – Academic Plan* where the student failed to meet the academic expectations for the term in review.

Probation – single term – This status allows a student to receive federal, Title IV financial assistance for a single term following the successful appeal by the student of his/her SAP *exclusion* status. This status may be conferred on a student by the Office of Student Financial Assistance utilizing professional judgment associated with the appeal process. This status is applied where it has been determined that it is mathematically possible for the student to correct his/her SAP standing within the time span of one term. Typically, specific academic objectives for the term are established as a condition of the status of *probation – single term*.

Probation – academic plan - This status allows a student to receive federal, Title IV financial assistance for a potential period of time greater than one term following the successful appeal by the student of his/her SAP *exclusion* status. This status may be conferred on a student by the Office of Student Financial Assistance utilizing professional judgment associated with the appeal process. This status is applied where it has been determined that it is mathematically impossible for the student to correct his/her

SAP standing within the time span of one term. This status requires the creation of an *academic plan* that outlines academic recovery objectives over consecutive terms. A student with a status of *probation – academic plan* is evaluated at the conclusion of each term in an effort to determine if the student has successfully met the objectives for that particular term. Provided the student meets the objectives for a given term, he/she will remain on the *probation – academic plan* status with no additional SAP appeal required. Conversely, if a student with an SAP status of *probation – academic plan* fails to meet the objectives for a given term, as set out as a condition of this status, the student's SAP will be downgraded to *exclusion* with the resulting loss of federal, Title IV, student eligibility at the time of evaluation.

F) Appeals

Students who have been placed on *exclusion* status may file an appeal with K-State's Office of Student Financial Assistance. The appeal should include:

- contact information for the student,
- a statement from the student detailing the cause(s) for his/her failure to meet the SAP standards as well as his/her plans for future academic improvement, and
- a statement from the student's academic advisor and/or representative from his/her academic department/college corroborating the student's academic improvement plans

The above noted information may be submitted utilizing a Satisfactory Academic Progress Appeal Form that can be obtained under the 'Forms and Applications' link on the Office of Student Financial Assistance's webpage. Alternatively, the appeal may be submitted in whole or part via e-mail communication with the office by the student and/or his/her academic advisor.

Upon receipt of the completed Satisfactory Academic Progress Appeal Form, a director-level staff member or designated full-time staff member within the Office of Student Financial Assistance will review the information provided to determine if the student has encountered mitigating circumstances that warrant the continuation of federal, Title IV, student eligibility.

Examples of mitigating circumstances might include – student illness, death of a relative, full time employment, a protracted break from academic work, etc..

The Office of Student Financial Assistance reserves the right to premise an appeal decision, in place of or in augmentation with a completed Satisfactory Academic Progress Appeal Form, on a review of a student's academic history, as recorded in the University's student information system, and/or on communications with the student, the student's academic advisor, or the student's academic department.

The Office of Student Financial Assistance also reserves the right to refuse to review an appeal that has been submitted for a specific term after a set period of time for that term has already elapsed. To exercise this option a deadline for the term is disclosed to the student on the appeal form. In the event the office chooses to review a given appeal for a specific term after the deadline has passed, the office reserves the right to request additional information from the student and/or his/her instructors for the term in order to assess the student's most recent academic work.

An appeal may be approved or denied. SAP appeal determinations rendered by the Office of Student Financial Assistance are final and may not be contested.

G) Probationary Periods

In the event that the SAP appeal is approved, a SAP status of *probation – single term* or *probation – academic plan* will be conferred on the student.

As a condition of either of the *probation* statuses, the Office of Student Financial Assistance may set specific academic requirements. The requirements may include any combination of the following:

- successful completion of a set number of units for one or more academic terms
- attainment of a set percentage of attempted vs. completed for one or more terms

- attainment of a specific term GPA for one or more terms
- setting a limit on the number of units attempted for one or more terms
- interruption of one or more terms

*Note: The status of *probation – academic plan*, will be accompanied with specific academic requirements for each term covered by the academic plan. This status will be conferred on students after July 1, 2011.

H) Regaining Eligibility

Typically, to be conferred the SAP status of *meets* a student must pass all of the quantitative and qualitative measurements applicable to his/her academic career (i.e. graduate, undergraduate, or professional (veterinary medicine) as described in both the Quantitative Measurement and Qualitative Measurement sections above. After all, failure to meet any applicable test is indicative of a failure to meet SAP.

However, on a case-by-case basis the Office of Student Financial Assistance may place a student on SAP *meets* status where it has been determined that unique circumstances to the student render an incomplete assessment of the student's true SAP status via the systematic tests deployed. For example, a student may be placed on a SAP status of *meets* when it has been verified that not all transfer units accepted by K-State are applicable toward the student's program of study or when it has been verified that a student is pursuing more than one degree concurrently or when it can be verified that a student has switched from one degree program to a differing one.

I) Communication of SAP Statuses

Generally, the Office of Student Financial Assistance makes no special provision to inform a student that he/she has a SAP status of *meets*.

The communications outlined below typically take the form of either a paper or electronic (e-mail) notification. Electronic, e-mail communications are sent to the student's, official campus e-mail address.

If it has been determined that a student has either a SAP status of *warning* or *exclusion*, the Office of Student Financial Assistance will communicate this status to the student along with the implications of the status in regard to federal, Title IV eligibility. For students with the SAP status of *exclusion*, the office will take an additional step of setting a checklist item within the University's student information system, KSIS, which will alert the student to this status and inform the student how to file an appeal.

Probationary SAP statuses such as *probation – single term* or *probation – academic plan* are communicated to the student upon the successful completion of the student's appeal process.

Typically, the status of *probation – single term* will outline the expectations of the student for the following term. The status of *probation – academic plan* will also outline the requirements to be met over a series of subsequent terms. (Note: The status of *probation – academic plan* will not come into full effect until after July 1, 2011)

In the event that a SAP appeal is denied, a communication is sent to the student when the determination is made.

J) Treatment of Repeated Course Work, Incomplete Course Work, Withdrawals from Course Work, and Course Work with Non-punitive Grade Assignments

Repeated Course Work -

K-State's Office of Student Financial Assistance will allow grades earned as part of repeated course work to factor into a student's cumulative G.P.A. (qualitative) SAP standing, while reserving the right, on a case by case basis, to include only the highest grade

earned for a repeated course as part of a student's *exclusion* appeal. This approach is premised on the understanding that, generally, a course may not be double counted toward a student's degree completion requirements. However, all attempts by a student, even repeated attempts, will be counted by the Office of Student Financial Assistance as part of the student's pace/max time-frame (quantitative) SAP standing.

Incomplete Course Work-

Course work that results in a status assessment of "incomplete" will have no impact upon a student's qualitative SAP component until grades have been attached to that course work. However, all course work with a unit value associated to it will be counted as part of a student's quantitative SAP component – irrespective of whether a status of "incomplete" has been attached to the course work at the conclusion of the term or not.

Withdrawal from Course Work-

Withdrawals from course work on or after the census date for a given term are counted by the Office of Student Financial Assistance as part of the student's quantitative SAP evaluation. Conversely, if a student is withdrawn from a course prior to the term census date, that course will not count toward the student's quantitative SAP evaluation.

The Office of Student Financial Assistance reserves the right, on a student-by-student basis and as part of a successful *exclusion* SAP appeal, to exclude specific withdrawals from a student's quantitative SAP evaluation where legitimate, mitigating circumstances gave rise to the student's course withdrawal after the term's census date.

Course Work with Non-punitive Grade Assignments –

Course work with non-punitive grade assignments such as audited courses or credit/no-credit grading schemes will be counted by the Office of Student Financial Assistance within the quantitative component of a student's SAP evaluation.

English as Second Language (ESL) and remedial course work –

ESL and remedial course work will be counted by the Office of Student Financial Assistance within the quantitative component of a student's SAP evaluation.

K) Treatment of Transfer Units, Multiple Degrees, and Changes in Program of Study

Where a student's eligibility for federal, Title IV, student financial assistance is threatened by the accumulation of units earned, the Office of Student Financial Assistance will endeavor to establish whether the time frame to completion has been artificially inflated due to one of the following:

- transfer units counted that are not applicable to the student's program of study or
- units counted that are applicable to the simultaneous pursuit of more than one program of study or
- units counted that are applicable to a completed program of study plus an in progress program of study or
- units counted where the student has changed his/her program of study

In resolving SAP eligibility issues such as noted above, the Office of Student Financial Assistance may utilize such resources as access to the student's academic department/college, communication with the student, and/or utilization of a degree audit tool.

Where transfer units from other post-secondary institutions have been recorded, but are not applicable to the student's program of study, the Office of Student Financial Assistance will endeavor to re-set the student's SAP status to reflect only the completion of units applicable to the student's program of study.

Where a student may be working toward the completion of more than one program of study simultaneously, the Office of Student Financial Assistance will endeavor to re-set the student's SAP status to more accurately reflect an appropriate time frame. For example, a student simultaneously pursuing an undergraduate degree in biochemistry and an undergraduate degree in business is not likely to complete both programs of study within the time frame associated with a single undergraduate program of study.

Similar to the above scenario, the Office of Student Financial Assistance will also endeavor to re-set a student's SAP status to address situations where a student has already successfully completed one program of study but is currently pursuing an additional program of study. An example of such a situation is observed where a student is actively pursuing the completion of a program of study having already successfully completed an earlier program e.g. working toward a second bachelor's degree.

Where a student has changed his/her program of study, the Office of Student Financial Assistance will endeavor to re-set the student's SAP status to reflect only those units attempted/completed that are applicable to the student's most current pursuit of his/her program of study.

L) Academic Fresh Start GPA and Academic Forgiveness GPA

Although K-State offers two academic amnesty/renewal procedures known as "Academic Fresh Start GPA" and "Academic Forgiveness GPA," federal student aid regulations make no provisions for such institution-based academic renewal programs. In consequence, K-State's Office of Student Financial Assistance must determine a student's SAP status premised on all historical units attempted, units completed, and grades earned that are applicable to a student's program of study irrespective of the student's admission into one of these two K-State academic amnesty/renewal programs.

Support Services

Early Childhood Laboratory

1701 N. Manhattan Avenue
785-532-2226
Fax: 785-532-3537
E-mail: stonehouse@k-state.edu
www.he.k-state.edu/fshs

The Early Childhood Laboratory, located at the Hoeflin Stone House Early Childhood Education Center, houses a part-day preschool classroom and is sponsored by the School of Family Studies. The Early Childhood Laboratory is licensed by the state and is accredited by the National Academy of Early Childhood Programs. The children enrolled in the program range in age from three to five years. Children who are eligible by age to enter kindergarten are not eligible for enrollment in the program. The group is balanced by age and sex of the children. Within these guidelines, children are accepted by date of application. The total group size is 15 children. The half-day preschool sessions are operated Monday through Thursday, 8:30 - 11:30 a.m.

K-State Family Center

139 Campus Creek Complex
785-532-6984
Fax: 785-532-6523
E-mail: family@k-state.edu
www.he.k-state.edu/familycenter

The K-State Family Center is the marriage and family therapy clinic housed in the Campus Creek Complex. The Center provides applied educational training to students while offering counseling, family-related educational programs, consultation and mediation services for Manhattan and the surrounding communities. MFT faculty, doctoral and masters interns staff the Family Center providing individual, couple, family and group therapy for a range of mental health and family related issues. The Center uses a sliding fee scale making services affordable for all economic ranges. Appointments are available Monday through Thursday from 8am-9pm and on Fridays from 8am-5pm. The Family Center is also home to the state sponsored home-based

family therapy training project providing training on home-based family therapy for clinicians throughout the state of Kansas. This training is sponsored through a contract with KDAD's.

Hoeflin Stone House Early Childhood Education Center

1701 N. Manhattan Ave
785-532-3537
E-mail: stonehouse@k-state.edu
www.he.k-state.edu/stonehouse

The Hoeflin Stone House Early Childhood Education Center is located on the north side of campus at 1701 North Manhattan Avenue. The two-story house and architect-designed playgrounds support the development of young children from six weeks to 5 years of age. Children who are eligible by age to enter kindergarten are not eligible for the program. Eight children are enrolled in the infant room. The toddler group accommodates 10 children. Thirty children are enrolled in the preschool group. The groups are balanced by sex and age of the children. Priority is given to children whose parents work full time. Within these guidelines, children are accepted by date of application. The center is available only for full-day enrollments, five days a week. The hours are 7:30 a.m. to 5:30 p.m., and the center is open for most of the year, with the exception of university holidays, three weeks in August, and two weeks at the end of December. The Hoeflin Stone House Early Childhood Education Center is licensed by the state and is accredited by the National Academy of Early Childhood Programs.

Other Research Facilities and Equipment

A variety of specialized facilities is maintained to support research and scholarly work in the humanities, natural sciences, applied sciences, social sciences, and professional areas. Although an exhaustive listing is prohibitive, the following list represents a selection of supporting resources:

- Aquatic and terrestrial research laboratories
- Arp electronic music synthesizer
- Audiovisual materials center
- Center for Excellence in Computer-Controlled Automation
- Center for Extended Services and Studies
- Computer-Aided Design Laboratories
- Consortium for Political Research data banks
- Controlled environment test facility
- Editorial offices of major journals
- Experimental animal facilities
- Financial Therapy Clinic
- Fourier transform spectroscopic laboratory
- Glassblowing and instrument shops
- Greenhouses
- Heliodon and wind tunnel
- Herbarium and monographic library
- Insect reference collection
- Interior architectural shops
- Marriage and Family Therapy Clinic
- Near infrared protein laboratory

- Nuclear magnetic resonance spectrometers
- Physiology of exercise laboratory
- Plant disease diagnostic laboratory
- Population and demographic laboratory
- Recording Raman spectrometer
- Scanning electron microscope
- Soil testing laboratory
- Speech and Hearing Center
- Statistical laboratory
- Textile chemistry laboratory
- Textile conservation laboratory
- Transmission electron microscope
- Veterinary diagnostic laboratory
- Weather data laboratory
- Wind and soil erosion laboratory
- X-ray diffractometers

Scholarly and Professional Publications

College of Architecture and Design Newsletter of the Rural/Small Town Planning Division, American Planning Association-information, articles, and essays on the nature of rural/small town planning. Oz, modern architectural trends.Environmental and Architectural Phenomenology Newsletter, information and features on environmental design as place making.

College of Education Educational Considerations, timely papers on educational issues at all levels. Media Adult Learning, research, reviews, papers.

College of Engineering Kansas State Engineer, technical and nontechnical articles on engineering developments. Research Activities, biennial report on research in the College of Engineering.

College of Veterinary Medicine Veterinary and Human Toxicology, toxicology, research, reviews, and field observation.

Continuing Education National Issues in Higher Education, proceedings of annual meetings on educational issues. IDEA Papers, series on college teaching, from the Center for Faculty Evaluation and Development.

Cooperative Agricultural Extension Numerous publications about research, in varied formats for various audiences.

Department of English Literary Magazine Review, reviews of literary magazines and commentary on the international noncommercial literary magazine scene. Touchstone, student literary magazine. The Spenser Newsletter, the official publication of the Spenser Society.

Department of History Journal of the West, history and culture of the U.S. West.

Department of Modern Languages Studies in Twentieth Century Literature, literary theory and practical criticism of 20th-century literature in French, German, Russian, and Spanish (with University of Nebraska, Lincoln).

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Kansas State University, in association with the other five Regents universities, operates and supports the University Press of Kansas for the purpose of publishing scholarly and regional books on a nonprofit basis. K-State joined the consortium in 1967 when the press was officially reorganized by the Kansas Board of Regents. Until mid-1982, the operation was known as the Regents Press of Kansas.

The University Press of Kansas is the first American university press to operate as a statewide consortium under the specific sponsorship of all the state's universities. A member of the Association of American University Presses since its founding in 1946, the press has published over 1400 titles, with more than 975 currently in print. Its ongoing American Presidency Series, with 35 titles issued to date, has been praised as one of the most interesting and rewarding historical series in this country.

The press is governed by a board of trustees, who are the chief academic officers of the sponsoring institutions and who appoint two members and two alternates from each faculty to serve on the advisory editorial committee.

University Faculty and Professional Staff

About this Section

This section lists each faculty member's name, title, academic degrees, and year of first appointment at K-State (in parentheses) and Professional Staff.

AAKERÖY, CHRISTER B., University Distinguished Professor of Chemistry (1996). MSc 1985, Uppsala University, Sweden; D. Phil. 1990, University of Sussex, United Kingdom.

ABEL, R. LYNN, Instructor of Anatomy and Physiology (2004). DVM 1998, Kansas State University.

ACKER, DUANE C., President Emeritus (1975). BS 1952, MS 1953, Iowa State University; PhD 1957, Oklahoma State University.

ACKERMAN, PATRICIA E., Professor of School of Integrated Studies (2001). BA 1978, Marymount College; MS 2000, Fort Hays State University; PhD 2007, Kansas State University.

ACKLESON, JASON, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2007). BA 1997, New Mexico State University; PhD 2002, The London School of Economics and Political Science.

ADAM, CLAUDIA, Assistant Professor of Geophysics (2016). PhD 2003, Institut de Physique du Globe de Paris (IPGP), France.

ADAMS, A. PAIGE, Research Assistant Professor of K-State Olathe, Ancillary Faculty of Diagnostic Medicine/Pathobiology (2014). BS 1990, DVM 1993, Texas A&M University; PhD 2004, Cornell University.

ADAMS, JAMES P., Associate Professor Emeritus; Extension Specialist, 4-H Youth Development (1976). BA 1969, Kansas State University; MS 1971, Oklahoma State University.

ADAMS, REBECCA, Instructor in Finance. MBA 2008, Kansas State University.

ADAMS, ROGER, Associate Professor, Rare Books Librarian, K-State Libraries (1998). BA 1991, Northern Kentucky University; MLS 1994, University of Kentucky.

ADAMS-WRIGHT, GAYLA, Academic Advisor, College of Arts and Sciences (2004). BS 1996, MS 1998, Emporia State University.

ADDISON, BARBARA L., Extension Agent Emeritus, 4-H, Finney County, Garden City (1998). BS 1969, Oklahoma State University.

ADDISON, CONALL E., Instructor Emeritus, Extension Specialist, 4-H Youth Development Programs, Southwest (1995). BS 1966, Tulsa University; BS 1970, MS 1972, Oklahoma State University.

ADE, CARL J., Assistant Professor of Kinesiology (2016). BS 2004, Kansas Wesleyan University; MS 2008, PhD 2013, Kansas State University.

ADHIKARI, KOUSHIK, Adjunct Associate Professor of Food, Nutrition, Dietetics and Health (2005). BS 1987, MS 1989, National Dairy Research Institute; PhD 2000, University of Missouri.

AGUILAR, JONATHAN, Associate Professor, Water Resources Engineer, Southwest Area Extension Office, (2012). BS 1996, MS 2005, University of the Philippines-Los Banos; PhD 2009, Kansas State University.

AHERN, CHRIS, Assistant Professor of Architectural Engineering and Construction Science (2012). BS/MS 2005, Kansas State University; Professional Engineer.

AHLERS, ADAM, Assistant Professor of Wildlife and Outdoor Enterprise Management (2015). AA 1998, Northeast Community College Liberal Arts; BS 2007 Eastern Illinois University; MS 2010, University of Illinois; PhD 2015, University of Illinois.

AHLVERS, DAVID A., Professor Emeritus of School of Integrated Studies (1982). AA 1970, Cloud County Community College; BS 1972, MS 1974, Fort Hays State University; CPA.

AIKEN, ROBERT M., Associate Professor Research Crop Scientist, Northwest Research Extension Center (1998). BS 1977, MS 1988, University of Nebraska; PhD 1992, Michigan State University.

AIKENS, CHRISTINE M., Professor of Chemistry (2007). BS 2000, University of Oklahoma; PhD 2005, Iowa State University.

AKINS, RICHARD GLENN, Professor Emeritus of Chemical Engineering (1963). BS 1957, MS 1958, University of Louisville; PhD 1962, Northwestern University.

AKHUNOV, EDUARD D., Professor of Plant Pathology (2007). BS 1990, Bashkirian State University; MS 1992, Novosibirsk State University; PhD 1999, Institute of Genetics.

AKHUNOVA, ALINA, Research Associate Professor of Plant Pathology (2007). MS 1992, PhD 1998, Bashkirian State University, Russia.

ALALI, BACIM, Assistant Professor of Mathematics (2014). BS 1998, Yarmouk University; MS 2005, PhD 2008, Louisiana State University.

ALAM, MAHBUB, Associate Professor Emeritus, Extension Biological and Agricultural Engineering; Extension Specialist, Irrigation and Water Management (1996). BS 1961, MS 1978, American University of Beirut; PhD 1985, Colorado State University.

ALAVI, SAJID, Professor of Grain Science and Industry (2002). BS 1995, Indian Institute of Technology, India; MS 1997, Pennsylvania State University; PhD 2001, Cornell University.

ALBERTO, JAMIE (JAMES) P., Instructor of Curriculum and Instruction (2017). BS 2012, MS 2017, Kansas State University.

ALBRIGHT, KENNETH B., Associate Professor Emeritus; Extension Specialist, Community Development, South Central (1955). BS 1952, Kansas State University; MEd 1967, Colorado State University.

ALBIN, NATHAN, Associate Professor of Mathematics (2011). BA 2001, University of Hawaii; MS 2004, PhD 2006, University of Utah.

ALDRICH, GREG, Research Associate Professor of Grain Science and Industry (2012). BS 1984, Kansas State University; MS 1991, University of Missouri; PhD 1995, University of Illinois.

ALEXIS, CYDNEY, Associate Professor of English (2014). BA 1995, MA 2000, University of Florida; PhD 2012, University of Wisconsin-Madison.

ALFONSO-DURRUTY, MARTA, Associate Professor of Anthropology (2011). BA 1995, Universidad de Chile; MA 2002, University of Nevada-Las Vegas; PhD 2008, Binghamton University.

ALFORD, GRANT, Assistant Professor in Architecture (2018). BS 2005, Texas Tech; March 2008, Princeton

ALGRIM, EUGENE E., Extension Agent Emeritus, Agriculture and Natural Resources, Walnut Creek District 2, LaCrosse (1976). BS 1965, MS 1972, Kansas State University.

AL-HAMDI, MOHANED TALIB, Instructor of Economics (2005). BSc 1998, MSc 2000, University of Central Missouri; PhD 2005, Kansas State University.

AL-KHATIB, KASSIM, Professor Emeritus of Agronomy; Weed Physiology Research (1996). BS 1971, MS 1977, University of Baghdad; PhD 1984, Kansas State University.

ALLBAUGH, RACHEL A., Assistant Professor of Clinical Sciences, Ophthalmology (2008). DVM 2004, Iowa State University; MS 2009, Kansas State University; Diplomate, American College of Veterinary Ophthalmologists.

ALLEN, BEN W., Extension Agent Emeritus, Agriculture and Natural Resources, Rolling Prairie District 8, Sedan (1997). BS 1979, Montana State University.

ALLEN, CHRISTOPHER, Assistant Strength and Conditioning Coach at K-State Athletics (2018), BA, BS 2000, MS 2005 West Virginia University.

ALLEN, DAVID, Associate Professor, Head of University Archives and Special Collections, K-State Libraries (1987). BA 1978, MLS 1982, Brigham Young University.

ALLEN, DAVID S., Associate Professor of Curriculum and Instruction (2001). BS 1989, MEd 1998, Eastern New Mexico University; EdD 2001, Texas Tech University.

ALLEN, ERIC B., Farm Management Economist Emeritus (1973). BS 1971, MS 1972, Kansas State University.

ALMES, KELLI, Clinical Assistant Professor of Diagnostic Medicine/Pathobiology (2010). BS 2003, DVM 2005, Kansas State University; Diplomate 2009, American College of Veterinary Pathologists.

ALTHAUSER, CRAIG, Farm Management Executive Economist (1995). BS 1993, MS 1995, Ohio State University.

ALVES, FERNANDO PIERUCCI, Research Assistant Professor of Anatomy and Physiology (2004). DVM 1999, Federal University of Uberlandia.

AMAMA, PLACIDUS B., Assistant Professor of Chemical Engineering (2013). BS 1992, University of Calabar Nigeria; MS 1999, PhD 2002, Yokohama National University, Japan.

AMAMCHARLA, JAYENDRA, Associate Professor of Animal Sciences and Industry (2012). BS 1998, Acharya N. G. Ranga Agricultural University; MS 2001, National Dairy Research Institute; PhD 2008, North Dakota State University.

AMACHAWADI, RAGHAVENDRA, Assistant Professor of Clinical Sciences. Food Animal Therapeutics 2016, BVSc 2002, Bangalore Veterinary College; MS 2010, Graduate Certificate 2012, PhD 2014, Kansas State University.

AMANOR-BOADU, VINCENT, Professor of Agricultural Economics, Agribusiness Economics and Management (2002). BSc 1985, University of Ibadan, Nigeria; MSc 1987, University of Ife, Nigeria; PhD 1992, University of Guelph.

AMARIUCAI, GEORGE, Associate Professor of Computer Science (2017). BS 2003, MSc 2004, Polytechnic University of Bucharest; PhD 2009, Louisiana State University.

AMBROSE, R.P. KINGSLY, Assistant Professor of Grain Science and Industry (2012). BS 1995, MS 1998, Tamil Nadu Agriculture University, India; PhD 2010, Purdue University.

AMERI, MEHRDAD, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2014). DVM 1991, PhD 1996, University of Tehran; 1996, Board Certification in Clinical Pathology, Tehran; 2008 Diplomate, American College of Veterinary Pathologists.

AMES, BARBARA L., Extension Agent, Family and Consumer Sciences, Wildcat District 14, Independence (2004). BS 1986, Pittsburg State University.

AMORIM, LINO, Assistant Professor of Mathematics (2017). MA 2008, PhD 2012, University of Wisconsin-Madison; Licenciatura 2006, Faculdade de Ciências da Universidade do Porto.

AMRINE, DAVID, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2014). BS 1997, Wichita State University; DVM 2009, PhD 2013, Kansas State University.

AMTOFT, TORBEN, Associate Professor of Computer Science (2002). BSc 1985, MSc 1989, University of Copenhagen; PhD 1993, University of Aarhus.

ANDERSON, BARBARA G., Professor and Head of Interior Design and Fashion Studies (1998). BArch 1983, Kansas State University; March 1993, University of Kansas.

ANDERSON, FREDERICK, Graphic Designer Emeritus, Department of Communication and Agricultural Education (1982). BA 1971, BFA 1991, Kansas State University.

ANDERSON, GARY A., Professor and Director of Diagnostic Laboratory (2005). BS 1975, South Dakota State University; DVM/MS 1979, Kansas State University; PhD 1983, University of California-Davis.

ANDERSON, HANNAH K., Extension Agent, 4-H Youth Development, Harvey County, Newton (2016). BS 2015, Kansas State University.

ANDERSON, JARED R., Associate Professor of Family Studies and Human Services (2007). BA 1998, Graceland University; MS 2001, Kansas State University; PhD 2007, University of Minnesota.

ANDERSON, PHILLIP D., Instructor Emeritus of Communications Studies (1980). MA 1966, Indiana University.

ANDERSON, RODNEY L., Associate Professor Emeritus of School of Integrated Studies (1984). BSEE 1958, Kansas State University; Professional Engineer.

ANDRES, DEBRA, Extension Agent Emeritus, Family and Consumer Sciences, Geary County, Junction City (2013). BS 1988, MS 1997, Kansas State University.

ANDRESEN, DANIEL A., Professor of Computer Science (1997). BS 1990, Westmount College; MS 1992, California Polytechnic State University; PhD 1997, University of California-Santa Barbara.

ANDREWS, MARY ANNE, Director of Academic and Student Services, College of Health and Human Sciences (1989). BSE 1980, MS 1984, Oklahoma State University.

ANDRUS, LYNDA E., Professor Emeritus of Art (1983). BFA 1978, University of Hawaii; MA 1979, MFA 1981, University of Iowa.

ANJI, ANTJE, Research Associate Professor of Anatomy and Physiology (2006). MD 1988, Bangalore University, India; PhD 2001, University of Texas health Science Center.

ANNO, RINA, Assistant Professor of Mathematics (2017). PhD 2008, Harvard University; Diploma 2003 Moscow State University; Diploma 2003, The Independent Univ. of Moscow.

ANTHONY, JENNIFER L., Associate Professor of Chemical Engineering (2005). BS 1999, University of Colorado, Boulder; MS 2003, PhD 2004, University of Notre Dame.

ANTONIOLI, KATHLEEN, Associate Professor of French (2014). BA 2004, Lewis and Clark College; MA 2008, PhD 2011, Duke University.

APEL, J. DALE, Professor Emeritus; Extension 4-H Youth Specialist (1962). BS 1950, Kansas State University; MS 1961, The American University; PhD 1966, University of Chicago.

APLEY, MICHAEL D., Frick Professor of Clinical Sciences, Production Medicine/Clinical Pharmacology (2005). BS 1981, DVM 1987, PhD 1992, Kansas State University; Diplomate 1994, American College of Veterinary Clinical Pharmacology.

APPEL, JON A., Adjunct Assistant Professor of Plant Pathology (1989). BS 1979, Fort Hays State University; MS 1982, Clemson University.

APPL, FREDRIC C., Professor Emeritus of Mechanical and Nuclear Engineering (1960). BS 1954, MS 1955, PhD 1958, Carnegie-Mellon University.

APPLEBY, MARIELLEN J., Associate Professor Emeritus; Extension Home Economist, Southeast (1955). BS 1955, Kansas State University; MS 1965, University of Maryland.

ARAMOUNI, FADI M., Professor of Animal Sciences and Industry, Extension Specialist (1989). BS 1977, MS 1980, American University of Beirut; PhD 1986, Louisiana State University.

ARATA, DARALYN GORDON, Coordinator, Office of Pre-Law Advising (2002). BA 1970, JD 1975, College of William & Mary; LLM 1979, George Washington University.

ARATA, JOSEPH O., Professor Emeritus of Agricultural Economics, Agribusiness (1996). BS 1969, St. Peters College; PhD 1994, Kansas State University.

ARCHER, ALLEN W., Professor Emeritus of Geology (1989). BS 1975, Oregon State University; AM 1979, PhD 1983, University of Indiana.

ARGABRIGHT, JOELLYN, Extension Agent, Family and Consumer Sciences, Rawlins County, Atwood (2014). BS 2008, Kansas State University.

ARIYARATNE, CHATURA, Research Assistant Professor of Agricultural Economics (2008). BSc 1992, University of Peradeniya, Sri Lanka; MSc 1997, PhD 2001, Kansas State University.

ARMSTRONG, PAUL R., Adjunct Assistant Professor of Biological and Agricultural Engineering. BEng 1980, University of Southern Queensland; MSc 1982, Oklahoma State University; PhD 1989, Michigan State University.

ARNOLD, JO ELLEN, Extension Agent Emeritus, 4-H, Frontier District 11, Ottawa (1977). BS 1977, Kansas State University.

ARRINGTON, AMANDA, Instructor of Music, School of Music, Theatre, and Dance (2010). BME 2005, Kansas State University; MA 2008, University of Central Missouri.

ARTHAUD-DAY, BRIAN, Instructor in Finance. BA 1990, Wake Forest University; MTS 1993, Trinity Lutheran Seminary; MBA, Indiana University – Purdue University at Indianapolis.

ARTHAUD-DAY, MARNE L., Associate Professor of Management (2005). BA 1992, Wake Forest University; MDiv 1995, Princeton Theological Seminary; MBA 2000, University of Texas-San Antonio; PhD 2004, Indiana University.

ARTHUR, FRANKLIN H., Adjunct Professor of Entomology; USDA Grain Marketing Research Center, Stored Grain Insect Pest Management (1995). BS 1976, University of Florida; PhD 1985, North Carolina State University.

ARTZER, MARJORY, Clinical Assistant Professor, Pet Health (2008). DVM 1996, MS 2009, Kansas State University.

ARYAL, SANTOSH, Assistant Professor of Chemistry (2014). BS 1994, MS 1996, Tribhuvan University; PhD 2007, Chonbuk National University.

ASANO, KATSURA, Professor of Biology; Molecular and Cellular Biologist (2001). BS 1989, MS 1991, PhD 1994, University of Tokyo, Japan.

ASENETA, LYDIA, Associate Professor Emeritus of Speech (1967). BS 1949, MA 1958, The National Teachers' College of the Philippines; MA 1968, Kansas State University.

ASLIN, RAYMOND G., Professor Emeritus of Forestry (1975). BS 1972, MS 1975, University of Missouri.

ATCHISON, FRED D., Associate Professor Emeritus; District Forester, Northeast (1964). BS 1954, University of Georgia; MS 1972, Fort Hays State University.

ATCHISON, ROBERT L., Assistant Forester; District Forester, Northeast (1990). BS 1981, University of Missouri.

ATKINSON, ERIC, Professor, Radio Specialist, Department of Communications and Agricultural Education (1983). BS 1978, MS 1982, Kansas State University.

AUCKLY, DAVID, Professor of Mathematics (1997). BS 1985, Arizona State University; PhD 1991, University of Michigan.

AUGUSTINE-SHAW, DONNA M., Associate Professor of Educational Leadership (2012). BME 1985, Marymount College of Kansas; MEd 1993, EdD 2001, Wichita State University.

AURAND, GINA, Extension Agent, Family and Consumer Sciences, River Valley District 4, Belleville (2008). BS 1992, Kansas State University.

AUSTIN, NICHOLAS A., Associate Director of Enrollment Management Technology Services (2000). BS 1998, Kansas State University.

AUTEN, SUZY, Director, Professional MBA Program, College of Business Administration. BS, Kansas State University; MA, Kansas State University.

AZER, NAIM Z., Professor Emeritus of Mechanical and Nuclear Engineering (1958). BS 1950, MS 1954, University of Alexandria, Egypt; PhD 1959, University of Illinois.

AZUMA, YOSHIHIRO, Instructor, Junior Surgery (2019); BS 1987, DVM 1989, Nippon Veterinary and Life Science University, Tokyo, Japan.

AZUMA, CHIEKO, Clinical Associate Professor, Radiation Oncology (2019); BS 1992, Nippon Veterinary and Life Science University, Tokyo, Japan; PhD 2004, North Carolina State University; Diplomate 2001, American College of Veterinary Radiology (Radiation Oncology).

BABCOCK, LINDSEY, Executive Associate Athletics Director for Compliance at K-State Athletics (2012). BS 1999, Elmira College; MS 2001, West Virginia University.

BABCOCK, MICHAEL W., Professor Emeritus of Economics (1972). BS 1967, BA 1967, Drake University; MA 1969, PhD 1973, University of Illinois.

BABIN, BRUCE R., Instructor of Mechanical and Nuclear Engineering (2014). BS 1988, MS 1991, Texas A&M University; PhD 1998, University of Arizona.

BACH, JAMES A., Director Accounting Services, General Accounting (1994). BS 1991, Kansas State University; CPA 1995, State of Kansas.

BACHMEIER, LANCE J., Associate Professor and Director of Graduate Studies of Economics (2004). BS 1997, Northern State University; PhD 2002, Texas A&M University.

BAGLADI-SWANSON, MARY S., Clinical Professor, Dermatology (1998). BS 1981, Michigan State University; DVM 1989, Kansas State University; Diplomate 1997, American College of Veterinary Dermatology.

BAI, GUIHA, Adjunct Assistant Professor of Agronomy (2003). BS 1982, MS 1985, Nanjing Agricultural University, China; PhD 1995, Purdue University.

BAI, JIANFA, Assistant Professor of Diagnostic Medicine/Pathobiology, Molecular Diagnostics (2007). BS 1982, Northwest Agricultural University, China; MS 1990, University of Philippines; PhD 2000, Kansas State University.

BAILEY, HEATHER, Associate Professor of Psychological Sciences (2013). BS 2002, Southern Illinois University-Edwardsville; MA 2005, Wake Forest University; PhD, Kent State University.

BAILEY, MARY E., Continuing Resources Librarian, K-State Libraries (1989). BS 1988, Kansas State University; MLS 2004, Emporia State University.

BAILEY, SALLY D., Professor of Theatre, School of Music, Theatre, and Dance (1999). BFA 1976, University of Texas-Austin; MFA 1981, Trinity University; MSW 1998, University of Maryland-Baltimore.

BAILEY, STACEY, Assistant Director (2003). BA 2003, MS 2012, Kansas State University.

BAILIE, WAYNE, Professor Emeritus of Diagnostic Medicine/Pathobiology (1994). BS 1957, DVM 1957, PhD 1969, Kansas State University; Diplomate 1980, American College of Veterinary Microbiologists.

BAIRD, CHARDIE, Associate Professor of Sociology, and Executive Director for KAWSE (2008). BS 1996, College of Charleston; MS 2000, PhD 2005, Florida State University.

BAKER, AIMEE C., Extension Agent, Family and Consumer Sciences, Wichita County, Leoti (2015). BS 2015, Kansas State University.

BAKER, ALLEN W., Extension Agent, Agriculture and Natural Resources, Wichita County, Leoti (2002). BS 1999, West Texas A&M University.

BAKER, RICHARD P., Associate Professor Emeritus, Department of Communications and Agricultural Education (1977). BS 1972, MS 1983, Kansas State University.

BALDWIN, LAVERNE BITSIE, Director of Multicultural Engineering Program (2005). BA 1991, Fort Lewis College; MS 2000, Kansas State University.

BALDWIN, WILL G., Associate Director of Information Technology, Biosecurity Research Institute (1993).

BALL, HERBERT D., Professor Emeritus of Mechanical and Nuclear Engineering (1958). BS 1952, MS 1958, University of Nebraska; PhD 1972, Kansas State University.

BALLOU, RUSSELL S., Communications Specialist Emeritus, Department of Communications and Agricultural Education (1973). BS 1971, Kansas State University.

BALTRIP, KIMETRIS N., Assistant Professor of Journalism and Mass Communications (2005). BA 1990, Prairie View A&M University; MA 1992, EdD 1997, University of Akron.

BAMMERLIN, LAUREL L., Extension Agent, Agriculture and Natural Resources, Flint Hills District 13, Council Grove (2013). BS 2006, Kansas State University; MS 2012, Oklahoma State University.

BANBURY, EVANS E., Professor Emeritus, Colby Branch Agricultural Experiment Station (1946). BS 1940, Kansas State University.

BANKS, WILLIAM, Assistant Director of Student Athlete Services at K-State Athletics (2012). BS 2007, Alma College; MS 2011, Kansas State University.

BANNER, CHRIS, Assistant Instructor Emeritus of Music, School of Music, Theatre, and Dance (1993). MM 1983, Kansas State University; BS 1991, MS 1993, University of Hawaii.

BANNISTER, STEPHANIE J., Associate Director, Housing and Dining Services (1999). BA 1993, Fort Hays State University; MS 1995, University of Kansas; PhD 2009, Kansas State University.

BAONGA, KRISTI, Culinary Operations Manager I, Registered Dietitian, Housing and Dining Services (2013). BS 2013, MS 2018, Kansas State University.

BAPTIST, JOYCE A., Associate Professor of Family Studies and Human Services (2006). BS 1992, Systematic College; MA 2000, Loyola University; PhD 2002, Virginia Tech.

BARDEN, CHARLES J., Professor of Horticulture and Natural Resources (1998). BS 1984, University of Rhode Island; MS 1987, Virginia Tech; PhD 1989, Pennsylvania State University.

BARDHAN, SOUMIA, Assistant Professor of Communication Studies (2015). BA 2001, University of Calcutta; MA 2003, University of Madras; PhD 2011, University of New Mexico.

BARKLEY, ANDREW P., Professor of Agricultural Economics, Agricultural and Public Policy (1988). BA 1984, Whitman College; MA 1986, PhD 1988, University of Chicago.

BARKLEY, L. ANN, Extension Agent Emeritus, Family and Consumer Sciences, Shawnee County, Topeka (1974). BS 1969, Kansas State University.

BARNABY, G.A. (ART), JR., Professor of Agricultural Economics, Extension State Leader and Agricultural Economist, Farm Management. (1979). BS 1973, Fort Hays State University; MS 1976, New Mexico State University; PhD 1979, Texas A&M University.

BARNARD, KENNETH, Professor Emeritus of School of Integrated Studies (1977). AA 1967, Riverside City College; AT 1977, Kansas Technology Institute; BS 1977, Kansas State University; MS 1980, Pittsburg State University; EdD 1998, Oklahoma State University.

BARNES, ALTON A., JR., Professor Emeritus of Landscape Architecture and Regional & Community Planning (1967). BLA 1965, University of Georgia; MLA 1968, University of Illinois. Registered Landscape Architect.

BARNES, HELEN L., Extension Home Economist Emeritus, Linn County, Mound City (1964). BS 1949, University of Missouri.

BARNES, MICHEAL D., Military Student Services Coordinator, K-State Global Campus (2015). BA 2009, Thomas Edison State College; MA 2013, Kansas State University.

BARNES, SIDNEY M., Assistant Professor Emeritus of School of Integrated Studies (1981). BA 1973, MA 1973, MA 1975, Loyola University.

BARNETT, MARK A., Professor of Psychological Sciences (1975). BA 1971, PhD 1975, Northwestern University.

BARNETT, MICHEAL, Instructor of Biochemistry and Molecular Biophysics (2017). BS 1999, MS 2001, PhD 2004, Kansas State University.

BARNETT, VALERIE, Instructor of Management (2006). BS 1986, Washburn University; MBA 1993, Kansas State University.

BARNHART, R. KURT, Associate Dean of Research and Engagement and Professor, School of Integrated Studies (2007). AS 1989, Vincennes University; BS 1991, Purdue University; MBA 1994, Embry Riddle Aeronautical University; PhD 2002, Indiana State University.

BARNHART, LYDIA J., Coordinator of Special Populations (2018). BFA 2014, Sam Houston State University; M.Ed. 2017, Southern Arkansas University.

BARR, SARAH S., Attorney for Students (2002). BA 1969, Fort Hays State University; JD 1985 Washburn University School of Law.

BARRETT, ELIZABETH B., Associate Professor Emeritus of Hospitality Management (1991). BA 1971, Stephen F. Austin State University; MS 1983, University of Southern Mississippi; PhD 1993, Kansas State University.

BARRETT, SARAH F., Clery Act Federal Compliance Coordinator (2014). BS 2008, M.S. 2014, Kansas State University.

BARRY, CATHERINE C., Associate Clinical Director, Lafene Health Center (1980). BS 1968, Ohio State University; MS 1993, Kansas State University.

BARSTOW, THOMAS J., Professor of Kinesiology (1996). BS 1974, MA 1978, PhD 1985, University of California-Davis.

BARTON, DAVID G., Professor Emeritus of Agricultural Economics, Agricultural Economist, Business Management (1976). BS 1967, Utah State University; MS 1970, PhD 1974, Purdue University.

BASCOM, MARCIA, Visiting Assistant Professor of Architecture (2013). BLA 1987, Kansas State University.

BASHFORD, CRYSTAL M., Extension Agent, Family and Consumer Sciences, Morton County, Elkhart (1998). BS 1997, Oklahoma Panhandle State University.

BATES, MARLIN A., Extension Agent, Horticulture, Douglas County, Lawrence (2014). BS 2005, MS 2007, Kansas State University.

BAUDOIN, GENEVIEVE, Associate Professor of Architecture (2013). BA 2002, Oberlin College; MArch 2007, Harvard University.

BAUER, TAMARA, Instructor of the Staley School of Leadership Studies (2010). BS 2005, MS 2012, Kansas State University.

BAUERNFEIND, ROBERT J., Professor Emeritus of Entomology; Extension Specialist, Entomology (1978). BS 1967, MS 1976, PhD 1978, University of Wisconsin.

BAUGHER, EARL EUGENE, Associate Professor Emeritus of Biological and Agricultural Engineering (1967). BS 1958, MS 1964, Kansas State University.

BAUSCH, ANGELA, Farm Management Economist (2018). BA 1995, Loras College, MAB 2016, Kansas State University.

BAYLESS, HEATHER, Instructor of Art (2010). BFA 2003, Miami University of Ohio; MFA 2007, Kookmin University, Seoul South Korea.

BAYBUTT, RICHARD C., Adjunct Assistant Professor of Food, Nutrition, Dietetics and Health (1994). BS 1978, Syracuse University; MS 1983, University of Maryland; PhD 1992, Pennsylvania State University.

BEAMISH, ANNE, Associate Professor of Landscape Architecture and Regional & Community Planning (2011). BArch 1979, Carleton University; SMArchS 1993, MCP 1995, PhD 2000, Massachusetts Institute of Technology.

BEAN, NATHAN, Instructor/Advisor/K-12 Program Coordinator of Computer Science (2004). BS 2003, MA 2009, Kansas State University; MS 2005, University of Abertay Dundee.

BEAN, SCOTT R., Adjunct Assistant Professor of Agronomy and Adjunct Assistant Professor of Grain Science and Industry (2002). BS 1993, MS 1996, PhD 2001, Kansas State University.

BEAR, ROBERT A., Senior Instructor of Biology (2004). BS 1992, MS 1995, Cleveland State University.

BEARD, LAURIE, Clinical Professor, Equine Internal Medicine (2004). BS 1987, DVM 1991, Washington State University; MS 1995, Ohio State University; Diplomate 1995, American College of Veterinary Internal Medicine.

BEARD, REGINA M., Associate Professor Emeritus, Faculty and Graduate Services Librarian, K-State Libraries (2005). BS 1982, University of Kansas; MLIS 2003, Clark Atlanta University.

BEARD, WARREN, Professor of Clinical Sciences, Equine Surgery (2004). BS 1982, DVM 1983, Texas A&M University; MS 1988, Ohio State University; Diplomate 1989, American College of Veterinary Surgeons.

BECK, B. TERRY, Professor of Mechanical and Nuclear Engineering (1979). BS 1971, MS 1974, PhD 1978, Oakland University.

BECKHAM, TAMMY R., Professor of College of Veterinary Medicine (2015). BM 1986, MM 1989, University of Cincinnati; DVM 1998, PhD 2001, Auburn University.

BECKMAN, BRADLEY, Media Production Specialist, Department of Communications and Agricultural Education (2013). BS 1980, University of Idaho.

BECKMAN, JOHN H., Extension Agent, Agriculture and Natural Resources, Scott County, Scott City (1992). BS 1982, Oklahoma Panhandle State University.

BEEBE, MARIA, Associate Director/H-1B and J-1 Scholar/Professor Coordinator of International Student and Scholar Services (2000). BA 1982, Pennsylvania State University; MA 2012, Kansas State University.

BEECH, LINDA K., Extension Agent, Family and Consumer Sciences, Ellis County, Hays (1979). BS 1979, Kansas State University.

BEHARRY, NATALIE T., Certified Sign Language Interpreter, Student Access Center (1996). KQAS Certified 1990.

BEHNKE, BRAD J., Associate Professor of Kinesiology (2014). BS 1998, MS 2000, PhD 2003, Kansas State University.

BEHNKE, KEITH C., Professor Emeritus of Grain Science and Industry; Feed Technology Research Scientist, Agricultural Experiment Station (1977). BS 1968, MS 1973, PhD 1975, Kansas State University.

BEJOT, DENNIS D., County Extension Director Emeritus, Douglas County, Lawrence (1989). BS 1966, MS 1968, University of Nebraska; PhD 1981, Iowa State University.

BELANGER, BLAKE M., Assistant Professor of Landscape Architecture and Regional & Community Planning (2007). BLA 1995, Michigan State University; MLA/MUD 2006, University of Colorado-Denver.

BELIN, GEORGE, Instructor of Human Ecology, Personal Financial Planning, School of Integrated Studies (2014). BA 1988, University of Notre Dame; MA 1998, Indiana University.

BELL, CATHERINE, Compliance Coordinator at K-State Athletics (2013). BA 2008, MA 2013, Kansas State University.

BELL, SAM, Associate Professor of Political Science (2009). BA 2004, University of Albany; MA 2007, PhD 2009, Binghamton University.

BELL, THOMAS, Associate Professor, Faculty and Graduate Services Librarian, K-State Libraries (2007). BFA 1985, Stephens College; MA 1989, University of California-Santa Barbara; MLIS 2001, University of Texas-Austin.

BELLAMY, REED, Market Intelligence Analyst, K-State Global Campus (2020). BS 2016, University of Nebraska-Kearney; MBA 2018, University of Nebraska-Kearney.

BELLO, NORA M., Associate Professor of Statistics and Ancillary Faculty of Diagnostic Medicine/Pathobiology (2010). DVM 2003, Catholic University of Cordoba-Argentina; MS 2006, MS 2008, PhD 2010, Michigan State University.

BEN-ARIEH, DAVID, Professor of Industrial and Manufacturing Systems Engineering (1990). BS 1980, MS 1982, Ben-Gurion University; PhD 1985, Purdue University.

BEN-ITZHAK, ITZIK, University Distinguished Professor of Physics; Director of J.R. Macdonald Lab (1988). PhD 1986, Technion, Israel.

BEN-ITZHAK, SVETLA, Instructor, English Language Program (2009) and Political Science Department. BA, 1997, MA 2000, France; MA 2012, Kansas State University; PhD 2015, University of Kansas.

BENJAMIN, LOUISE M., Professor of Journalism and Mass Communications and Associate Dean for Academic Affairs in College of Arts and Sciences (2008). BA 1971, Briar Cliff University; MS 1978, Iowa State University; PhD 1985, University of Iowa.

BENNETT, A. G., Professor and Head of Mathematics (1988). BS 1981, Colorado State University; MA 1982, PhD 1985, Princeton University.

BENSON, DOUGLAS K., Professor Emeritus of Modern Languages (1980). BA 1966, New Mexico State University; MA 1968, PhD 1974, University of New Mexico.

BENSON, JANET, Associate Professor Emeritus of Anthropology (1972). BA 1964, Arizona State; MA 1969, PhD 1974, Brandeis University.

BENTON, STEPHEN L., Professor Emeritus of Education (1983). BA 1977, MA 1980, PhD 1983, University of Nebraska.

BERG, MATTHEW J., Associate Professor of Physics (2016). BS 2003, Colorado School of Mines; PhD 2008, Kansas State University.

BERGTOLD, JASON S., Professor of Agricultural Economics (2007). BA 1999, Colorado State University; MS 2001, PhD 2004, Virginia Tech.

BERKE, KARA A., Clinical Assistant Professor, Small Animal Soft Tissue and Orthopedic Surgery (2017). BS 2007, DVM 2011, Ohio State University.

BERNICK, ETHAN, Associate Professor of Political Science (2008). BA 1996, North Carolina State University; MS 1998, PhD 2002, Florida State University.

BERNSTEIN, KEVIN, Associate Professor of Art (2008). BFA 1999, Rhode Island School of Art and Design; MFA 2005, University of Washington.

BESTHORN, JODI L., Extension Agent, 4-H Sedgwick County, Wichita (1980). BS 1978, Sterling College.

BETZ, AMY R., Assistant Professor of Mechanical and Nuclear Engineering (2011). BS 2006, George Washington University; MS 2008, PhD 2011, Columbia University.

BEYER, BROOKE, Assistant Professor of Accounting.

BEYER, R. SCOTT, Associate Professor of Animal Sciences and Industry, Extension Poultry Science Specialist (1993). BS 1983, Texas A&M University; MS 1988, PhD 1992, University of Georgia.

BIBY, VIRGIL H., Extension Agent Emeritus, Agriculture and Natural Resources, Butler County, El Dorado (1966). BS 1957, Oklahoma State University.

BIEHL, FLORENCE F., Extension Agent Emeritus, Family and Consumer Sciences, Johnson County, Olathe (1962). BS 1951, Kansas State University.

BIERE, ARLO W., Professor Emeritus of Agricultural Economics, Natural Resources, Regional and Community Development, Agricultural Experiment Station (1968). BS 1963, University of Nebraska; MA 1967, PhD 1968, University of California.

BILES, BERTRAM R., Special Projects Officer, Regents Educational Communications Center (1972). BA 1963, PhD 1976, Kansas State University.

BILES, DAN, Adjunct instructor of Journalsim and Mass Communcations, Kansas State University.

BILES, LARRY E., State Forester (2008). BS 1967, University of Missouri; MS 1974, Kansas State University.

BILGILI, HANSIN, Assistant Professor of Management.

BILGILI, TSVETOMIRA, Assistant Professor of Management. BSBA 2008, Colorado State University - Pueblo; MBA 2010, Colorado State University – Pueblo; PhD 2016, University of Memphis.

BILLER, DAVID S., Professor of Clinical Sciences, Radiology (1994). BS 1976, North Carolina State; DVM 1980, Auburn University; Diplomate 1987, American College of Veterinary Radiology.

BINDRA, HITESH, Assistant Professor of Mechanical and Nuclear Engineering (2014). BE 2002, Panjab University; MS 2007, PhD 2010, University of Illinois at Urbana Champaign.

BINGHAM, ROBERT, Professor Emeritus of School of Integrated Studies (1973). BS 1957, Northeast Missouri State University; MS 1965, St. Louis University.

BIRKHEAD, NATHANIEL A., Assistant Professor of Political Science (2012). BA 2006, University of Colorado; PhD 2012, Indiana University.

BISHOP, ERIN R., Food Pantry Coordinator, VP Student Life (2017). BS 2005, MS 2008, Kansas State University.

BLACK, SARAH N., Creative Coordinator and Project Manager, Housing and Dining Services (2012). BFA 2003, Kansas State University.

BLAIR, JOHN, Associate Director, Director of Konza Prairie Biological Station, University Distinguished Professor and Edwin Brychta Endowed Professor of Biology; Grassland Ecology, Agricultural Experiment Station (1992). BS 1980, MS 1983, Kent State University; PhD 1987, University of Georgia.

BLAIR, NATALIE, Coordinator of Public and Alumni Relations (2009). BA 2006, MA 2008, Fort Hays State University.

BLAIR, W. LAWARENCE, Extension Agent Emeritus, Agriculture and Natural Resources, Linn County, Mound City (1960). BS 1954, Oklahoma State University.

BLAKE, ASHLEY R., Academic Advisor, K-State Global Campus (2013). BS 2011, MS 2014, Kansas State University.

BLAKE, KEVIN S., Professor Emeritus of Geography and Geospatial Sciences (1999). BS 1982, MA 1991, University of Kansas; PhD 1996, Arizona State University.

BLANK, IVAN, Associate Professor of Mathematics (2008). AB 1993, Princeton University; PhD 2000, Courant Institute of Mathematical Sciences, New York University.

BLANKENHAGEN, ELMER W., Assistant Professor Emeritus; Coordinator, Schedules and Reports (1950). BS 1948, Kansas State University.

BLANKENAU, WILLIAM (BILL) F., Professor of Economics (2001). BS 1988, University of Nebraska; MA 1990, Colorado State University; PhD 1997, University of Iowa.

BLANKLEY, SARA M., Assistant Director of Admissions (2003). BS 1997, Kansas State University.

BLASI, DALE A., Professor of Animal Sciences and Industry, Extension Specialist (1990). BS 1984, MS 1986, Colorado State University; PhD 1989, University of Nebraska.

BLASKE, WHITNEY, Admissions Representative, K-State Polytechnic (2018). BS 2016, MS 2018, Grand Canyon University.

BLECHA, FRANK, Associate Dean for Research and University Distinguished Professor of Anatomy and Physiology (1981). BS 1971, MS 1977, University of Idaho; PhD 1981, Washington State University.

BLEVINS, CHRIS, Clinical Associate Professor, Equine Field Service (2008). MS 2004, DVM 2006, Kansas State University.

BLOCKER, SHANNON M., Extension Agent, Agriculture and Natural Resources, Frontier District, Garnett (2002). BS 2000, MS 2009, Kansas State University.

BLOCKSOME, CAROL E., Research Assistant Professor of Horticulture and Natural Resources (2008). BS 1977, Kansas State University; MS 1992, Fort Hays State University; PhD 2006, Kansas State University.

BLOODGOOD, JAMES M., Professor of Management (1999). BS 1984, Indiana University; MS 1989, GMI Engineering and Management Institute; PhD 1997, University of South Carolina.

BLOODGOOD, JANE A., Instructor of Accounting (2014). BS 1984, Purdue University; MAcc 2002, Kansas State University; CPA 1988, Indiana.

BLOOMQUIST, NEAL, Teaching Assistant Professor of School of Integrated Studies (2018). BS 1981, University of Nebraska, MS 2013, University of Central Missouri.

BLYTHE, MARIE M., Coordinator Emeritus, Planning and Reporting; Extension Administration (1995). BS 1964, MS 1965, PhD 1997, Kansas State University.

BOGGS, DONALD L., Associate Dean of Agricultural Academic Programs and Professor of Animal Sciences and Industry (2005). BS 1975, University of Illinois; MS 1977, Kansas State University; PhD 1982, Michigan State University.

BOGGS, ROSEMARY B., Coordinator, Curriculum and Instruction (2017). BS 1977, University of Illinois; MEd 2004, South Dakota State University.

BOHN, BETH, Editor, Division of Communications and Marketing (1996). BA 1980, Kansas State University.

BOKELMAN, RJ, Director of Facilities Operations at K-State Athletics (1977).

BOLINE, AMY, Farm Management Economist (2016). BS 2014, Kansas State University; MS 2016, Oklahoma State University.

BOLLMAN, STEPHAN RAY, Professor Emeritus of Family Studies and Human Services (1966). BS 1957, MS 1963, PhD 1966 Iowa State University.

BOLTON, DEBRA J., Director of Intercultural Learning and Academic Success, and Faculty, Geography and Geospatial Sciences (2005). BS 1990, St. Mary of the Plains; MS 2001, Fort Hays State University; PhD, 2011, Kansas State University.

BOLTON, TIMOTHY, Professor of Physics (1994). BS 1982, Stanford University; PhD 1988, Massachusetts Institute of Technology.

BOMBERGER, KIM, Associate Forester (2003). BS 1987, MS 2003, Kansas State University.

BONELLA, LAURA, Associate Professor, Faculty and Graduate Services Librarian, K-State Libraries (2001). BA 1991, MA 1993, Kansas State University; MLS 2003, Emporia State University.

BONTRAGER, CINDY, Vice President for Administration and Finance; Assistant Vice President for Budget Planning (2003). BS 1982, Kansas State University; MBA 1990, University of Kansas.

BOOR, ALICIA A., Extension Agent, Agriculture and Natural Resources, Barton County, Great Bend, (2013). BS 2001, Fort Hays State University.

BORCA, MANUEL, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2011). DVM 1979, Universidad de Buenos Aires, Argentina; PhD 1989, University of Nebraska.

BORCHERS, VICKY L., Associate Professor Emeritus of Interior Architecture and Product Design (1995). BIA 1977, Kansas State University; MArch 1982, Texas A&M University.

BORMANN, JENNIFER MINICK, Professor of Animal Sciences and Industry (2004). BS 1997, Iowa State University; MS 1999, Oklahoma State University; PhD 2004, Iowa State University.

BORO, SARA, Education Abroad Advisor (2016). BA 2011, MS 2013, Eastern Illinois University.

BORST, WILLIAM H., Associate Professor Emeritus; Extension Specialist, 4-H Youth Development Programs, Northeast (1953). BS 1950, Kansas State University; MS 1962, Colorado State University.

BOSCO, PAT J., Retired Emeritus Vice President for Student Life and Dean of Students (2019). BS 1971, MS 1973, Kansas State University; PhD 1982, University of Nebraska.

BOSSMANN, STEFAN H., Professor of Chemistry (2004). BS 1986, PhD 1991, University of Saarland.

BOWDEN, ROBERT L., Adjunct Professor of Plant Pathology (1989). BS 1978, Michigan State University; MS 1981, University of Minnesota; PhD 1989, University of Wisconsin-Madison.

BOWER, MERRY D., Assistant Professor, Metadata Librarian, K-State Libraries (1980). BA 1976, University of Kansas; MLS 1980, University of Illinois.

BOWER, TIMOTHY L., Associate Professor of School of Integrated Studies (2004). BS 1987, MS 1990, Kansas State University.

BOWERS, JANE RAYMOND, Professor Emeritus of Food, Nutrition, Dietetics and Health; Agricultural Experiment Station (1966). BS 1962, MS 1963, PhD 1967, Kansas State University.

BOYD, PEGGY BERRIER, Extension Agent Emeritus, 4-H Youth Development Programs, Wyandotte County, Kansas City (1999). BS 1973, MS 1979, Central Missouri State.

BOYER, CHERYL R., Associate Professor of Horticulture and Natural Resources (2008). BS 2003, MS 2005, Oklahoma State University; PhD 2008, Auburn University.

BOYER, JOHN E., JR., Professor Emeritus of Statistics (1981). BS 1969, University of Nebraska; MS 1972, PhD 1976, Michigan State University; Diplomate 2017, American Board of Veterinary Practitioners-Canine and Feline Practice.

BOYER, NEALA A., Clinical Associate Professor, Pet Health (2015). BS 1997, University of Nebraska; DVM 2003, University of Missouri.

BOYER, WILL R., Instructor, Extension Watershed Specialist, Northeast (2003). BA 1990, Chadron Nebraska State College; MA 2003, Kansas State University.

BOYLE, DANIEL, Research Assistant Professor of Biology; Microscopy, Agricultural Experiment Station (1995). BS 1986, MS 1988, Colorado State University; PhD 1992, University of Louisville.

BOYLE, ELIZABETH ERNST, Professor of Animal Sciences and Industry; Extension Specialist (1992). BS 1980, University of Minnesota; MS 1987, PhD 1991, Colorado State University.

BOYLE, RACHAEL R., Extension Agent, Agriculture and Natural Resources, Phillips-Rooks District 5 (2004). BS 2002, MS 2004, Kansas State University.

BOYLE, W. ALICE, Associate Professor of Biology; Ornithology, Agricultural Experiment Station (2012). BM 1990, University of British Columbia; PhD 2006, University of Arizona.

BOYER, RUSSELL, Instructor in Management. BS 2012, Kansas State University; MBA 2014, Kansas State University.

BOZWORTH, ROBERT W., Extension Agent Emeritus, Agriculture and Natural Resources, Franklin County, Ottawa (1960). BS 1957, MS 1971, Kansas State University.

BRADFORD, BARRY JOSEPH, Professor of Animal Sciences and Industry (2006). BS 2002, Iowa State University; PhD 2006, Michigan State University.

BRADLEY, FRED O., Professor Emeritus of Special Education, Counseling and Student Affairs (1972). BA 1962, Colorado State College; MEd 1970, PhD 1972, University of Wyoming.

BRADLEY, KYLE, Assistant Professor in Management.

BRADSHAW, MICHAEL H., Associate Professor Emeritus of Family Studies and Human Services; Extension Specialist, Health and Safety (1978). BS 1968, MS 1971, Brigham Young University; PhD 1978, Kansas State University.

BRAET, STEVEN (TAYLOR), Director of Football Recruiting Operations/Special Teams Quality Control at K-State Athletics (2012). BS 2008, Kansas State University.

BRANDSBERG, GEORGE T., Professor Emeritus, Department of Communications and Agricultural Education (1977). BS 1959, University of South Dakota; MS 1967, Iowa State University.

BRANNON, LAURA A., Professor of Psychological Sciences (1996). BS 1988, MA 1990, PhD 1993, Ohio State University.

BRASS, VICTORIA R., Extension Agent, Family Consumer Science, Comanche (2015). BS 2015, Fort Hays State University.

BREEN, LOUISE A., Associate Professor of History; Associate Professor of Gender, Women, and Sexuality Studies (1993). BA 1983, MA 1986, PhD 1993, University of Connecticut.

BREMER, DALE, Professor Horticulture and Natural Resources (2001). BS 1985, University of Nebraska-Lincoln; MS 1994, PhD 1998, Kansas State University.

BRENNER, ADALEE, Assistant Director, Network and Telecom Services (1976).

BRESSERS, BONNIE, Associate Professor of Journalism and Mass Communications (1997). BA 1974, University of Wisconsin- Madison.

BREYMEYER, TAMI, Director of Licensing at K-State Athletics (1999).

BRIDGES, NANCY Y., Instructor Emeritus of Education (2004). BS 1968, University of Kansas; MS 1973, Kansas State University.

BRIGGEMAN, BRIAN C., Professor of Agricultural Economics, Director of Arthur Capper Cooperative Center (2011). BS 2000, Kansas State University; MS 2002, Texas A&M University; PhD 2006, Purdue University.

BRIGGS, DEBORAH J., Adjunct Faculty of Diagnostic Medicine/Pathobiology (1989). BS 1979, Pittsburg State University; MS 1983, University of Arkansas; PhD 1989, Kansas State University.

BRIGGS, JEREMY, Instructor of Sociology (2013). BS 2004, MS 2006, Pittsburg State University; PhD 2013, Kansas State University.

BRIGGS, JOHN M., Professor Emeritus of Biology; Ecology (2008). BS 1978, MS 1980, Pittsburg State University; PhD 1985, University of Arkansas.

BRIGGS, MELISSA, Assistant Professor, School of Music, Theatre, and Dance (2018). B.A. Pittsburg State University; M.S., E.D.S. Pittsburg State University; Ph.D., Kansas State University.

BRIGHAM, LINDA C., Associate Professor Emeritus of English (1991). BA 1977, Georgetown University; MA 1987, PhD 1991, University of Maryland.

BRIGHTMAN, ALAN H., Professor Emeritus of Clinical Sciences, Ophthalmology (1987). DVM 1974, Kansas State University; MS 1977, University of Illinois; Diplomate 1978, American College of Veterinary Ophthalmologists.

BRIMHALL, TRACI D., Associate Professor of English (2014). BA 2003, Florida State University; MA 2008, Sarah Lawrence College; PhD 2014, Western Michigan University.

BRITT, SONYA L., Associate Professor of Family Studies and Human Services (2009). BS 2003, MS 2005, Kansas State University; PhD 2010, Texas Tech University.

BROCCOLO, MICHELLE D., Special Events Coordinator, Office of the President (1999).

BROCKUS, KATELYN, Extension Agent, Livestock Production; River Valley District 4, Washington (2015). BS 2012, Kansas State University; MS 2014, Mississippi State University.

BROCKWAY, KATHY J., Professor of School of Integrated Studies (1994). BS 1990, MAcc 1991, Kansas State University; CPA 1991, Kansas.

BROCKWAY, TROY D., Professor of School of Integrated Studies (1999). BS 1990, Kansas State University; MS 2001, Central Missouri State University.

BROKESH, EDWIN, Instructor of Biological and Agricultural Engineering. BS 1983, MBA 2006, Kansas State University.

BRONDELL, WILLIAM JOHN, Associate Professor Emeritus of English (1964). AB 1959, MA 1964, PhD 1964, University of Missouri.

BROOKS-KIEFFER, JAMENE, Associate Professor, Resource Linking Librarian, K-State Libraries (2006). AB 1997, Bryn Mawr College; MA 1999, University of Mississippi; MSLIS 2003, Florida State University.

BROTTON, JENNIFER J., Instructor of Marketing (2016). BS 1995, Wichita State University; MS 1999, Baker University.

BROUK, MICHEAL J., Professor of Animal Sciences and Industry (1998). BS 1985, MS 1989, University of Missouri-Columbia; PhD 1994, South Dakota State University.

BROWDER, LEWIS E., Adjunct Professor Emeritus of Plant Pathology (1958). AS 1952, Cameron State Agricultural College; BS 1954, MS 1956, Oklahoma State University; PhD 1965, Kansas State University.

BROWN, ANNA MAE, Extension Agent Emeritus, Family and Consumer Sciences, Wildcat District, Girard (1990). BS 1973, Kansas State University; MS 1976, Pittsburg State University.

BROWN, CHRIS, Assistant Director of Athletic Communications at K-State Athletics (2016). BS 2011, MPE 2012, Idaho State University.

BROWN, CRAIG E., Instructor of Communication Studies and Director of Forensics and Director of Public Speaking (2013). BS 1982, MA 1985, Kansas State University.

BROWN, DAVID A., Associate Professor of Interior Architecture and Product Design (1988). BIA 1984, Kansas State University; MPD 1988, North Carolina State University.

BROWN, GLEN R., Professor of Art (1998). BA 1983, The Colorado College; MA 1986, SUNY-Stony Brook; MA 1991, PhD 1991, Stanford University.

BROWN, KATIE, Psychologist, Counseling Services (2011). BS 2003, Kansas State University; MA 2005, University of Colorado-Colorado Springs; PhD 2009, University of Southern Mississippi.

BROWN, NOZELLA, Extension Agent, Family and Consumer Sciences, Wyandotte County, Kansas City (2003). BS 1976, MS 2008, PhD 2014, Kansas State University.

BROWN, SUSAN, University Distinguished Professor of Biology; Molecular Genetics, Arthropod Genomics, Bioinformatics (1996). BA 1978, Smith College; PhD 1984, University of Missouri-Columbia.

BROWNSON, CHARLENE M., Program/Project Associate, K-State Global Campus UFM (1995). BA 1981, University of Northern Colorado; MS 1995. Kansas State University.

BROYLES-GONZÁLEZ, YOLANDA, University Distinguished Professor and Head of American Ethnic Studies (2013). PhD 1979, Stanford University.

BRUCKERHOFF, DAVID N., Associate Professor Emeritus of Forestry; District Forester, Southeast (1978). BS 1971, MS 1975, University of Missouri.

BRUESEKE, EMILY, Program Director, Career Development, College of Business Administration. BS 2002, Butler University; MS 2004, Miami University of Ohio.

BRUESEKE, MATTHEW E., Assistant Professor of Geology (2007). AB 1997, PhD 2006, Miami University of Ohio.

BRUNNER-LIVINGSTON, VIRGINIA, Instructor, English Language Program (2012). MA 2012, BA 2009, BS 2008, Kansas State University.

BRUNSCHEEN-CARTAGENE, ELIZABETH, Extension Agent, Family and Consumer Sciences, Sedgwick County, Wichita (2009). BA 1990, University of Puerto Rico; MS 2003, Wichita State University.

BRUNSON, ALICIA, Visiting Assistant Professor of American Ethnic Studies (2011). BS 2005, MS 2007, PhD 2013, University of North Texas.

BRUTON, DAVID L., Assistant Forester; District Forester, Northeast (1992). BS 1988, University of Missouri-Columbia.

BRYANT, LINDSAY, Farm Management Economist (2016). BS 2013, MS 2014, Kansas State University.

BRYANT, TONI JO, Culinary Operations Manager l, Housing and Dining Services (2015). BBA 1981, University of Texas-El Paso; MS 2004, Kansas State University.

BUEHLER, JANA, Assistant Director of Specialized Learning and Tutorial Program at K-State Athletics (2010). MBA 2005, Kansas State University.

BUHLER, FORREST A., Instructor, Kansas Agricultural Mediation Service (1995). BA 1974, JD 1977, Washburn University.

BULK, HERBERT W., County Extension Director Emeritus, Shawnee County, Topeka (1949). BS 1949, Kansas State University.

BULLER, ORLAN H., Professor Emeritus of Agricultural Economics; Research Agricultural Economics Farm Management; Production Economics, Agricultural Experiment Station (1963). BS 1958, Kansas State University; MS 1959, PhD 1965, Michigan State University.

BULLOCK, ROBERT A., Associate Professor Emeritus of Interior Architecture and Product Design (1982). BFA 1970, MFA 1975, Michigan State University.

BURCHFIELD, DAVID, Teaching Assistant Professor of School of Integrated Studies (2016). BS 2011, Brigham Young University, MA, Kansas State University.

BURCKEL, ROBERT B., Professor Emeritus of Mathematics (1971). BS 1961, University of Notre Dame; MA 1963, PhD 1968, Yale University.

BURDEN, PAUL R., Professor Emeritus of Education (1980). BS 1970, MS 1973, Buffalo State College; PhD 1979, Ohio State University.

BURENHEIDE, BRADLEY, Associate Professor Curriculum and Instruction (2006). BA 1995, Ottawa University; MLS 2003, Fort Hays State University; PhD 2006, Kansas State University.

BURGE, NORMAN, Senior Video Engineer at K-State Athletics (1989).

BURGESS, BRITTANY, Admissions Representative, K-State Global Campus (2019). BS 2018, Kansas State University.

BURGESS, LAURA, Office Specialist II, Department of Finance, College of Business Administration.

BURKE, KATHERINE J., Assistant Professor, Department of Communications and Agricultural Education (2017). BS 2010, PhD 2015, Kansas State University.

BURKHOLDER, KATHY, Director, Strategy, Information Systems and Operations, K-State Global Campus (2010). BA 1982, Bethany College; MBA 2000, University of South Dakota.

BURNETT, DEBRA L., Assistant Professor of Family Studies and Human Services (2009). BS 1999, MA 2000, SUNY-Geneseo; PhD 2010, Syracuse University.

BURNS, ANDREA R., Extension Agent, Agriculture, Ford County, Dodge City (2000). BS 1999, Kansas State University.

BURRACK, FREDERICK W., Director, Office of Assessment; Professor of Music, School of Music, Theatre, and Dance (2005). BME 1981, Wartburg College; MME 1993, Northwestern University; PhD 2001, University of Illinois.

BURRIS, BLAINE, Assistant Athletic Trainer at K-State Athletics (2014). MHRD 2010, Clemson University.

BURTON, KATHRYN L., Systems Analyst, Biosecurity Research Institute (2000). BS 2000, Kansas State University.

BURTON, ROBERT O., Professor Emeritus of Agricultural Economics, Farm Management, Production Economics, Farm Finance (1984). BS 1969, MS 1977, Virginia Tech; PhD 1982, Purdue University.

BUSCHMAN, LAWRENT L., Professor Emeritus of Entomology; Research Entomologist, Corn Insects, Southwest Research Extension Center (1981). BA 1964, Tabor College; MS 1968, Emporia State University; PhD 1977, University of Florida.

BUSICK, DARREN, Extension Agent, Agriculture and Natural Resources, Reno County, South Hutchinson (2014). BS 2014, Fort Hays State University.

BUSSING, CHARLES E., Associate Professor Emeritus of Geography and Geospatial Sciences (1964). BA 1959, Colorado State College; MA 1961, University of Colorado; PhD 1968, University of Nebraska.

BUSSING, SANDRA I., Instructor Emeritus of English (1974). BA 1957, University of Colorado.

BUSSMAN, DERINDA G., Extension Agent Emeritus, Family and Consumer Sciences, Barton County, Great Bend (1971). BS 1971, Oklahoma Panhandle State University.

BUYLE, RAYMOND, Associate Professor of Architectural Engineering and Construction Science (2007). BSCNS 1984, M 2010, Kansas State University.

BYARS, JACKSON A., Assistant Professor Emeritus of Education (1969). BA 1959, Municipal University of Omaha; MA 1964, Colorado State College; PhD 1970, University of Nebraska.

BYRNE, DAVID R., Professor Emeritus of Education (1984). BA 1959, Idaho State University; PhD 1971, University of Utah.

CABLE, TED T., Professor of Horticulture and Natural Resources (1984). BS 1974, University of Illinois-Chicago; MS 1980, PhD 1984, Purdue University.

CAFFEY, ROB, Special Assistant to CIO (2019). BS 1997, Kansas State University.

CAI, LIANG-WU, Associate Professor of Mechanical and Nuclear Engineering (2001). BS 1985, University of Science and Technology of China; MS 1988, Chinese Academy of Sciences; PhD 1992, University of Tennessee; ScD 1998, Massachusetts Institute of Technology.

CAIN, MARY E., Professor of Psychological Sciences (2004). BS 1994, Manhattan College; MA 1999, PhD 2002, University of Vermont.

CALDAS, MARCELLUS, Assistant Provost for International Faculty Collaboration and Educational Programs; Professor of Geography and Geospatial Sciences (2008). BES 1984, Pontifcie Catholic University, Brazil; MSc 1988, Federal University of Vicosa, Brazil; PhD 2001, University of Sao Paulo; PhD 2008, Michigan State University.

CALHOUN, CHERYL, Instructor of Social Work (2016). BGS 2005, University of Kansas; MSW 2010, Boston College.

CALHOUN, MYRON AMMON, Associate Professor Emeritus of Computer Science (1971). AA 1961, Graceland College; BS 1963, University of Kansas; MS 1964, Colorado State University; PhD 1967, Arizona State University.

CAMPABADAL, CARLOS, Instructor of Grain Science and Industry (2013). BS 2000, University of Costa Rica; MS 2005, University of Illinois-Urbana Champaign; PhD 2013, Purdue University.

CAMPBELL, JAMES F., Adjunct Professor of Entomology; USDA Grain Marketing Research Center, Insect Behavior (1999). BS 1986, MS 1997, Rutgers University; PhD 1999, University of California-Davis.

CAMPBELL, STACY T., Extension Agent, Agriculture and Natural Resources, Ellis County, Hays (1995). BS 1986, Angelo State University.

CANFIELD, JESSICA A., Associate Professor of Landscape Architecture/Regional and Community Planning (2009). BSLA 2004, Colorado State University; MLA II 2009, Harvard University.

CANFIELD, MARGARET LAVONNE, Instructor, School of Music Theatre, and Dance (2017). B.F.A Florida International University; M.A., Kansas State University.

CANTER, DEBORAH D., Professor Emeritus of Food, Nutrition, Dietetics and Health (1977). BS 1972, MS 1974, PhD 1977, University of Tennessee.

CARAGEA, DOINA, Professor of Computer Science (2006). BS 1996, MS 1997, University of Bucharest; PhD 2004, Iowa State University.

CAREL, ANNABELL, Instructor, English Language Program (2012). MA 2010, Andrews University.

CAREY, EDWARD E., Professor Emeritus of Horticulture and Natural Resources (1999). BS 1979, University of New Hampshire; MS 1981, PhD 1985, University of Illinois.

CARLIN, JOHN W., Visiting Professor of the Staley School of Leadership Studies (2005). BS 1962, Kansas State University.

CARLIN, LYNN L., Special Assistant to the Provost (2007). BSSW 1974, Ohio State University; MA 1981, Marshall University.

CARLSON, DENNIS W., Associate Forester (1987). BS 1991, University of Missouri.

CARLSON, JAN, Noncredit Online Program Coordinator, K-State Global Campus (2013). BS 1984, Kansas State University.

CARLSON, JEAN K., Professor Emeritus; Extension Specialist, Household Equipment and Management (1950). BS 1950, Kansas State University; MS 1965, Oklahoma State University.

CARLSON, LOIS O., Extension Agent Emeritus, Family and Consumer Sciences, Neosho County, Erie (1964). BS 1964, Pittsburg State University; MS 1982, Kansas State University.

CARLSON, VIRGIL P., Extension Agent Emeritus, Agriculture and Natural Resources, Ellsworth County, Ellsworth (1957). BS 1949, MS 1966, Kansas State University.

CARLTON, COURTNEY, Academic Adviser (2019). BA 2017, Kansas State Univsersity.

CARMICHAEL, TRAVIS R., Extension Agent, Horticulture and Community Development, Lyon County, Emporia (2013). BS 2011, Northwest Missouri State University; MS 2012, Kansas State University.

CARNAHAN, DAVID L., Associate Professor Emeritus of Obstetrics and Gynecology (1961). BS 1959, DVM 1959, MS 1964, Kansas State University; Diplomate 1976, American College of Theriogenology.

CARNES, KEVIN, Research Professor of Physics (1984). BS 1979, Baker University; MS 1981, PhD 1984, Purdue University.

CARPENTER, JAMES W., Professor of Clinical Sciences, Zoological Medicine (1989). DVM 1974, MS 1970, Oklahoma State University; Diplomate 1992, American College of Zoological Medicine.

CARR, CHRIS, Assistant Women's Basketball Coach at K-State Athletics (2016). BA 2012, Argosy University.

CARR, DANIELL, Data Reporting Specialist, K-State Global Campus (2019). BS 2019.

CARR, JENNIFER L., Extension Agent, Agriculture and Natural Resources, Harper County, Anthony (2012). BS 1994, Northwest Oklahoma State University.

CARROLL, DORIS J., Associate Professor of Special Education, Counseling, and Student Affairs (1999). BS 1974, MS 1976, Kansas State University; PhD 1982, University of Nebraska.

CARSON, SHERYL, Extension Agent, Family and Consumer Sciences, Kearny County, Lakin (2010). BS 1983, MS 1995, Chadron State College.

CARSON, TIM, Instructor of Animal Sciences and Industry (1999). BS 1999, Kansas State University.

CARTER, BART, Director of Animal Resource Facility (2004). DVM 1990, MS 2002, University of Missouri; Diplomate 2003, American College of Laboratory Animal Medicine.

CARTER, DAVID A., Instructor of Kansas Industrial Extension Service (2006). BS 1985, Florida Institute of Technology; MS 2001, Kansas State University.

CASADA, MARK E., Adjunct Professor of Biological and Agricultural Engineering (2001). BS 1981, MS 1985, University of Kentucky; PhD 1990, North Carolina State University.

CASEBEER, SHANNON, Instructor of Architectural Engineering and Construction Science (2013). BS 1992, Kansas State University.

CASTLEBERRY, SHANNON R., Assistant Registrar (2001). BA 2000, MHR (2001), University of Oklahoma.

CASEY, ROBERT D., Auditor, Business and Finance Office, Agriculture (1999). BS 1979, Kansas State University; MS 2000, Friends University.

CASSEL, NICOLETTE, Assistant Professor of Clinical Sciences, Radiology (2018). BSc (microbiology and plant pathology) 1998, BVSc 2003, MMedVet (Diag Im) 2012, University of Pretoria.

CASSIDY, HUGH, Assistant Professor of Economics (2013). BA 2007, University of Guelph; MA 2008, PhD 2013, University of Western Ontario.

CASSONE, DEANDRA, Associate Professor of Industrial and Manufacturing Systems Engineering (2015). BS 1982, MS 1985, PhD 2005, Kansas State University.

CASSOU, STEVEN P., Professor of Economics (1997). BA 1992, University of California-Berkeley; PhD 1989, University of Minnesota.

CASTELLANOS, CARLOS, Assistant Professor of Art (2014). BA 2004, San Francisco State University; MFA 2007, San Jose State University; PhD 2014, Simon Fraser University.

CASTRO DIAZ, SIGIFREDO, Instructor of Chemical Engineering (2016). BS 1998, Universidad Nacional de Colombia; MS 2001, PhD 2003, Kansas State University.

CAUBLE, A. ELIZABETH, Associate Professor Emeritus of Social Work and Head of Sociology, Anthropology, and Social Work (1993). BA 1972, University of Colorado-Boulder; MA 1980, PhD 1988, University of Minnesota.

CAVENDER, DANNY, Assistant Coach/Head Strength and Conditioning Coach for Olympic Sports at K-State Athletics (2008). MS 2004, Emporia State University.

CAYWOOD, BRAD, Major United States Air Force, Assistant Professor of Aerospace Studies (2016). BS 2009 Kansas State University; MA 2010 Trident University.

CECCARANI, MARCO, Adjunct Instructor of Architecture, Planning and Design (2007). PhD 1979, University of Perugia, Italy.

CERBE, AL, Head Football Equipment Manager at K-State Athletics (2007). BS 2007, University of Memphis.

CERNICCHIARO, NATALIA, Assistant Professor (2012). DVM 2003, University of Uruguay, MS 2006, University of Minnesota, PhD 2010, University of Guelph.

CHA, INKYUNG, Adjunct Professor of Economics (2004). BS 1988, MA 1995, Ewha Womens University-South Korea; PhD 2004, Texas A&M University.

CHAD, BAILEY, Instructor of School of Integrated Studies (2017) BS 2003, Kansas State University.

CHAE, BONGSUG, Professor of Management Information Systems (2002). BS 1995, City University of New York; MBA 1997, PhD 2002, Texas A&M University.

CHAKRABARTI, AMITABHA, Dean of College of Arts and Sciences and Professor of Physics (1990). BS 1979, MS 1982, University of Calcutta, India; PhD 1987, University of Minnesota.

CHAKRABARTI, LEENA, Associate Director, English Language Program (1994). BA 1984, Calcutta University; MA 1986 Jadavpur University; MA 1994, PhD 2008, Kansas State University.

CHAMBERS, DELORES, Professor of Food, Nutrition, Dietetics and Health; Co-Director of Sensory Analysis Center (1995). BS 1982, Southeast Missouri State University; MS 1992, PhD 1994, Kansas State University.

CHAMBERLIN, KYLE, Student Life Center Coordinator for K-State Polytechnic Campus (2015), BS 2008, Sterling College MS 2017, Pittsburg State University.

CHAMBERS, EDGAR, IV, University Distinguished Professor of Sensory Analysis and Consumer Behavior; Director of Sensory Analysis Center, Department of Food, Nutrition, Dietetics and Health (1988). BS 1977, University of Tennessee; MS 1979, PhD 1980, Kansas State University.

CHANDLER, LAURIE R., Associate Program Leader, Extension Administration (1993). BS 1982, MS 1984, Kansas State University.

CHANDRA, D.V. LATISH, Associate Professor of Electrical and Computer Engineering (1984). BE 1970, Bangalore University, India; ME, Indian Institute of Science, India; MS 1980, PhD 1984, Auburn University.

CHANG, KYEONG-OK, Professor of Virology (2005). DVM 1989, MS 1991, Seoul National University; PhD 1999, Ohio State University.

CHANG, SHING I., Associate Professor of Industrial and Manufacturing Systems Engineering (1991). BS 1983, Tsing Hua University; MS 1987, Arizona State University; PhD 1991, Ohio State University.

CHANG, YANG-MING, Professor of Economics (1984). MA 1978, National Taiwan University, Taipei; PhD 1984, SUNY-Buffalo.

CHAO, MICHAEL, Assistant Professor of Animal Sciences and Industry, Meat Science (2018). BS 2007, MS 2011, University of California-Davis; PhD 2015, University of Nebraska-Lincoln.

CHAPES, STEPHEN K., Interim Director of Terry C. Johnson Center for Basic Cancer Research and Professor of Biology; Immunologist (1984). BS 1975, MS 1978, PhD 1981, University of Illinois.

CHAPMAN, BEN, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2011). BS 2001, MS 2005, PhD 2009, University of Guelph.

CHAPMAN, GRANT, Associate Provost for International Administration (2015). BS 1989, Oklahoma State University; JD 1993, MA 1993, St. Louis University.

CHAPPELL, CARY, Instructor, English Language Program (2012). BA 1989, University of Alabama; MAE 2009, University of Alabama at Birmingham.

CHARD, STACEY, Advisor College of Architecture, Planning and Design (2016). BS 1991, Kansas State University; MS 2003, Emporia State University.

CHARLAND, KIMBERLY D., Senior Instructor of Accounting (1996). BS 1983, MAcc 1985, Kansas State University; CPA 1985, Kansas; 1990, Missouri.

CHARNEY, WAYNE M., Associate Professor of Architecture (1987). BS 1973, MArch 1975, University of Illinois; PhD 1985, Northwestern University.

CHASTAIN, MELVIN L., Associate Professor Emeritus of Journalism and Mass Communications (1987). BA 1961, MA 1962, University of Denver; PhD 1970, Texas A&M University.

CHAVEZ, MIRTA, Senior Director of Multicultural Programs and Services (2004). BS 1995, MS 1998, Fort Hays State University.

CHELZ, ANTHONY W., Associate Professor Emeritus of Landscape Architecture and Regional & Community Planning (1975). BArtEd 1966, School Art Institute, Chicago; MFA 1970, Syracuse University.

CHEN, JAMES M., Assistant Professor of Mechanical and Nuclear Engineering (2015). BS 2005, National Chung-Hsing University, Taiwan; MS 2007, National Taiwan University; PhD 2011, George Washington University.

CHEN, JIANHAN, Adjunct Professor of Biochemistry and Molecular Biophysics (2007) BS 1998, University of Science and Technology of China; PhD 2002, University of California-Irvine.

CHEN, MING-SHUN, Adjunct Professor of Entomology, USDA, Insect Molecular Genetics/Plant Resistance (2001). BS 1981, Hunan Agricultural University; MS 1984, Fujian Agricultural University; PhD 1991, Kansas State University.

CHENGAPPA, M. M., University Distinguished Professor and Head of Diagnostic Medicine/Pathobiology (1988). BVSc 1970, MVSc 1973, University of Agricultural Sciences, India; MS 1977, PhD 1981, Michigan State University; Diplomate 1981, American College of Veterinary Microbiology.

CHERMAK, ANDREW, Professor of Mathematics (1982). AB 1971, PhD 1975, Rutgers University.

CHIKAN, VIKTOR, Associate Professor of Chemistry (2005). BS 1997, MS 1998, Jozsef Atilla University, Hungary; PhD 2002, Kansas State University.

CHIKANNE-GYURKO, AGNES, Instructor, English Language Program (2009). BS and MS 2005, University of Szeged, Hungary.

CHILTON, MICHAEL A., Associate Professor of Management Information Systems (2002). BS EE 1975, University of Missouri; MBA 1991, University of Illinois-Chicago; PhD 2001, University of Arkansas.

CHLADNY, BRUCE A., County Extension Director, Wyandotte County, Kansas City (1996). BS 1991, Purdue University; MS 1993, University of Missouri.

CHOI, KYOUNGJU, Research Assistant Professor of Anatomy and Physiology (2014). BS 1992, Seoul Woan's University, Seoul, Korea; MS 1995, KonKuk University, Seoul, Korea; PhD 2004, North Carolina State University.

CHOI, SEONG-O, Assistant Professor of Anatomy and Physiology (2014). BS 1998, Yonsei University, Seoul, Korea; MS 2001, University of Southern California; MS 2003, PhD 2007, Georgia Institute of Technology.

CINO, GISELLE, Clinical Track Assistant Professor of Diagnostic Medicine/Pathobiology (2015). BSc 2002, Colegio Experimental, Paraguay; DVM 2009, National University of Asuncion, Paraguay; Residency 2013; PhD 2014, Kansas State University.

CHO, JIHOON, Assistant Professor of Marketing (2017). BA 2005, Korea University; MS 2008, Korea University; MPS 2009, Cornell University; PhD 2016, University of Michigan.

CHOLICK, FRED, Dean Emeritus of Agriculture and Director Emeritus of Agricultural Experiment Station and Cooperative Extension Services (2003). BS 1972, Oregon State University; MS 1975, PhD 1977, Colorado State University.

CHRISJOHN, KEVIN P., Communications and Marketing Specialist, K-State Global Campus (2016). BS 2008, MBA 2014, Pittsburg State University.

CHRISTENSEN, KEITH H., Associate Professor Emeritus of Architecture (1966). BArch 1950, University of Nebraska; MArch 1957, University of Michigan. Licensed Architect.

CHRISTIANER, KATELIN, Education Abroad Advisor (2015). BS 2011, Kansas State University. MEd 2014, Endicott College.

CHRONISTER, NECIA N., Assistant Professor of German (2011). BA 2003, University of Oklahoma; MA 2006, PhD 2011, Washington University-St. Louis.

CHUA, ANSLEY, Associate Professor of Finance and Department Head (2011). BS 1995, Florida State University; MS 2002, Ball State University; PhD 2009, Florida State University.

CHUMLEY, FORREST, Associate Dean Emeritus and Adjunct Professor of Plant Pathology (2001). BA 1969, Johns Hopkins University-Baltimore; PhD 1980, University of California-Berkeley.

CHUNG, OKKYUNG, Adjunct Emeritus Professor of Grain Science and Industry; USDA Grain Marketing Research Center (1976). BS 1959, EWHA Women's University, Korea; MS 1965, PhD 1973, Kansas State University.

CHURCHILL, FRANCIS, Instructor of Grain Science and Industry (2011). BS 1984, Kansas State University.

CHURCHILL, NENA ADRIENNE, Admissions Representative, K-State Global Campus (2014).

CHUWONGANANT, CHAIRANT, Professor of Finance (2007). BS 1987, Chulalongkorn University; MBA Marketing 1989, MBA Finance 1990, University of North Texas; PhD 1999, University of Memphis.

CIFTCI, SABRI, Associate Professor of Political Science (2008). BA 1994, MA 1997, Ankara University; MS 2003, PhD 2005, Florida State University.

CINO, GISELLE, Clinical Track Assistant Professor of Diagnostic Medicine/Pathobiology (2015). BSc 2002, Colegio Experimental, Paraguay; DVM 2009, National University of Asuncion, Paraguay; Residency 2013; PhD 2014, Kansas State University.

CLAASSEN, CAMILLE, Farm Management Economist (2014). BS 2012, Bethel College; MS 2014, Kansas State University.

CLAASSEN, MARK M., Professor Emeritus of Agronomy; Research Agronomist in charge, Harvey County Experimental Field (1977). BS 1965, University of Nebraska; MS 1968, PhD 1971, Iowa State University.

CLAFLIN, LARRY E., Professor Emeritus of Plant Pathology (1975). BS 1963, Northwestern Oklahoma State University; MS 1969, East Texas State University; PhD 1972, Kansas State University.

CLARK, BRANDON, Multicultural Student Programs Coordinator (2012). BS 2009, Kansas State University.

CLARK, GARY A., Interim Dean (2019), Senior Associate Dean of Engineering and Professor of Biological and Agricultural Engineering (1994). BSE 1980, ME 1982, University of Florida; PhD 1986, Texas A&M University.

CLARK, GEORGE R., II, Professor Emeritus of Geology (1977). AB 1961, Cornell University; MS 1966, PhD 1969, California Institute of Technology.

CLARK, MIKE, Senior Director of Development at K-State Athletics (2007). MS 1977, Northwest Missouri State University.

CLARK, PATRICK, Adjunct Faculty of Grain Science and Industry (2010). BS 2000, MS 2004, PhD 2006, Kansas State University.

CLARK, ROBERT L. A., Director of International Studies and Latin American Studies; Professor of French (1992). BA 1973, Carlton College; MA 1976, PhD 1994, Indiana University.

CLARK, J. SPENCER, Assistant Professor of Curriculum and Instruction (2016). BA 2001, University of Kansas; MEd 2003, Rockhurst University

CLARK, THOMAS, Instructor in the National Strategic Selling Institute. BA, Kansas State University. MS, Emporia State University.

CLARKE, MARY P., Professor Emeritus of Food, Nutrition, Dietetics and Health; Extension Specialist, Nutrition Education (1973). BS 1950, Indiana University; MS 1970, Indiana State University; PhD 1973, Kansas State University.

CLAVIJO, ALFONSO, Professor of Diagnostic Medicine/Pathobiology (2016). DVM 1986, National University, Bogota, Colombia; PhD 1995, Ontario Veterinary College, University of Guelph.

CLAYBERG, CARL D., Professor Emeritus of Horticulture; Research Horticulturist, Vegetable Crop Geneticist, Agricultural Experiment Station (1974). BS 1954, University of Washington; PhD 1958, University of California.

CLEGG, VICTORIA L., Director Emeritus, Center for the Advancement of Teaching and Learning; Assistant Professor of Education (1982). BS 1965, Kansas State University; MA 1972, Wichita State University; PhD 1979, Kansas State University.

CLEM, ROLLIE J., Professor of Biology; Virologist, Agricultural Experiment Station (1997). BA 1986, Moorhead State University; MS 1988, Iowa State University; PhD 1994, University of Georgia.

CLEMENT, LAURENCE A., Associate Professor of Landscape Architecture and Regional & Community Planning (1981). BS 1978, BLA 1980, SUNY, College of Environmental Science and Forestry; MLA 1985, Kansas State University; JD 1991, University of Kansas. Professional Landscape Architect; Licensed Attorney.

CLEMENTS, DEREK, Instructor of Architectural Engineering and Construction Science (2016). BS 2009, Kansas State University.

CLIMENHAGA, GRETA, Instructor, English Language Program (2006). BA 2000, M.Ed 2004, University of Arizona.

CLORE, ROBERT ALVIN, Associate Professor Emeritus of Art (1970). AA 1966, Casper College; BA 1968, MA 1970, University of Northern Colorado; MFA 1977, University of Kansas.

CLOYD, RAYMOND, Professor of Entomology, Extension and Research, Pest management (2006). BS 1990, California Polytechnic State University; MS 1995, PhD 1999, Purdue University.

COBB, ANTHONY, Knowledge Base Manager and Help Desk Coordinator, Information Technology Assistance Center (2002). AS 1986 Ross Business School.

COCHRAN, ALFRED W., Professor of Music, School of Music, Theatre, and Dance (1979). BME 1972, Memphis State University; MM 1975, PhD 1986, Catholic University.

COCHRANE, TODD E., Professor of Mathematics (1984). BS 1978, Harvey Mudd College; PhD 1984, University of Michigan.

COCKE, C. LEWIS, University Distinguished Professor Emeritus of Physics (1969). AB 1962, Haverford College; PhD 1967, California Institute of Technology.

COCO, CHRISTOPHER L., Captain, Kansas Army National Guard, Assistant Professor of Military Science (2008). BS 2004, Kansas State University.

COETZEE, JOHANN, Head and Professor of Anatomy and Physiology (2016). BVSc 1996, University of Pretoria; PhD 2005, Iowa State University.

COFFEY, BRIAN K., Assistant Professor of Agricultural Economics (2015). BS 1999, MS 2001, University of Kentucky-Lexington; PhD 2005, Kansas State University.

COFFMAN, CRYSTAL R., Extension Agent Emeritus, 4-H, Miami County, Paola (1972). BS 1971, MS 1996, Kansas State University.

COFFMAN, JAMES R., Professor Emeritus of Clinical Sciences (1981). BS 1960, DVM 1962, MS 1969, Kansas State University.

COHEN, PETER Z., Associate Professor Emeritus of English (1961). BS 1953, MA 1961, University of Wyoming.

COHNSTAEDT, LEE W., Adjunct Assistant Professor; USDA Grain Marketing Research Center (2012). BA 2001, University of Oregon; PhD 2009, Yale University.

COLEMAN, ANDRE, Offensive Coordinator/Wide receivers at K-State Athletics (2013). BA 2011, Kansas State University.

COLEMAN, JASON, Associate Professor, Undergraduate and Community Services Librarian, K-State Libraries (2004). BA 1992, University of Kansas; BS 2002, Kansas State University; MLS 2007, Emporia State University.

COLEMAN, TARA L., Associate Professor, Web Services Librarian, K-State Libraries (2004). BA 2002, Kansas State University; MLS 2004, University of Oklahoma.

COLLINS, AMY M., Extension Agent, Family and Consumer Sciences and 4-H, Stafford County, St. John (2004). BS 1993, Kansas State University.

COLLINS, BILL D., Farm Management Economist Emeritus (1954). BS 1951, Kansas State University; MS 1962, University of Wisconsin.

COLLINS, EMMA C., Extension Agent, 4-H Youth Development, Golden Prairie District, Gove (2015). BS 2015, Mississippi State University.

COLLINS, JUDITH, Associate Professor Emeritus of School of Integrated Studies (2001). BA 1991, MA 1993, Western Washington University; PhD 2000, Arizona State University.

COLLINS, ROYCE ANN, Associate Professor of Educational Leadership (2005). BA 1983 Northeastern Oklahoma State University; MRE 1987, Midwestern Baptist Theological Seminary; MA 1993, University of Missouri-Kansas City; PhD 2005, Kansas State University.

COLTRAIN, JOSHUA, Extension Agent, Agriculture and Natural Resources, Wildcat District 14, Girard (2012). BS 2002, MS 2004, Kansas State University.

COMER, JEFFREY, Assistant Professor of Anatomy and Physiology (2014). BS 2001, University of Akron; PhD 2005, University of Illinois-Urbana-Champaign.

COMROE, ALYSSA, Clinical Assistant Professor, Shelter Medicine (2018). DVM 2015, MS 2015, University of Florida.

CONDIA, ROBERT J., Professor of Architecture (1989). BArch 1980, California Polytechnic-San Luis Obispo; MArch 1983, Columbia University. Licensed Architect.

CONDRAY, MARY M., Extension Agent Emeritus, Central Kansas District 3, Minneapolis (1991). BS 1968, Sterling College.

CONNOLLY, ALLY, Assistant Director of Hospitality and Special Events at K-State Athletics (2018), BA 2011, ME 2015, University of Oklahoma.

CONNOLLY, RYAN, Director of Baseball Operations at K-State Athletics (2018), BS 2009, Notre Dame.

CONROW, MARGARET E., Associate Professor Emeritus of English (1964). BA 1954, Swarthmore College; MA 1955, PhD 1962, University of Illinois.

COOK, DAVID E., Assistant Professor of Plant Pathology (2017). BS 2005, MS 2008 Virginia Tech University, PhD 2013, University of Wisconsin-Madison

COOK, KELLY, Program Associate, K-State Global Campus UFM (2019).

COOK, KEVIN M., Associate Director, Housing and Dining Services (2002). BS 1998, Southeast Missouri State University; MA 1999, Ball State University; PhD 2016, Kansas State University.

COOK, LINDA, Chief of Staff and Director of Community Relations (2018). BS, Kansas State University; MBA Massachusetts Institute of Technology.

COOK, RON, Graphics Designer/Publications Graphic Designer at K-State Athletics (2000). BA 2000, Kansas State University.

COOMES, SHEILA, Instructor of Accounting. BA 2002, Kansas State University; MAcc 2003, Kansas State University.

COPP, STEVEN W., Assistant Professor of Kinesiology (2016). BS 2006, MS 2008, Phd 2013, Kansas State University.

COOPER, CORA, Professor of Music, School of Music, Theatre, and Dance (1990). BM 1978, University of Vermont; MM 1982, Eastman School of Music; DM 1992, Florida State University.

COOPER, HELEN, Assistant Director Emeritus of Facilities Planning (1992). BS 1978, MS 1986, Kansas State University.

COOPER, SUSAN E., Interim University Registrar (2019), Associate Registrar (1997). BA 1980, Washington State University; MS 2008, Kansas State University.

COOPER, WILL, Assistant Director of Development (2017). BS 2012, Kansas State University; MS 2017, Kansas State University.

COPPLE, MARY T., Assistant Professor of Spanish and Language Program Coordinator (2007). BS 1992, MA 1998, Kansas State University; PhD 2009, University of New Mexico.

CORDILL, BRIAN, Director of Event Operations at K-State Athletics (2009). BA 1988, University of Arizona.

CORDILL, LINDSEY, Academic Advisor for the College of Business Administration. BS 2008, Kansas State University; MS 2010, Kansas State University.

CORE, DEANA R., Assistant Director of New Student Services (2016). BA 1997, Kansas State University; MA 2004, Iowa State University.

CORREA, MARIA, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2008). DVM 1983, University of Uruguay; MS 1988, PhD 1991, Cornell University.

CORUM, ROBERT T., Professor Emeritus of Modern Languages (1977). BA 1969, Old Dominion College; MA 1971, PhD 1975, University of Virginia.

COULSON, L. ANN, Assistant Professor of Family Studies and Human Services (1987). BS 1974, University of Missouri; MS 1980, University of Arkansas; PhD 1988, University of Missouri.

COULSON, STEPHEN J., Director, Engineering Computer Services (1985). BS 1965, Kansas State University.

COURBOU, ANGÉLIQUE, Department Coordinator and Instructor (2002). BA 1995, Université Blaise Pascal, France; MA 2002, ABD, Kansas State University.

COOVER, JAMES B., Extension Agent, Agriculture and Natural Resources, Dickinson County, Abilene (2015). BS 2012, MS 2014, Kansas State University.

COX, JUDY, Associate Professor Emeritus of Clinical Sciences (2009). BS 1968, DVM 1968, MS 1984, Kansas State University; Diplomate 1987, American College of Veterinary Internal Medicine.

COX, LYDELL, Academic Recruitment Assistant, K-State Global Campus (2013).

COX, THOMAS STANTON, Adjunct Professor of Agronomy (2000). BS 1976, University of Georgia; MS 1979, PhD 1983, Iowa State University.

COYNE, PATRICK I., Professor Emeritus, Western Kansas Agricultural Research Centers, Agronomist (1985). BS 1966, Kansas State University; PhD 1969, Utah State University.

COZMA, RALUCA A., Associate Professor of Journalism and Mass Communications (2017). BS 2003, University of Bucharest; MA 2005, PHD 2009, Louisiana State University.

CRAFT, CHRISTY M., Professor of Special Education, Counseling, and Student Affairs (2005). BS 1995, Bradley University; PhD 2001, University of Arizona.

CRAGHEAD, DEWAYNE E., Extension Agent, Agriculture and Natural Resources, Hodgeman County, Jetmore (1991). BS 1981, Kansas State University.

CRAIG, GERALDINE, Professor of Art (2007). BFA 1982, University of Kansas; MFA 1989, Cranbrook Academy of Art.

CRANFORD, JERRY J., Assistant Professor of Theatre, School of Music, Theatre, and Dance (2013). BFA 2002, University of Oklahoma; MFA 2010, Minnesota State University-Mankato.

CRANE, ALISON, Assistant Professor of Animal Sciences and Industry, Sheep and Meat Goat Extension Specialist (2017). BS 2012, Berry College; MS 2014, PhD 2017 North Dakota State University

CRAUER, BRAD, Clinical Associate Professor, Shelter Medicine (2018). DVM 1991, Iowa State University.

CRAVENS, EMILIE, Academic Advisor for the College of Business Administration. BA 2004, Sacramento State University; MS 2013, Mississippi State University.

CRAWFORD, DON, Information Services Manager, College of Architecture, Planning and Design (1997).

CRAWFORD, DUANE W., Professor of Family Studies and Human Services (2012). BA 1977, MA 1982, Wichita State University; PhD 1988, Pennsylvania State University.

CRAWFORD, M. JOSEPHINE, Associate Professor, Head, Content Development and Acquisitions, K-State Libraries (2010). BA 1974, University of California-Riverside; MLS 1982, University of California-Los Angeles.

CRO, MELINDA, Associate Professor of French and Language Program Coordinator (2011). MA 2006, PhD 2010, University of Georgia.

CROSBY, MARK, Associate Professor of English (2012). BA 2003, University of London; MA 2004, University of York; DPhil 2008, Oxford University.

CROUCH, CAROL A., Extension Agent, Family and Consumer Sciences, Scott County, Scott City (2002). BS 1992, Fort Hays State University.

CROUCH, SARA L., Culinary Operations Manager l - Assistant Unit Director, Housing and Dining Services (2000). BS 2000, Kansas State University; MA 2016, Baker University.

CROUSE, LARRY E., Extension Agent, Horticulture, Butler County, El Dorado (1993). BS 1984, Arizona State University.

CROW, JANIS J., Instructor of Marketing (1997). BS 1990, MS 2000, PhD 2006, Kansas State University.

CROW, MICHAEL, Associate Director, Housing and Dining Services (1999). BA, BS 1985, MBA 1991, Kansas State University.

CRUZ, CHRISTIAN, Research Assistant Professor of Plant Pathology (2016). BS 2002, Honduras; MS 2008, The Ohio State University; PhD 2013, Kansas State University.

CULBERTSON, CHRISTOPHER, Associate Professor of Chemistry (2002). BA 1988, Harvard College; BS 1991, University of West Florida; PhD 1996, University of North Carolina-Chapel Hill.

CULBERTSON, JAMES C., Assistant Professor of Military Science (2011). BS 2005, Upper Iowa University.

CULBERTSON, SATORIS S., Associate Professor of Management (2007). BS 1999, University of Central Missouri; MS 2002, Missouri State University; PhD 2005, Texas A&M University.

CULLEY, LOUANN F., Associate Professor Emeritus of Art (1971). BFA 1957, MA 1967, University of New Mexico; PhD 1975, Stanford University.

CUNNINGHAM, BRADFORD, Academic Advisor for the College of Business Administration (2007). BS 2005, MS 2007, Kansas State University.

CUNNINGHAM, GARY, Computer Information Specialist, NACADA (1997). BS 1996, Upper Iowa University.

CUPP, SHAWN, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2011). BS 1985, MS 1986, Virginia Tech; MMAS 2002; PhD 2009, Kansas State University.

CURRIE, RANDALL S., Associate Professor, Research Weed Scientist, Southwest Research-Extension Center (1991). BS 1980, Kansas State University; MS 1987, Oklahoma State University; PhD 1990, Texas A&M University.

CURRIER, CHAD, IT Chief Op Officer/Deputy CIO Enterprise Technology (2019).

CURRY, KATRINA E., Extension Agent, 4-H Youth Development, Cherokee County, Columbus (2015). BS 2014, Oklahoma State University.

CURTIS, LAURIE J., Assistant Professor Emeritus of Education (2003). BS 1980, University of Northern Colorado; MS 1987, SUNY-Oneonta.

CUTLER, LORRAINE M., Professor Emeritus of Interior Architecture and Product Design (2007). BA, BFA 1974, Arizona State University; MA 1989, University of Phoenix.

DAHL, ROBERT E., Professor Emeritus of Architectural Engineering and Construction Science (1976). BS 1951, MS 1954, Kansas State University; Professional Engineer.

DAHL, JOHN, Teaching Assistant Professor of School of Integrated Studies (2016). BS 2008, Kansas State University.

DAILY, MELINDA L., Extension Agent, Family and Consumer Sciences, Sunflower District 6 (1998). BS 1983, Oklahoma Panhandle State University.

DALE, REBECCA A., Academic Advisor, K-State Global Campus (2012). BS 2007, MS 2013, Kansas State University.

DALIDA, JOHN W., Associate Professor Emeritus of Education (1988). AB 1970, MA 1971, University of Detroit; PhD 1988, University of Chicago.

DALTON, TIMOTHY J., Professor of Agricultural Economics, Director of Feed the Future Innovation Lab for Collaborative Research on Sorghum and Millet (2007). AB 1988, Columbia University; MS 1992, University of Illinois-Urbana-Champaign; PhD 1996, Purdue University.

DALY, ROBERT K., Associate Professor Emeritus of Journalism and Mass Communications (1973). AB 1967, Marquette University; MA 1973, Sangamon State University.

DANDU, RAJU, Professor of School of Integrated Studies (1996). BS 1981, Slovak Technical University; PhD 1991, North Dakota State University.

DANIELS, MELINDA D., Ancillary Faculty of Geography (2008). BS 1996, Cornell University; Masters of Research 1997, University College London; PhD 2003, University of Illinois.

DARBYSHIRE, M. JEAN, Director Emeritus, K-State Libraries (1992). BS 1968, Emporia State University; MPA 1997, Kansas State University.

DARLING, DAVID L., Professor Emeritus of Agricultural Economics (1983). BS 1970, MS 1974, University of Massachusetts; PhD 1983, Ohio University.

DARNELL, APRIL, Instructor, English Language Program (2014). BA 1991, University of North Dakota; MA 1996, Southeast Missouri State University.

DA SILVA, PERI A., JR., Professor of Economics (2011). BS 1997, Federal University of Rio de Janeiro; MS 1999, Getulio Vargas Foundation; PhD 2005, University of Illinois-Champaign.

DAS, SANJOY, Assistant Professor of Electrical and Computer Engineering (2001). BS 1985, Sambalpur University of India; MS and PhD 1994, Louisiana State University.

DATTA, SAUGATA, Professor of Geology (2008). BS 1993, MS 1995, University of Calcutta, India; PhD 2001, University of Western Ontario, Canada.

DAUBER, DONALD D., Extension Agent Emeritus, Hodgeman County, Jetmore (1960). BS 1953, MS 1958, Kansas State University.

DAVIDSON, CHAD, Instructor, English Language Program (2013). BS 2001, MA 2004, Biola University; MS 2010, California State University Fullerton.

DAVIDSON, JEFFREY L., Instructor, Extension Watershed Specialist-Flint Hills, Eureka (1977). BS 1973, MS 1975, Colorado State University.

DAVIDSON, STEVEN, Assistant Professor of Interior Architecture and Product Design (2012). BIA 1977, Kansas State University; MArch 2002, University of Kansas.

DAVIS, A. SALLY, Assistant Professor of Experimental Pathology (2014). BA 1992, Dartmouth College; DVM 2007, PhD 2014, North Carolina State University.

DAVIS, DEAN L., Extension Agent Emeritus, Agriculture and Natural Resources, Shawnee County, Topeka (1989). BS 1966, MS 1996, Kansas State University.

DAVIS, ELIZABETH M., Professor and Head of Clinical Sciences, Equine Internal Medicine (2003). BS 1989, Delaware Valley College; DVM 1996, University of Florida; PhD 2004, Kansas State University; Diplomate 1994, American College of Veterinary Internal Medicine.

DAVIS, GREGORY L., Associate Professor of Horticulture and Natural Resources (1999). BS 1979, MS 1988, PhD 1993, Kansas State University.

DAVIS, LAWRENCE CLARK, Professor of Biochemistry and Molecular Biophysics (1975). BS 1966, Haverford College; PhD 1970, Yeshiva University.

DAVIS, SHECKY L., Director of Administrative Services, Lafene Health Center (1993). BS 1992. Kansas State University.

DAVIS ZACKARY, Assistant Sports Medicine Trainer at K-State Athletics (2017). BS 2014, Ball State University; MS 2016, Wichita State University.

DAWES, BARBARA E., Associate Director Emeritus of Admissions (1979). BS 1961, St. Mary College, Leavenworth; MS 1979, Kansas State University.

DAWSON, CHRISTOPHER, Director of Strength and Conditioning/Head FB Strength Coach at K-State Athletics (2010). BBA 1995, MBA 1998, University of Oklahoma.

DAWSON, DARREN M., Dean of College of Engineering and Professor of Electrical and Computer Engineering (2014). BSE 1984, PhD 1990, Georgia Institute of Technology.

DAWSON, RITA T., Extension Agent Emeritus, Family and Consumer Sciences, Coffey County, Burlington (1971). BS 1971, Kansas State University; MS 1979, Emporia State University.

DAWSON, ROBERT E., Farm Management Economist Emeritus (1976). BS 1973, MS 1974, Kansas State University.

DAY, DENNIS J., Professor Emeritus of Landscape Architecture and Regional & Community Planning (1966). BSLA 1964, Michigan State University; MLA 1966, University of Michigan. Professional Landscape Architect.

DAY, DWIGHT D., Associate Professor of Electrical Engineering and Computer Engineering (1990). BS 1980, MS 1981, PhD 1987, Oklahoma State University.

DAYTON, TIMOTHY A., Professor of English (1990). BA 1982, Siena College; MA 1984, SUNY-Albany; PhD 1990, Duke University.

DE BRES-COLE, KAREN J., Professor Emeritus of Geography and Geospatial Sciences (1990). BS 1973, MA 1974, University of Missouri; PhD 1986, Columbia University.

DE LUCCIE, MARY, Associate Professor of Family Studies and Human Services; Administrator of Early Childhood Programs (1991). BS 1976, MS 1982, University of New Mexico; PhD 1987, Kansas State University.

de NOBLE, TIMOTHY E., Dean of Architecture, Planning and Design; Professor of Architecture (2009). BS 1986, University of Texas-Arlington; MArch 1992, Syracuse University. Licensed Architect.

DEBES, CYNTHIA, Instructor of English (2006). BA 2001, MA 2003, Kansas State University.

DeBEY, BRAD M., Professor Emeritus of Pathology (1995). BS 1976, DVM 1988, Kansas State University; PhD 1993, Iowa State University; Diplomate 1990, American College of Veterinary Pathologists.

DEBLAUW, AMANDA, Faculty Services and Testing Specialist, K-State Global Campus (2017). BS 2007, MS 2013; Kansas State University.

DEFRIES, DAVID J., Associate Professor History (2012). BA 1994, University of Richmond; MA 1998, PhD 2004, Ohio State University.

DEES, JEROME STEELE, Professor Emeritus of English (1976). BA 1958, Catawaba College; MA 1961, Florida State University; PhD 1968, University of Illinois at Urbana-Champaign.

DEETER-SCHMELZ, DAWN R., Professor of Marketing; Director, National Strategic Selling Institute (2011). BS 1983, Morehead State University; MBA 1993, University of South Florida; PhD 1996, University of South Florida.

DEEWALL, MICHAEL A., Extension Agent Emeritus, Agriculture and Natural Resources, Comanche County, Coldwater (2005). BS 1970, Oklahoma State University.

DeGREEFF, BECKY, Assistant Professor of School of Integrated Studies (2012). BS 1993, Southwest Minnesota State University, MS 2006, South Dakota State University, PhD 2010, North Dakota State University.

DeGROAT, ARTHUR S., Director, Military Affairs (2000). BA 1984, Seton Hall; MA 1997, USA CGSF; MS 2004, Kansas State University.

DEHON, CLAIRE LOUISE, Professor of French (1972). BA 1962, Royal Art Institute of Brussels; MA 1964, MA 1969, MPhil 1971, PhD 1973, University of Kansas.

DEIHL, LINCOLN W., Professor Emeritus of Management (1979). BS 1949, Bowling Green State University; MS 1951, Indiana University; PhD 1964, Ohio State University.

DEINES, DAN S., Professor and of Accounting (1982). BA 1970, Fort Hays State University; MS 1974, Emporia State University; PhD 1985, University of Nebraska; CPA Nebraska 1983, Kansas 1984.

DEINES, TIMOTHY, Instructor of Industrial and Manufacturing Systems Engineering (2002). BS 2000, Kansas State University.

DEINES, ROBYN R., Extension Agent, 4-H, Walnut Creek District, Ness City (2000). BS 1993, Emporia State University.

DE LA MOTA-PEYNADO, ALINA, Teaching Assistant Professor (2014). BS 1999, MS 2005, University of Puerto Rico-Mayaguez; PhD 2014, Kansas State University.

DELANO, FRED, Administrator, Professor Emeritus of Agricultural Economics (1972). BS 1961, Kansas State University; MS 1971, University of Missouri.

DELKER, DAVID G., Associate Dean and Professor Emeritus of School of Integrated Studies (1979). AT 1973, Kansas Technology Institute; BS 1977, MS 1979, Oklahoma State University.

DELPH, KATHERINE M., Clinical Assistant Professor, Equine Internal Medicine (2017). DVM 2012, Purdue University; MS 2016 Kansas State University; Diplomate 2016, American College of Veterinary Internal Medicine (Large Animal).

DeLOACH, SCOTT A., Professor and Head of Computer Science (2001). BS 1982, Iowa State University; MS 1987, PhD 1996, Air Force Institute of Technology.

DeLONG, ROB, Associate Professor of Anatomy and Physiology (2014). BS 1985, SUNY-Buffalo; MS 1988, University of Rochester; PhD 1994, Johns Hopkins University.

DELUCA, ANNE, Program Director, Parents and Family Program (2020). BA 2011, Doane University MA 2013, Kansas State University.

DeMARS, BETH, Assistant Women's Rowing Coach at K-State Athletics (2016). BS 2014, Kansas State University.

DENNING, ROYAL G., Adjunct Instructor of Grain Science and Industry (2010). BS 1965, Kansas State University.

DePALIO, MARÍA TERESA, Associate Professor of Spanish (2006). MA 1995, PhD 2001, Purdue University.

DePAOLA, BRETT DAVID, Professor of Physics and Interim Head (1986). BS 1977, MS 1979, Miami University of Ohio; PhD 1984, University of Texas-Dallas.

DERBY, MELANIE M., Associate Professor of Mechanical and Nuclear Engineering (2014). BS 2008, MS 2010, PhD 2013, Rensselaer Polytechnic Institute.

DeROUCHEY, JOEL M., Professor of Animal Sciences and Industry, Extension State Leader (2001). BS 1997, South Dakota State University; MS 1999, PhD 2001, Kansas State University.

DESAI, ANAND S., Associate Professor Emeritus of Finance (1994). BE 1973, Maharaja Sayajirao University; MS 1975, Iowa State University; PhD 1985, University of Michigan.

DESANTO, BARBARA, Associate Professor of Journalism and Mass Communications (2013) BA 1982, MS 1991, St. Cloud State University; EdD 1995, Oklahoma State University.

DESPER, JOHN, Department Crystallographer (2001). BS 1998, University of Chicago; PhD 1993, University of Wisconsin.

DEVAULT, GUNILE, Associate Registrar Emeritus (1987). BS 1970, Kansas State University; MS 1972, University of Illinois.

DEVAULT, JAMES E., Professor Emeritus of Electrical and Computer Engineering (1985). BS 1970, MS 1971, Michigan Tech University; MS 1977, University of Michigan.

DEVIN, MARY, Professor of Educational Leadership (2005). BS 1961, Emporia State University; MS 1974, PhD 1985, Kansas State University.

DEVLIN, DANIEL L., Director of KCARE and Professor (1985). BS 1979, MS 1983, Kansas State University; PhD 1985, Washington State University.

DEVORE, JOHN J., Professor of Electrical and Computer Engineering (1982). BS 1971, MS 1973, PhD 1984, Kansas State University.

DeWOLF, ERICK D., Professor of Plant Pathology (2007). BA 1994, Hope College; PhD 2000, North Dakota State University.

DEYOE, CHARLES W., Professor Emeritus of Grain Science and Industry; Feed Technology Research Scientist, Agricultural Experiment Station (1962). BS 1955, Kansas State University; MS 1957, PhD 1959, Texas A&M University.

DHUNGEL, ERIN K., Assistant Forester (2010). BS 2004, Southern Missouri State University; MS 2009, Southern Illinois University.

DIAH, KIMBERLY, Instructor, English Language Program (2009). MA 2008, TESOL; BA 2006, Oral Roberts University.

DIAS, DENISE G., Extension Agent, Family and Consumer Sciences, Sedgwick County, Wichita (1996). BS 1985, University of Nebraska; MS 2007, Kansas State University.

DIAZ, YASMIN, Spanish Assistant Coordinator and Instructor (2005). BA 1998, Universidad Nacional de Colombia; MA in Second Language Acquisition 2004, Kansas State University.

DIBBINI, MICHAEL, Head Women's Soccer Coach at K-State Athletics (2015). BA 1999, MBA 2002, Kansas Wesleyan.

DICKINSON, PAIGE E., Instructor of Theatre, School of Music, Theatre, and Dance (2000). BA 1993, American University; MA 1996, New York University; PhD 2005, California School of Professional Psychology.

DICKEY, CHARLES, Co-Offensive Coordinator Run Game/Offensive Line at K-State Athletics (2009). BA 1988, University of Arizona.

DICKEY, TASHA, Director of Women's Basketball Video Services at K-State Athletics (2013). BA 2011, University of Arizona.

DICKSON, WILLIAM M., Farm Management Economist Emeritus (1961). BS 1956, MS 1961, Kansas State University.

DIEHL, MARIA, Assistant Professor of Psychological Sciences (2012). BS 2004, Emory University; PhD, University of Rochester.

DIKEMAN, MARK, Farm Management Associate KFMA Associate Director (2007). BS 1996. MS 2002, Kansas State University.

DILLE, JOHANNA ANITA, Associate Professor of Agronomy; Weed Ecology (1999). BS 1991, MSc 1994, University of Guelph, Ontario; PhD 1998, University of Nebraska.

DILLINGER, SUSAN A., Instructor Emeritus of Education (2008). BS 1972, Washburn University; MS 1986, Kansas State University.

DILLON, JANET K., Instructor Emeritus of English (1986). BSF 1970, Emporia State University; MSF 1982, Kansas State University.

DINKEL, JANICE, Associate Professor and Director Emeritus of Social Work (1988). BSW 1976, MSW 1978, University of Kansas.

DIPAOLO, JOSHUA, Visiting Assistant Professor of Philosophy (2016). BA 2008, California State University Northridge College; MA 2009, University of Wisconsin-Madison; PhD 2016, University of Massachusetts–Amherst.

DIPPOLD, STEFFI, Associate Professor of English (2013). MA 1999, Freie University Berlin; MA 2005, PhD 2012, Stanford University.

DISBERGER, BRANDIE, Instructor, Department of Communications and Agricultural Education (2011). BS 2001, MS 2003, Kansas State University.

DISSANAYAKE, SUNANDA, Professor of Civil Engineering (2002). BS 1990, University of Moratuwa; MS 1993, Asian Institute of Technology; PhD 1999, University of South Florida; Professional Engineer.

DITTMER, NEAL, Research Assistant Professor of Biochemistry and Molecular Biophysics (2000). BS 1988, PhD 2000, Michigan State University.

DIXIT, AKASH, Instructor of Mechanical and Nuclear Engineering (2014). BS 2000, National Institute of Technology, India; MS 2008, PhD 2012, Georgia Institute of Technology.

DIXSON, CYNTHIA E., Extension Agent Emeritus, Agriculture and Natural Resources, Rawlins County, Atwood (1995). BS 1985, Oklahoma Panhandle State University.

DIXON, LYLE J., Professor Emeritus of Mathematics (1963). BS 1948, MS 1950, Oklahoma State University; PhD 1963, University of Kansas.

DIXON, MICHAEL E., Assistant Director, Dean of Engineering Office (1989). BS 1978, MA 1997, Kansas State University.

DIXON, ROBERT B., Lieutenant Colonel, Professor and Head of Military Science (2012). BS 1994, North Georgia University; MS 2008, Kansas State University.

DOBRZANSKI, SLAWOMIR, Professor of Music, School of Music, Theatre, and Dance (2005). BM 1986, Karol Szymanowski Gymnasium; MM 1991, Fryderyk Chopin Academy of Music; DMA 2001, University of Connecticut.

DODD, ELIZABETH C., University Distinguished Professor of English (1989). BA 1983, Ohio University; MFA 1986, PhD 1989, Indiana University.

DODDS, WALTER K., University Distinguished Professor of Biology; Aquatic Ecology, Agricultural Experiment Station (1990). BS 1980, University of Denver; PhD 1986, University of Oregon.

DOEBELE, JACQUELINE, Accountant I, K-State Global Campus (2017). BS, Kansas State University.

DOGAN, HULYA, Professor of Grain Science and Industry (2006). BS 1990, MS 1993, PhD 2000, Middle East Technical University, Turkey.

DOGAN, HUSEYIN, Instructor of Grain Science and Industry (2006). BS 1989, Middle East Technical University, Turkey.

DOLL, GAYLE A., Assistant Professor of Family Studies and Human Services and Director for the Center on Aging (2004). BS 1975, McPherson College; MS 1993, PhD 2004, Kansas State University.

DOMSCH, L. ANN, Extension Specialist, 4-H Youth Development Programs (1959). BS 1958, MS 1981, Kansas State University.

DONELAN, VALERIE A., Culinary Operations Manager ll/Registered Dietitian, Housing and Dining Services (2011). BS 2007, BS 2009, MS 2017, Kansas State University.

DONELIN, DAN W., Professor Emeritus of Landscape Architecture and Regional & Community Planning (1995). BLA 1965, University of Georgia; MLA 1967, Michigan State University. Professional Landscape Architect.

DONNELLY, BRENDAN, Professor Emeritus and Emeritus Department Head of Grain Science and Industry (1996). BS 1960, National University of Ireland; MS 1962, Trinity College, Ireland; PhD 1965, National University of Ireland; MBA 1975, St. Louis University.

DONNELLY, MICHAEL, Associate Professor Emeritus (1972). AB 1963, Harvard College, PhD 1970, Harvard University.

DONNELLY, KEVIN J., Professor of Agronomy (1998). BS 1972, MS 1974, Kansas State University; PhD 1983, Colorado State University.

DONNERT, H. DANIEL, Media Production Specialist, Department of Communications and Agricultural Education (1995). BS 1984, Kansas State University.

DORHOUT, PETER K., Professor of Chemistry and Vice President for Research (2012). BS 1985, University of Illinois; PhD 1989, University of Wisconsin-Madison.

DOUGLAS-MANKIN, KIMBERLY, Associate Professor of Industrial and Manufacturing Systems Engineering (2004). AS 1984, Northeastern Oklahoma A&M College; BS 1987, MS 1989, Oklahoma State University; PhD 1993, Arizona State University; Professional Engineer.

DOUTHIT, TERESA, Professor of Animal Sciences and Industry (2000). BS 1999, MS 1999, Kansas State University; PhD 2007, Colorado State University.

DOW, DOUGLAS, Associate Professor of Art (2007). BA 1995, University of Maine; MA 1997, PhD 2006, Pennsylvania State University.

DOWELL, FLOYD E., Adjunct Professor of Biological and Agricultural Engineering (1996). BS 1984, MS 1985, Oklahoma State University; PhD 1988, University of Illinois.

DOWNEY, RONALD G., Professor Emeritus of Psychological Sciences (1975). BA 1966, University of Texas; MA 1968, PhD 1971, Temple University.

DRAKE ADRYANNA, Clinical Assistant Professor, Counseling Services (2017). MA 2008, MS 2010, PhD 2013, Kansas State University.

DRAKE, JODI L., Extension Agent, Family and Consumer Sciences, Pratt County, Pratt (2008). BS 1997, MS 2009, Kansas State University.

DRAKE, MEG, Public Information Officer, Department of Communications and Agricultural Education (2019). BS 2013, Kansas State University; MS 2015, Oklahoma State University.

DRAPER, MARTIN, Professor and Head of Plant Pathology (2016). BS 1982 Iowa State University, MS 1985, PhD 1985 North Dakota State University.

DRESCHER, V. ELIZABETH, Extension Agent, 4-H Youth Development Programs, Sedgwick County, Wichita (1996). BS 1975, Virginia Tech; MS 1999, Kansas State University.

DRESSLER, ROBERT E., Professor Emeritus of Mathematics (1970). BA 1965, University of Rochester; MA 1966, PhD 1969, University of Oregon.

DRITZ, STEVEN S., Professor of Diagnostic Medicine/Pathobiology (1995). BS 1986, South Dakota State University; DVM 1990, University of Minnesota; PhD 1995, Kansas State University.

DROLET, BARBARA S., Adjunct Faculty of Diagnostic Medicine/Pathobiology (2010). BS 1986, MS 1989, University of Wyoming; PhD 1994, Oregon State University.

DROUILLARD, JAMES S., Professor of Animal Sciences and Industry (1995). BS 1985, MS 1986, University of Florida; PhD 1989, University of Nebraska.

DRYDEN, MICHAEL W., University Distinguished Professor of Diagnostic Medicine/Pathobiology (1990). BS 1982, DVM 1984, Kansas State University; MS 1988, PhD 1990, Purdue University; Diplomate 2011, American College of Veterinary Microbiology.

DU, JUAN, Associate Professor of Statistics (2009). BS 1997, MS 2000, Hubei University-China; PhD 2009, Michigan State University.

DUDEK, MICHAEL, Associate Professor of Interior Design and Fashion Studies (2004). BS 1980, University of Wisconsin-Milwaukee; MS 1981, Florida State University.

DUEVER, MEAGAN J., Assistant Professor, Data Services Librarian, K-State Libraries (2011). BA 1997, MA 2004, Western Michigan University; MLIS 2010, University of Wisconsin-Milwaukee.

DUMLER, JEFFERY K., Pharmacist, Lafene Health Center (1993). BS 1974, University of Kansas.

DUNBAR, JOHN O., Professor and Dean Emeritus of Agriculture; Director of the Agricultural Experiment Station (1976). BS 1942, MS 1948, PhD 1954, Purdue University.

DUNCAN, ANDREW M., Instructor of Chemical Engineering (2017). BS 2007, PhD 2015, University of Kansas.

DUNCAN, JANINE M., Assistant Professor of Curriculum and Instruction (2018). BS 1986, University of Illinois; MEd 1999, PhD 2002 University of Missouri-St. Louis.

DUNCAN, JUSTIN H., Colonel United States Air Force, Professor and Head of Aerospace Studies (2017). BS 1997, United States Air Force Academy; MS 2008, Air Force Institute of Technology.

DUNCAN, STEWART R., Professor and Extension Specialist, Crops and Soils, Northeast (1991). BS 1977, MS 1988, PhD 1991, Kansas State University.

DUNN, ARIN, Director of Student-Athlete Development K-State Athletics (2016). BA 2010, Colorado State University; MS 2016, University of Northern Colorado.

DUNN, DUANE M., Associate Dean of K-State Global Campus (2015). BS 1979, MS 1984, EdD 1996, Kansas State University.

DUNN, JON D., Professor Emeritus of Anatomy and Physiology (1990). BS 1962, College of Idaho; PhD 1967, University of Kansas.

DUNN, NEIL, Instructor of Dance and Dance Production Coordinator, School of Music, Theatre, and Dance (2006). BS 1998, Weber State University; MM 2002, University of Arizona.

DUNN, WILLIAM L., Professor and Head of Mechanical and Nuclear Engineering (2002). BS 1968, University of Notre Dame; MS 1970, PhD 1974, North Carolina State University.

DUNNING, BEVERLY K., County Extension Director Emeritus, Sedgwick County, Wichita (1964). BS 1963, Kansas State University; MS 1970, Wichita State University.

DUNSTAN, JANE M., Communication and Marketing Specialist, Department of Communications and Agricultural Education (2005). BFA 2004, Fort Hays State University.

DUPREE, GABRIELLE, Major United States Air Force, Assistant Professor of Aerospace Studies (2014). BS 1998, Kansas State University; MA 2009, Trident University.

DURBIN, STEFANIE, Clinical Assistant Professor of Clinical Sciences, Small Animal Emergency (2019). DVM 2016, Kansas State University.

DURBIN, TREVOR J., Assistant Professor of Anthropology (2015). BS 2007, PhD 2015, Rice University.

DURRETT, TIMOTHY, Associate Professor of Biochemistry and Molecular Biophysics (2011). AB 1999, Harvard University; PhD 2006, University of Missouri-Columbia.

DURTSCHI, JARED A., Assistant Professor of Family Studies and Human Services (2011). BS 2004, Brigham Young University; MS 2007, Purdue University-Calumet; PhD 2011, Florida State University.

DUSHKIN, LELAH, Associate Professor Emeritus of Sociology (1968). AB 1953, Smith College; MA 1957, PhD 1974, University of Pennsylvania.

DYE, JORDAN, Farm Management Economist (2015). BS 2012, Kansas State University.

DYER, RUTH A., Retired Senior Vice Provost and Professor of Electrical and Computer Engineering (1983). BS 1973, MS 1975, Kansas State University; PhD 1980, University of Kentucky.

DYER, STEPHEN A., Professor of Electrical and Computer Engineering (1983). BS 1973, MS 1974, PhD 1977, Kansas State University.

DYKMANN, NOELLE, Assistant Women's Rowing Coach at K-State Athletics (2017). BS 2016, Kansas State University.

EAKIN BRETT, Director of Fan Experience at K-State Athletics (2017). BS 2009, Kansas State University; MS 2010, University of Louisiana.

EARLES, BEVERLEY, Associate Director, English Language Program (1990). DipTESL 1979, PhD 1989, Victoria University-Wellington, New Zealand.

EAST, MARGARET, Program Coordinator Agricultural Economics Ghana METSS Office (2012). BS 1995, Appalachian State University; MA 1999, PhD 2007, University of Georgia.

EASTON, TODD W., Associate Professor of Industrial and Manufacturing Systems Engineering (2001). BS 1993, Brigham Young University; MS 1994, Stanford University; PhD 1999, Georgia Tech.

EASTWOOD, FRANCES (FRANNY) M., Extension Agent, Nutrition, Food Safety and Health, Marais des Cygnes District 16, Mound City (2014). BS 2002, Kansas State University; MS 2004, University of Tennessee.

EBADI, YAR M., Dean Emeritus of Business Administration; Professor of Management (1983). BS 1968, Kabul University; MS 1970, Georgia Tech; MBA 1974, DBA 1977, Indiana University.

EBERLE, WILLIAM M., Associate Professor Emeritus of Agronomy; Extension Specialist, Land Resources (1973). BS 1968, Purdue University; MS 1970, PhD 1973, University of Illinois.

ECKELS, STEVEN J., Professor of Mechanical and Nuclear Engineering; Director, Institute of Environmental Research (1993). BS 1988, Dordt College; MS 1991, PhD 1993, Iowa State University.

ECKERT, R. SCOTT, Extension Agent, Horticulture, Harvey County, Newton (1999). BS 1990, MS 1994, Kansas State University.

ECKHOFF, N. D., Professor Emeritus of Mechanical and Nuclear Engineering (1961). BS 1961, MS 1963, PhD 1968, Kansas State University; Professional Engineer, 1978.

EDGAR, JAMES H., University Distinguished Professor and Head of Chemical Engineering (1988). BS 1981, University of Kansas; MS 1982, PhD 1987, University of Florida.

EDMONDSON, ALESHA, Digital and Social Media Marketing Specialist, K-State Global Campus (2018). BS 2009, Kansas State University.

EDWARDS, ALVIN J., Professor Emeritus of Clinical Sciences, Food Animal Medicine (1975). DVM 1959, PhD 1979, Kansas State University.

EDWARDS, ELAINE, News Media Services Coordinator Emeritus, Department of Communications and Agricultural Education (2008). BS 1979, MS 1994, Iowa State University.

EDWARDS, JENNIFER, Associate Professor Emeritus of Music, School of Music, Theatre, and Dance (1973). BA 1967, Stephen F. Austin State College; MM 1970, University of Oregon; DMA 1997, University of Missouri-Kansas City.

EDWARDS, MARISSA, Academic Counselor at K-State Athletics (2105). BS 2009, Colorado State University; MA 2012, California State University, Fresno.

EDWARDS, ROBERT L., Professor Emeritus of Music, School of Music, Theatre, and Dance (1972). BM 1961, MM 1963, Wichita State University; DMA 1972, University of Oregon.

EHIE, IKE C., Professor of Management (2002). BS 1981, MS 1983, MBA 1984, Southern Illinois University-Carbondale; PhD 1989, University of Missouri-Rolla.

EHLER, STANLEY W., Associate Professor Emeritus of Agronomy (1972). BS 1962, MS 1964, University of Southern Illinois; PhD 1974, University of Missouri.

EILERT, SCOTT, Director of Football Video Services at K-State Athletics (1992). BS 1991, Kansas State University.

EISELEIN, GREGORY, Professor of English (1993). BA 1987, University of Idaho; PhD 1993, University of Iowa.

EKART, DONNA, Communications Coordinator, K-State Libraries (2001). BS 1988, MS 1996, Kansas State University; MLS 2005, Emporia State University.

ELBRADER, DENNIS R., Extension Agent Emeritus, Agriculture and Natural Resources, Cherokee County, Columbus (1995). BS 1987, Southwest Missouri State University.

ELCIOGLU, MEKIN, Assistant Professor of Interior Architecture and Product Design (2018). BS 2000, Istanbul Technical University, MS 2003, Mimar Sinan University, PhD 2009, Mimar Sinan University, Istanbul, Turkey.

ELCOCK, DOUGLAS A., Senior Business and Finance Officer, Agriculture (1989). BS 1971, University of Kansas; MS 1986, Kansas State University.

ELDER, NELDA J., Professor Emeritus, K-State Libraries (1972). BA 1963, Wichita State University; MLS 1970, Emporia State University.

ELKINS, RICHARD N., Director Emeritus of Admissions (1966). BS 1963, MS 1963, Kansas State University.

ELLIOTT, KAREN S., Extension Agent Emeritus, Family and Consumer Sciences, Johnson County, Olathe (2000). BS 1970, MS 1978, PhD 1981, Kansas State University.

ELLIS, JASON D., Professor and Department Head, Department of Communications and Agricultural Education (2011). BS 1998, Kansas State University; MS 2003, PhD 2006, Iowa State University.

ELMORE, CAROL H., Librarian, Veterinary Medical Library (1996). BA 1969, Greenville College; MLS 1975, JD 1983, University of Missouri.

ELMORE, RONNIE G., Associate Dean and Professor of Theriogenology (1990). BA 1969, Greenville College; BS 1970, DVM 1972, University of Illinois; MS 1978, University of Missouri. Diplomate 1977, American College of Theriogenologists.

ELSASSER, JAN, Deputy CIO for Business Intelligence, Analytics, and Enterprise Applications (2019). BS 2001, Kansas State University; MS 2013 Iowa State University.

ELSASSER, JAYNA, Advisor College of Architecture, Planning and Design (2008). BS 2007, MS 2009, Kansas State University.

EMERSON-BOWEN, MARY J., Program Associate, Agricultural Economics Master of Agribusiness (2005). BS 1996, Kansas State University; MS 2013, University of Denver.

ENGLAND, NAOMI A., Extension Agent Emeritus, Family and Consumer Sciences, Sedgwick County, Wichita (1976). BS 1960, Central Oklahoma State College; MS 1968, Kansas State University.

EPPING, DARREN, Assistant Director of Forensics, Instructor of Communication Studies (2011) BA 2004, Hastings College; MA 2006, Kansas State University.

ERDWIEN, NEIL C., Web Services Director, Division of Communications and Marketing (1984). BS 1984, MS 1989, Kansas State University.

ERHART, ANDREW B., Professor Emeritus, Southwest Kansas Branch Agricultural Experiment Station (1931). BS 1933, Kansas State University.

ERICKSON, DONALD B., Professor Emeritus of Agricultural Economics, Extension Agricultural Economist, Marketing (1966). BS 1955, MS 1960, University of Wyoming; PhD 1964, Purdue University.

ERICKSON, ETHAN, Chief Financial Officer and Director of Budget Planning (2014). BS, Kansas State University; MBA, Kansas State University.

ERICKSON, HOWARD H., Professor Emeritus of Anatomy and Physiology; Research Cardiovascular Physiologist (1981). BS 1957, DVM 1959, Kansas State University; PhD 1966, Iowa State University.

ERICKSON, LARRY EUGENE, Professor Emeritus of Chemical Engineering; Director of Hazardous Substance Research Center (1964). BS 1960, PhD 1964, Kansas State University.

ERICKSON, PAMELA S., Director, Student Success and Advising, K-State Global Campus (2016). BS 1997, MS 1999, Kansas State University.

ERICKSON-FRYBACK, SHARON M., Extension Agent, Family and Consumer Sciences, Gray County, Cimarron (2010). BA 2003, Kansas Wesleyan University.

ERLICK, BARRY, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2016). BS 1968, University of Texas; MS 1970, Texas Christian University; PhD 1975, Hahnemann Medical College and Hospital; Post-Doctoral Training 1975-76, National Cancer Institute, Bethesda Maryland and Hahnemann Medical College.

ERPELDING, LAWRENCE H., JR., Professor Emeritus and Associate Dean Emeritus of Agriculture (1977). BS 1965, MS 1969, PhD 1972, Kansas State University.

ESHAR, DAVID, Associate Professor of Clinical Sciences, Exotics (2012). BA 1996, MA 2004, DVM 2003, Hebrew University, Israel; Diplomate 2011, American Board of Veterinary Practitioners; Diplomate 2012, European College of Zoological Medicine; Diplomate 2017, European College of Zoological Medicine - Zoo Health Management.

ESMAEILY, ASAD, Professor of Civil Engineering (2002). BS/MS 1987, University of Tehran; MS 2000, PhD 2001, University of Southern California; Professional Engineer.

ESRY, BRETT D., Ernest and Lillian Chapin Professor and University Distinguished Professor of Physics (1999). BS 1993, Kansas State University; PhD 1997, University of Colorado-Boulder.

EUBANK, ROBIN L., Extension Agent, Family and Consumer Sciences, Barber County, Medicine Lodge (2003). BS 2002, MS 2006, Kansas State University.

EUSTACE, DALE, Professor Emeritus of Grain Science and Industry; Milling Technology Research Scientist, Agricultural Experiment Station (1973). BS 1959, MS 1962, PhD 1967, Kansas State University.

EVANS, CINDY L., Extension Agent, Family and Consumer Sciences, Shawnee County, Topeka (1990). BS 1980, Fort Hays State University; MS 1991, Kansas State University.

EVANS, THOMAS MARION, Professor Emeritus of Health, Physical Education, and Recreation (1942). BS 1930, Kansas State University; MS 1942, University of Michigan; PE Director 1958, Indiana University.

EVERLEY, REBECCA, Instructor, English Language Program (2008). BA 2002, MS 2007, PhD 2019, Kansas State University.

EVERSMEYER, MERLE G., Adjunct Associate Professor Emeritus of Plant Pathology (1965). BS 1966, MS 1969, PhD 1971, Kansas State University.

EVERSON, EVERETT K., Farm Management Economist Emeritus (1974). BS 1973, MS 1974, Kansas State University.

EWANOW, LYNN, Emeritus Associate Dean of Architecture, Planning and Design; Associate Professor of Landscape Architecture and Regional & Community Planning (1979). BA 1975, Keuka College; MLA 1979, SUNY, College of Environmental Science and Forestry.

EXDELL, JOHN B., Associate Professor Emeritus of Philosophy (1972). BA 1967, Dickinson College; PhD 1973, University of Texas-Austin.

EYESTONE, GREGG R., Extension Agent, Horticulture, Riley County, Manhattan (1990). BS 1986, Kansas State University.

FABURAY, BONTO, Research Assistant Professor of Diagnostic Medicine/Pathobiology (2013). DVM 1996, Moscow State Academy of Veterinary Medicine; PhD 2007, Utretch University, The Netherlands.

FABRIZIUS, MADISON, Assistant Athletic Trainer at K-State Athletics (2018), BS 2016, MS 2018, Kansas State University.

FAIDLEY, DONALD L., Farm Management Economist Emeritus (1956). BS 1953, Kansas State University.

FAIRCHILD, FRED, Professor Emeritus of Grain Science and Industry (1995). BS 1963, MS 1964, Kansas State University.

FAIRMAN, JOHN T., Emeritus Assistant Vice President for University Relations (1987). BS 1966, Central Michigan University.

FAJEN, DEANA, Senior Application Developer (2006). BS 1998, Kansas State University.

FALCONE, JESSICA M., Associate Professor of Anthropology (2010). BA 1998, New College of Florida; MS 2001, George Washington University; MA 2005, PhD 2010, Cornell University.

FALK, JEANNE S., Instructor, Multicounty Specialist, Crops and Soils; Thomas County, Colby (2004). BS 2002, MS 2004, Kansas State University.

FALK JONES, JEANNE S., Instructor/Multi-County Specialist, Crops and Soils, Northwest Area Extension Office, Colby (2004). BS 2002, MS 2004, Kansas State University.

FALLIN, JANA R., Retired Director, Center for the Advancement of Teaching and Learning (2019); Professor of Music and Distinguished Teacher Scholar, School of Music, Theatre, and Dance (1988). BME 1968, Baylor University; MM 1974, PhD 1979, University of Texas.

FALLIN, DAVID J., Instructor of Marketing (1996). MBA 1990, Kansas State University; BA 1988, University of Northern Iowa.

FALLON, DON, Coordinator Emeritus Religious Activities (1989). BA 1948, Wartburg College, Iowa; BD, M DIV 1952, Wartburg Seminary, Iowa.

FANG, YING, Associate Professor of Diagnostic Medicine/Pathobiology (2013). MS 1997, Iowa State University; PhD 2004, South Dakota State University.

FANGMAN, SUSAN L., Extension Agent, Family and Consumer Sciences, Shawnee County, Topeka (2016). BS 1994, Kansas State University; MS 2010, Baker University.

FANT, LISA, Assistant Director of Office of Fraternity and Sorority Life (2005). BA 2003, Marquette University; MEd 2005, James Madison University.

FARIS, JUSTIN, Adjunct Professor of Plant Pathology (2001). BS 1993, MS 1995, North Dakota State University; PhD 1999, Kansas State University.

FARMER, LARRY A., Professor Emeritus of School of Integrated Studies (1968). AS 1955, Sayre Junior College; BS 1957, Oklahoma State University; MS 1971, Kansas State University.

FARNEY, JAYMELYNN, Associate Professor of Animal Sciences and Industry; Extension Specialist, Southeast, Parsons (2012). BS 2007, Kansas State University; MS 2009, Oklahoma State University; PhD 2012, Kansas State University.

FAROUGH, AIDA, Teaching Assistant Professor of Geology (2016). PhD 2015, Virginia Tech.

FARRELL, COILA, Purchasing Systems Administrator, Housing and Dining Services (2008). BS 2007, Kansas State University.

FARRIS, DORIS M., Extension Agent Emeritus, Family and Consumer Sciences, Kearny County, Lakin (1976). BS 1967, Jacksonville State University.

FARRIS, KELLI, Director Center for Student Involvement (2017). BS 2008, Northwest Missouri State University; MS 2010, Indiana State University.

FASSLER-KERSTETTER, JACQUELINE, Associate Professor of Music, School of Music, Theatre, and Dance (2001). BM 1985, University of Wisconsin-Madison; MM 1987, Indiana University; 2001, University of Georgia.

FAUBION, JON, Professor of Grain Science and Industry (2005). BS 1973, MS 1977, PhD 1980, Kansas State University.

FAUSETT, MARVIN R., Professor Emeritus of Agricultural Economics, Extension Agricultural Economist, Southeast (1979). BS 1961, MS 1970, PhD 1979, University of Missouri.

FAVOR, JUDY K., Assistant Professor of Educational Leadership (2012). BS 1987, Culver-Stockton College; MS 1992 Southeast Missouri State University; PhD 2010, University of Kansas.

FAW, RICHARD E., Professor Emeritus of Mechanical and Nuclear Engineering; Director of Nuclear Reactor Facility (1962). BS 1959, University of Cincinnati; PhD 1962, University of Minnesota; Professional Engineer, 1970.

FEATHERSTONE, ALLEN M., Professor and Head of Agricultural Economics, Director of Master of Agribusiness (1986). BS 1982, University of Wisconsin; MS 1984, PhD 1986, Purdue University.

FECHTER, RICHARD H., Extension Agent, Agriculture and Natural Resources and 4-H Youth Development Programs, Rolling Prairie District 8, Howard (1994). BS 1993, MS 2000, Kansas State University.

FEDDE, M. ROGER, Professor Emeritus of Anatomy and Physiology; Research Neurophysiologist (1964). BS 1957, Kansas State University; MS 1959, PhD 1963, University of Minnesota.

FEDDER, NORMAN J., University Distinguished Professor Emeritus of Communication Studies, Theatre and Dance (1970). BA 1955, Brooklyn College; MA 1956, Columbia University; PhD 1962, New York University.

FEES, BRONWYN, Associate Dean for Academic Affairs and Professor of Family Studies and Human Services (1998). BS 1984, MS 1986, University of Nebraska-Kearney; PhD 1998, Iowa State University.

FEHRENBACH, CHARLES C., Research Assistant Professor of Physics (1999). BS and BA 1982, University of Texas; PhD 1993, University of Michigan.

FEIN, CHRISTOPHER A., Assistant Professor of Architecture (2010). MArch 2005, Yale University.

FELDKAMP, WILL, Farm Management Economist (2010). BS 2003, Kansas State University.

FELLERS, JOHN P., Adjunct Associate Professor of Plant Pathology (1999). BS 1989, MS 1992, Oklahoma State University; PhD 1996, University of Kentucky.

FELTNER, KURT C., Professor Emeritus; Director-at-Large, NC Association of AES Directors (1982). BS 1957, MS 1959, University of Wyoming; PhD 1963, University of Arizona.

FENTON, DONALD L., Professor of Mechanical and Nuclear Engineering (1986). BS 1969, Kansas State University; MS 1970, PhD 1974, University of Illinois; Professional Engineer.

FERGUSON, CAROLYN J., Associate Director, Professor of Biology and Curator of Herbarium; Botany, Agricultural Experiment Station (2000). BA 1990, Carlton College; PhD 1998, University of Texas.

FERGUSON, CLYDE RANDOLPH, Associate Professor Emeritus of History (1960). BA 1955, University of Oklahoma; MA 1957, Clemson; PhD 1960, Duke University.

FICK, WALTER H., Professor of Agronomy, Extension Specialist, Range Management Research Agronomist (1978). BS 1973, MS 1975, University of Nebraska; PhD 1978, Texas Tech University.

FIKE, KAROL E., Assistant Professor of Animal Sciences and Industry (2006). BS 1991, Iowa State University; MS 1994, PhD 1997, University of Nebraska-Lincoln.

FINK, CAROL J., Extension Assistant in Family Studies and Human Services (2010). BS 1977, MS 1991, PhD 2004, Kansas State University.

FINKELDEI, SCOTT, Assistant Director of Mediated Education (1998). BA 1993, BS 1998, Kansas State University.

FINNEGAN, MICHAEL, Professor Emeritus of Anthropology (1973). BA 1967, MA 1970, PhD 1972, University of Colorado. Diplomate 1978, American Board of Forensic Anthropology.

FINNEGAN, MICHAEL J., Assistant Professor of the Staley School of Leadership Studies (2006). BS 2000, PhD 2013, Kansas State University; MCSPA 2006, University of Central Missouri.

FINNIGAN, GREGORY, Assistant Professor of Biochemistry and Molecular Biophysics (2017). BS 2005, Gonzaga University, PhD 2011, University of Oregon.

FIRSOVA, TATIANA, Assistant Professor of Mathematics (2014). Diploma 2004, Moscow State University; PhD 2010, University of Toronto.

FISCHER, DANIELLE, Office Specialist II, Department of Accounting. BS 2012, Kansas State University; MS 2015, Kansas State University.

FISHBACK, SARAH JANE, Associate Professor of Educational Leadership (1999). BS 1964, University of Virginia; MS 1991, PhD 1997, Kansas State University.

FISHER, DANN G., Associate Professor of Accounting (1991). BBA 1985, MAcc 1988, Kansas State University; CPA 1985, PhD 1992, University of Missouri.

FISHER, STEVEN D., Professor Emeritus; Extension Specialist, 4-H Youth Development Programs (1971). BS 1971, MS 1977, Kansas State University.

FITZGERALD, REBECCA, Assistant Athletic Trainer at K-State Athletics (2016). BS 2010, University of Kansas; MA 2012, Ball State University.

FITZSIMMONS, ERIC J., Assistant Professor of Civil Engineering (2015). BS 2005, MS 2007, PhD 2011, Iowa State University.

FLAMING, RYAN, Extension Agent, Agriculture and Natural Resources, Harvey County, Newton (2012). BS 2009, Kansas State University.

FLANAGAN, BRUCE, Professor Emeritus of Speech (1966). BS 1953, Western Michigan University; MS 1958, Southern Illinois University; PhD 1966, University of Florida.

FLANAGAN, MARTHA A., Extension Agent Emeritus, Family and Consumer Sciences, Cherokee County, Columbus (1995). BS 1975, Pittsburg State University.

FLANDERS, BRET N., Associate Professor of Physics (2009). BS 1993, University of California-San Diego; PhD 1999, University of Chicago.

FLEMING, SHERRY, Professor of Biology; Immunology (2004). BS 1989, MS 1991, Kansas State University; PhD 1998, University of Colorado Health Sciences Center.

FLINCHBAUGH, BARRY L., Professor Emeritus of Agricultural Economics (1971). BS 1964, MS 1967, PhD 1971, Purdue University.

FLIPPO, DANIEL K., Assistant Professor of Biological and Agricultural Engineering (2011). BS 1994, Kansas State University, MS 2004, Wichita State University, PhD 2009, University of Oklahoma.

FLITER, JOHN, Associate Professor of Political Science (1994). BA 1985, California State University-Northridge; MA 1987, PhD 1993, University of Maryland-College Park.

FLOUER, JACK, Professor Emeritus of Music, School of Music, Theatre, and Dance (1971). BA 1960, Marshall University; MM 1962, Eastman School of Music; DM 1971, Indiana University.

FLYNN, MICHAEL, Assistant Professor of Political Science (2014). BA 2006, SUNY-Potsdam College; MA 2010, PhD 2013 SUNY-Binghamton University.

FOLLAND, NATHAN O., Professor Emeritus of Physics (1966). BA 1959, Concordia College; PhD 1965, Iowa State University.

FONG, PEYING, Associate Professor of Anatomy and Physiology (2006). BS 1981, Yale University; PhD 1989, University of California-San Francisco.

FORRESTER, S. DRU, Adjunct Faculty of Clinical Sciences (2005). MS 1989, Texas A&M University; DVM 1985, Auburn University; Diplomate 1990, American College of Veterinary Internal Medicine.

FORSHEE, JOHN, District Extension Director, River Valley District 4, Clay Center (2010). BS 1992, Kansas State University.

FORSYTH, RICHARD H., Professor Emeritus of Landscape Architecture and Regional & Community Planning (1979). BSLA 1967, Michigan State University; MLA 1969, Harvard University. Professional Landscape Architect.

FORSYTH, SARAH W., Assistant Director for Fitness and Aquatics, Recreational Services (1993). BFA 1972, University of North Texas; MS 1990, Texas Christian University.

FORTNEY, WILLIAM D., Assistant Professor Emeritus of Small Animal Medicine (1977). BS 1970, DVM 1974, University of Missouri.

FOSTER, DONALD E., Emeritus University Registrar, Consultant (1965). BS 1960, MS 1961, Kansas State University.

FOUT, HAMILTON, Graduate Faculty Associate (2012). BA 2001, Florida State University; PhD 2007, University of North Carolina at Chapel Hill.

FOWLER, EDDIE R., Professor Emeritus of Electrical and Computer Engineering (1962). BS 1957, MS 1965, Kansas State University; PhD 1969, Oklahoma State University.

FOWLER, LIANE, Director of Specialized Learning and Tutorial Program at K-State Athletics (2001). MS 1987, Wichita State University.

FOWLER, MARK, IGP Associate Director and Instructor (2003). BS 1992, MS 2006, Kansas State University.

FOX, JESSICA, Program Associate, Center for the Advancement of Entrepreneurship. BS 2012, Kansas State University.

FOX, LAURA J., Instructor of Chemistry (2016). BS 2011, Indiana University of Pennsylvania; MS 2013, PhD 2016, University of Minnesota.

FRANCHITTI, ABBY, Instructor, English Language Program (2008). BA 1968, New York State University; MA 1980, DEA 2000, PhD 2006, University of Tours.

FRANK, RONALD E., Professor Emeritus, Department of Communications and Agricultural Education (1985). BA 1972, Fort Hays State University; MA 1979, Kansas State University.

FRANKE, JAMES L., Associate Professor of Political Science (1984). BS 1972, Bradley University; MA 1974, PhD 1979, Northern Illinois University.

FRANKO, CAROL S., Associate Professor of English (1990). BA 1983, The American University; MA 1984, PhD 1990, University of Wisconsin-Madison.

FRANZ, DAVID R., Adjunct Faculty of Diagnostic Medicine/Pathobiology (2003). BS 1968, DVM 1970, PhD 1980, Baylor College of Medicine.

FRATECELLI, CARRIE, Clinical Assistant Professor of Family Studies and Human Services (2016). BA BS 2007, Manhattan Christian College, Kansas State University; MS 2009, Kansas State University.

FRAZIER, CHESTER, Assistant Men's Basketball Coach at K-State Athletics (2012). BS 2009, University of Illinois-Urbana/Champaign.

FREDERICK, JUSTIN, Assistant Dean and Assistant Director of the Office of Student Life (2017). BS 2002, Pittsburg State University; MS 2004, University of Central Missouri.

FREELAND, GLORIA B., Assistant Professor of Journalism and Mass Communications (1983). BA 1975, MBA 1983, Kansas State University.

FREEMAN, AMANDA S., Instructor of Economics (2006). BA 2004, MA 2006, Kansas State University.

FREEMAN, LISA C., Adjunct Faculty of Anatomy and Physiology (1994). DVM 1986, MS 1986, Cornell University; PhD 1989, Ohio State University.

FREEZE, JERRY D., Farm Management Economist Emeritus (1979). BS 1977, MS 1979, University of Missouri.

FRIEMAN, JEROME, Professor Emeritus of Psychology (1968). BA 1963, MS 1965, Western Reserve University; PhD 1969, Kent State University.

FRIESEN, LINDSEY, Extension Agent, 4-H Youth Development, McPherson County, McPherson (2011). BS 2008, Kansas State University.

FREY, ALICE L., Extension Agent Emeritus, Family and Consumer Sciences, Grant County, Ulysses (1955). BS 1955, MS 1968, Kansas State University.

FREY, MARSHA L., Professor of History (1973). BA and BSc in Education 1967, MA 1968, PhD 1971, Ohio State University.

FREY, MICHAEL W., Athletic Trainer, Lafene Health Center (2000). BS 1994, Kansas State University.

FRIEBE, BERND RALF, Research Professor of Plant Pathology (1991). MS 1975, PhD 1977, Free University of Berlin.

FRIEDMANN, ROGER A., Instructor of English (1987). BA 1978, MA 1987, Kansas State University.

FRIHART, CHELSEY, Director of Women's Soccer and Tennis Operations at K-State Athletics (2013). BS 2012, Kansas State University.

FRISBIE, ROBERT L., Instructor Emeritus, Extension Watershed Specialist, Southwest (1971). BS 1969, Kansas State University.

FRITCH, MELIA ERIN, Associate Professor of Undergraduate and Community Services, Hale Library (2006). BA 2000, Chadron State College; MA 2004, Kansas State University; MLS 2010, Emporia State University.

FRITCHEN, DAVID R., Professor Emeritus of Architectural Engineering and Construction Science (1993). BS 1971, Kansas State University; MS 1977, University of Washington.

FRITZ, ALLAN K., Professor of Agronomy; Wheat Genetics (2000). BS 1986, University of Nebraska-Lincoln; MS 1991, PhD 1994, Kansas State University.

FRITZ, BRADY, Assistant Director of Compliance at K-State Athletics (2014). BA 2012, MAE 2014, University Northern Iowa.

FRITZ, JOHN O., Associate Professor of Agronomy; Forage Crops (1990). BS 1978, MS 1981, Purdue University; PhD 1988, University of Illinois.

FRITZ, SUSAN L., Head Volleyball Coach at K-State Athletics (1997). BS 1994, Florida Atlantic University; MS 2003, Kansas State University.

FRITZEMEIER, BRENT, Communications and Marketing Specialist, College of Business Administration. BS 2010, Kansas State University; MA 2012, University of South Carolina

FROMM, KENNETH W., Extension Agent Emeritus, Agriculture and Natural Resources, Mitchell County, Beloit (1953). BS 1951, Kansas State University; MEd 1964, Colorado State University.

FRONCE, DANNY, Director, Network and Telecom Services (1996).

FRY, JACK D., Professor of Horticulture and Natural Resources; Turfgrass Management (1991). BS 1982, Kansas State University; MS 1984, University of Maryland; PhD 1987, Colorado State University.

FRYER, E. BETH, Professor Emeritus of Food, Nutrition, Dietetics and Health; Agricultural Experiment Station (1959). BS 1945, University of New Mexico; MS 1949, Ohio State University; PhD 1959, Michigan State University.

FULLAGAR, CLIVE J. A., Professor Emeritus of Psychological Sciences (1988). BA 1977, MA 1981, PhD 1986, University of Witwatersrand.

FULLER, MATTHEW H., Systems Specialist, Information Systems Office (1994). BS 2000, Kansas State University.

FULLERTON, CHELSEA, Farm Management Economist (2017). BS 2015, Ottawa University; MS 2016, Purdue University.

FULTZ, WILLIAM E., Extension Agent Emeritus, 4-H Youth Development Programs, Sedgwick County, Wichita (1962). BS 1961, Kansas State University; MEd 1974, Wichita State University.

FUND, ANDREW D., Assistant Dean of Electrical and Computer Engineering (2016). BS 2005, MS 2015, Kansas State University.

FUNK, JORDAN, Program Coordinator, Professional Education and Outreach, K-State Polytechnic Campus (2016), AS 2006, Cloud County Community College, BS 2009, BSE 2009, MS 2011, Fort Hays State University.

FUNKHOUSER, SARA, Professor Emeritus of Music, School of Music, Theatre, and Dance (1976). BM 1974, MM 1975, DM 1982, University of Missouri-Kansas City.

FURLONG, MICHAEL, Director of Men's Basketball Video Services at K-State Athletics (2017). BA 2015, Hillsdale College; MS 2017, Kansas State University.

FUTRELL, CRYSTAL l., Extension Agent, Nutrition, Food Safety and Health, Johnson County, Olathe (2013). BA 2000, University of Tennessee.

GABBARD, R. TODD, Associate Professor of Architecture (2004). B. of Design 2000, M. Arch 2004, University of Florida.

GAD, SABREEN, Teaching Assistant Professor of Geology (2010). PhD 2007, Saint Louis University.

GADZIKWA, TENDAI, Assistant Professor of Chemistry (2016). BS 2003, Macalester College; PhD 2009, Northwestern University.

GADBURY, GARY L., Professor Emeritus of Statistics (2007). BS 1983, Southern Illinois University; MS 1994, University of Colorado-Denver; PhD, 1998, Colorado State University.

GAFFORD, NANCY M., Extension Agent Emeritus, Nemaha County, Seneca (1958). BS 1958, Kansas State University.

GAEDDERT, TERRI, Director and Associate Professor for School of Integrated Studies (2017), BS 1987, Chadron State College, MA 2001, Friends University, EdD 2014, Wichita State University.

GALITZER, STEVEN J., Director Emeritus of Public Safety; Adjunct Assistant Professor of Industrial and Manufacturing Systems Engineering (1988). BS 1974, MS 1978, PhD 1984, Kansas State University.

GALLAGHER, RICHARD R., Professor Emeritus of Electrical and Computer Engineering (1968). BS 1964, MS 1966, PhD 1968, Iowa State University.

GALLAND, JOHN C., Professor of Food Animal Health and Management Center (1990). BA 1971, Adams State College; MS 1979, PhD 1985, University of California.

GAMEZ, ROBERT, Director of Student Financial Assistance (1995). BS 1988, MS 1995, Iowa State University.

GANJYAL, GIRISH, Adjunct Faculty of Grain Science and Industry (2009). BS 1998, University of Agricultural Science, India; MS 2000, Asian Institute of Technology, Thailand; PhD 2004, University of Nebraska-Lincoln; MBA 2006, Benedictine College.

GANTA, CHANRAN, Assistant Professor Veterinary Diagnostic Laboratory (2013). BVSc 2001, Angrau, Hyperabad, India; PhD 2006, Kansas State University.

GANTA, ROMAN REDDY, Professor of Microbiology (1998). BS 1978, MS 1980, Andhra University; PhD 1987, All India Institute of Medical Sciences, New Delhi.

GARAVITO, C. LUCIA, Associate Professor of Spanish (1986). BA 1974, Universidad Pedagógica Nacional, Bogota, Colombia; MA 1979, PhD 1982, University of Kansas.

GARCIA, BRENNAN, Director of Ticketing Services at K-State Athletics (2018), BS 2013; Millikin University, MS 2014, Florida State University.

GARCIA, JANE MERTZ, Professor of Family Studies and Human Services (1996). BS 1978, Kansas State University; MS 1981, University of Nebraska-Lincoln; PhD 1996, University of South Alabama.

GARCIA lll, JESUS, Culinary Operations Manager l, Housing and Dining Services (2018). BS 2015, Kansas State University.

GARCIA, ROBERT G., Clinical Associate Professor of Family Studies and Human Services and Program Director for Communication Sciences and Disorders (1996). BS 1981, MS 1983, University of Nebraska-Lincoln; MBA 1992, University of South Alabama; AuD 2003, A.T. Still University.

GARDNER, RICHARD L., Instructor Emeritus, Engineering Extension (1981). BS 1969, Kansas State University.

GARG, LALIT C., Research Associate of Biochemistry (1982). PhD 1980, University of Jawahara, India.

GARNI, ALISA, Associate Professor of Sociology (2008). BS 1998, Santa Clara University; MA 2002, MA 2004, PhD 2008, University of California-Los Angeles.

GARRETT, G. KAY, Research News Coordinator, Office of Research and Sponsored Programs (1984). BA 1967, Bowling Green State University; MS 1982, Kansas State University.

GARRETT, LaMAR, Assistant Track and Field Coach at K-State Athletics (2018), BS 2007, MS 2009 Kansas State University.

GARRETT, SCOTT, Executive Associate Athletics Director for External Operations at K-State Athletics (2010). BS 2002, Illinois State University; MS 2003, Indiana University.

GARRISON, WILLIAM E., Assistant Professor Emeritus of School of Integrated Studies (1979). BA 1971, Park College.

GARTEN, CARL H., District Extension Director, Central Kansas District 3, Salina (1978). BS 1976, MS 1987, Kansas State University.

GARTNER, KURT, Professor of Music, School of Music, Theatre, and Dance (1999). BM 1986, Eastern Illinois University; MM 1988; University of Kansas; DA 2001, University of Northern Colorado.

GARVIN, RICK L., Assistant Director Emeritus, Information Systems Office (1972). BA 1970, San Jose State University.

GARVIN, W. LAWRENCE, Professor Emeritus of Architecture (1985). BS 1948, Washington and Lee University; BArch 1952, Ohio State University; MArch 1958, Massachusetts Institute of Technology. Registered Architect.

GATES, RENEE D., Application Specialist, K-State Libraries (1991). BS 1993, Kansas State University.

GATEWOOD, BARBARA, Professor Emeritus of Apparel, Textiles, and Interior Design; Agricultural Experiment Station (1976). BS 1968, Syracuse University; MS 1972, PhD 1976, Purdue University.

GAULKE, AMANDA (MANDY), Assistant Professor of Economics (2015). BA 2009, Lake Forest College; MS 2012, PhD 2015, University of Wisconsin-Madison.

GAYLE, PHILIP G., Professor and Head of Economics (2002). BS 1995, MS 1997, University of the West Indies, Jamaica; MA 2000, PhD 2002, University of Colorado-Boulder.

GAYNOR, MATTHEW S., Professor and Head of Art (2015). BA 1982, MFA 1988, Yale University.

GEANKOPLIS, NICHOLAS, Assistant Professor of Art (2017). BFA 2011, Sierra Nevada College; MFA 2013, New York State College of Ceramics at Alfred University.

GEHRT, JENNIFER, Associate Director ISO (1977). BS 1984, Kansas State University.

GEISBRECHT, BRIAN, Professor of Biochemistry and Molecular Biophysics (2013). BS 1996, Saint Vincent College; PhD 2000, The Johns Hopkins University School of Medicine.

GEISBRECHT, ERIKA, Professor of Biochemistry and Molecular Biophysics (2013). BS 1996 The University of Wisconsin-Madison; PhD 2003 The Johns Hopkins University School of Medicine.

GEISER, CHERIE J., Professor Emeritus, K-State Libraries (1978). BA 1972, University of North Dakota; MLS 1978, University of Missouri.

GENEREUX, WILLIAM E., Professor of School of Integrated Studies (2004). AA 1997, Cloud County Community College; BS 1999, Kansas Wesleyan University; MLS 2005, Fort Hays State University.

GEORGE, HERSCHEL C., Instructor Emeritus, Extension Watershed Specialist, Southeast (1970). BS 1970, MS 1983, Kansas State University.

GEREN, JERI L., Extension Agent, Crop Production, Wildcat District 14, Independence (2014). BS 2014, Kansas State University.

GERHARD, GARY W., Professor; Extension Specialist, 4-H Youth Development Programs (1995). BS 1978, University of Arizona; MA 1985, New Mexico State University; PhD, 1988, Ohio State University.

GERHARDT, PATRICIA A., Extension Agent, Family and Consumer Sciences, River Valley District 4, Concordia (1988). BS 1978, Kansas State University; MS 2004, University of Nebraska.

GERMAN, DAKOTA, Video Producer at K-State Athletics (2016). BA 2016, Kansas State University.

GERMANN, RALPH N., Farm Management Economist Emeritus (1956). BS 1951, MS 1957, Kansas State University.

GERSTNER, DIANN G., Extension Agent Emeritus, Family and Consumer Sciences, Thomas County, Colby (2005). BS 1980, MS 1986, Kansas State University.

GETTY, KELLY, Associate Professor of Animal Sciences and Industry (1999). BS 1988, PhD 1999 Kansas State University; MS 1992, Pennsylvania State University.

GIBBS, JULIE A., Director of Health Promotion/Nutrition Counseling, Lafene Health Center (2010). BS 2004, MS 2008, Kansas State University.

GIBBS, MARY LOU, Extension Agent Emeritus, Family and Consumer Sciences, Pottawatomie County, Westmoreland (1972). BS 1952, Kansas State University.

GIBSON, HUSTON J., Associate Professor of Landscape Architecture and Regional/Community Planning (2010). BA 1997, University of Mississippi; MSP 2002, University of Tennessee; PhD 2009, Florida State University.

GIBSON, MICHAEL D., Associate Professor of Architecture (2011), BArch 2002, Miami University of Ohio; MArch 2006, Harvard Graduate School of Design, Cambridge Massachusetts.

GIBSON, ROBYN, Instructor of Interior Architecture and Product Design (2016). MIAPD 2016, Kansas State University.

GIDO, KEITH B., Professor of Biology; Fisheries (2001). BA 1991, New Mexico State University; MS 1995, University of New Mexico; PhD 1999, University of Oklahoma.

GILBERT, TOM, Associate Director of Athletic Communications at K-State Athletics (1999). BA 1998, Furman University.

GILL, BIKRAM S., University Distinguished Professor of Plant Pathology (1979). BS 1966, MS 1966, Punjab University, India; PhD 1973, University of California.

GILLIAM, EBONY, Women's Basketball Recruiting Coordinator at K-State Athletics (2014). BS 2004, MA 2009, Texas Christian University.

GILLEN, ROBERT L., Professor and Head of Western Kansas Agricultural Research Centers (2006). BS 1978, Colorado State University; PhD 1982, Oregon State University.

GILLER, MATTHEW, Director of Development at K-State Athletics (2013). BS 2011, MBA 2014, Kansas State University.

GILLESPIE, VINCENT E., Associate Professor Emeritus of English (1966). BA 1952, Sterling College; MA 1956, PhD 1970, University of Kansas.

GILLUM, TANER D., Extension Director, Clark County, Ashland (2005). BS 2005, Kansas State University.

GILMORE, LINDA R., Editor, Department of Communications and Agricultural Education (2004). BS 1985, Lincoln Christian College; MS 1998, Kansas State University.

GLASGOW, LARRY A., Professor Emeritus of Chemical Engineering (1978). BS 1972, MS 1974, PhD 1977, University of Missouri-Columbia.

GLASSCOCK, KELLY, Instructor of Journalism and Mass Communications (2017). BA 2004, Kansas State University; MBA 2018, Baker Univsersity.

GLASSCOCK, MARLENE, Research Assistant Professor of Family Studies and Human Services (1994). BS 1969, MS 1970, Kansas State University.

GLEASON, MARTIN, Extension Agent, Agriculture and Natural Resources, Edwards County, Kinsley (2012). BS 1977, Kansas State University.

GLENN, CAREY, Academic Adviser (2019). BA 2008, Texas Christian University; MS 2010, Kansas State University.

GLENN, MARILYN S., Extension Agent Emeritus, Family and Consumer Sciences and 4-H, Kingman County, Kingman (1971). BS 1968, Kansas State University.

GLICKMAN, DAN, Adjunct Faculty of Agricultural Economics (1999). BS 1966, University of Michigan; JD 1969, George Washington University Law School.

GLYMOUR, BRUCE D., Professor and Head of Philosophy (1995). BA 1990, University of Pittsburgh; CPhil 1993, PhD 1995, University California-San Diego.

GNAD, DAVID P., Assistant Professor of Agricultural Practices (1998). BS 1994, DVM 1996, Kansas State University.

GODDARD, JAMES F., CNSM Program Coordinator and Professor of Architectural Engineering and Construction Science (1972). BSBC 1969, Kansas State University; MS 1972, University of Florida.

GODFREY, VICTOR RYUN, Head Cross Country Coach/Assistant Track and Field Coach at K-State Athletics (2014). BS 1996, North Dakota State University.

GODINET, TAYLOR, Assistant Director of Football Recruiting/Defensive Quality Control at K-State Athletics (2015). BS 2014, Kansas State University.

GOE, W. RICHARD, Professor of Sociology (1991). BA 1979, MA 1981, Marshall University; PhD 1988, Ohio State University.

GOETSCH, LORI A., Professor and Dean of Libraries, K-State Libraries (2004). BS 1975, MS 1977, Illinois State University; MLS 1982, Rosary College-Dominican University.

GOH, GYUHYEONG, Assistant Professor of Statistics (2015). BS 2008, Kyungpook National University; MS 2013, PhD 2015, University of Connecticut.

GOINS, ANNA, Instructor of English (2007). BS 2002, Midland Lutheran College; MA 2006, Kansas State University.

GOINS, WAYNE, University Distinguished Professor of Music, School of Music, Theatre, and Dance (1998). BS 1983, MME 1985, University of Tennessee-Chattanooga; PhD 1998, Florida State University.

GOLD, GARRETT L., Extension Agent Emeritus, Agriculture and Natural Resources, Stevens County, Hugoton (1973). BS 1973, Kansas State University.

GOLDBERG, KARIN, Assistant Professor of Geology (2016). PhD 2001, University of Chicago.

GOLDEN, BILLY B., Research Assistant Professor of Agricultural Economics (2006). BS 1973, Texas A&M University, MAB 2001, PhD 2005, Kansas State University.

GOLLADAY, RICHARD E., Extension Agent Emeritus, Agriculture and Natural Resources, Osborne County, Osborne (1979). BS 1952, Kansas State University.

GONZALEZ, ADRIANA, Associate Professor, Head, Faculty and Graduate Services, K-State Libraries (2012). BA 1996, University of New Mexico; MSIS 2007, University of Texas-Austin.

GONZÁLEZ, EDDY A., Area Coordinator for Student Development, Housing and Dining Services (2019). BA 2014, Florida International University; MS 2016, Kansas State University.

GONZALEZ, JOHN M., Associate Professor of Animal Sciences and Industry (2011). BS 2002, Texas A&M University; MS 2005, Sul Ross State University; PhD 2008, University of Florida.

GONZÁLEZ, TANYA, Professor of English (2005). BA 1995, Scrupps College; MA 2000, PhD 2004, University California-Riverside.

GOODBAND, ROBERT D., Professor of Animal Sciences and Industry (1989). BS 1984, Pennsylvania State University; MS 1986, PhD 1989, Kansas State University.

GOODHEART, CLARENE L., Extension Agent Emeritus, Family and Consumer Sciences, Rooks County, Stockton (1974). BS 1961, Fort Hays State University.

GOODIN, DOUGLAS G., Professor of Geography and Geospatial Sciences (1993). BA 1986, University of Northern Colorado; MA 1989, University of Illinois; PhD 1993, University of Nebraska-Lincoln.

GOODMAN, ALLAN P., Associate Professor Emeritus of Architectural Engineering (1977). BArch 1967, MArch 1988, Kansas State University; Registered Architect, Kansas, 1970.

GOODSON, F. TODD, Associate Professor and Chair of Curriculum and Instruction (1997). BS 1980, University of Missouri; MS 1983, Northwest Missouri State University; PhD 1993, University of Missouri.

GOODSON, LORI A., Assistant Professor of Curriculum and Instruction (2013). BS 1982, Northwest Missouri State University; MS 1990, University of Kansas; PhD 2004, Kansas State University.

GORDON, JUDY O., Associate Professor of Architecture (2013). BEnvDesign 1979, Miami University of Ohio; MArch 1986, Columbia University. Licensed Architect.

GORDON, RHONDA, Extension Agent, Family and Consumer Sciences, Lyon County, Emporia (2008). BS 1988, Kansas State University.

GORDON, W. BARNEY, Professor Emeritus of Agronomy (1990). BS 1973, Mississippi State University; MS 1985, Auburn University; PhD 1990, South Dakota State University.

GORMAN, MAUREEN, Research Associate Professor of Biochemistry and Molecular Biophysics (2000). BS 1984, University of Notre Dame; MS 1987, PhD 1990, Iowa State University.

GORMELY, PATRICK J., Professor Emeritus of Economics (1967). AB 1963, Catholic University of America; PhD 1967, Duke University.

GORTON, ROBERT L., Professor Emeritus of Mechanical and Nuclear Engineering; Associate, Institute for Environmental Research (1960). BS 1953, Louisiana Polytechnic Institute; MS 1960, Louisiana State University; PhD 1966, Kansas State University; Professional Engineer, 1953.

GOTT, TRISHA, Instructor and Assistant Director for Service Learning of the Staley School of Leadership Studies (2007). BS 2007, MS 2012, EdD 2016, Kansas State University.

GOTTSCH, A. HAROLD, County Extension Director Emeritus, Reno County, Hutchinson (1954). BS 1953, Oklahoma State University; MS 1962, Kansas State University.

GOUDEY, ASHLEY D, Extension Agent, Nutrition, Food Safety and Health, Post Rock District 1, Osbourn (2015). BS 2015, Kansas State University.

GOULD, REBECCA A., Director, Information Technology Assistance Center and Professor of Hospitality Management (1992). BS 1977, Sam Houston State University; MS 1982, PhD 1986, Texas Women's University.

GOULD, REBECA, Career Coach, Career Development, College of Business Administration. BS 2008, Kansas State University.

GOULDEN, NANCY, Associate Professor Emeritus of Communication Studies, Theatre and Dance (1985). BS 1957, Kansas Teacher's College; MA 1981, Villanova University; EdD 1989, Northern Arizona University.

GOVIND, REVATHI, Associate Professor of Biology; Cell and Developmental Biology (2010). BS 1992, MS 1995, Tamil Nadu Agricultural University; PhD 2006, Texas Tech University Health Sciences Center.

GOWDY, KENNETH K., Associate Dean Emeritus of Engineering and Professor Emeritus of Mechanical and Nuclear Engineering (1957). BS 1955, MS 1961, Kansas State University; PhD 1965, Oklahoma State University; Professional Engineer.

GRABER, RONALD W., Instructor, Extension Watershed Specialist, Northeast Area Office (1986). BS 1982, MS 1985, Kansas State University.

GRADY, JASON A., Clinical Assistant Professor, Equine Theriogenology (2015). DVM 2003, MS 2008, Kansas State University; Diplomate 2009, American College of Veterinary Internal Medicine.

GRAFF, DAVID, Associate Professor of History (1998). BA 1984, Haverford College; MA 1987, University of Michigan; PhD 1995, Princeton University.

GRAGG, SARA, Associate Professor of Animal Sciences and Industry (2013). BS 2006, University of Nebraska-Lincoln; MS 2008, PhD 2012, Texas Tech University.

GRAMP, VIKTORIA, Instructor, English Language Program (2013). MA 2002, Irkutsk State Linguistics University, Russia; MS 2008, Kansas State University.

GRANDIN, TEMPLE, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2015). BA 1970, Franklin Pierce College; MS 1975, Arizona State University; PhD 1989, University of Illinois.

GRAUER, BETTE L., Assistant Dean for Retention, Diversity, and Inclusion, College of Engineering (2011). BS 1978, 1997, Kansas State University; MEd 2003, Wichita State University.

GRAUER, GREGORY F., Emeritus Professor of Clinical Sciences (Small Animal Internal Medicine) (2019). MS 1982, Colorado State University; DVM 1978, Iowa State University; Diplomate 1983, American College of Veterinary Internal Medicine.

GRAVES, JASON L., Extension Agent, Horticulture, Central Kansas District 3, Salina (2010). BS 2005, Kansas State University.

GRAY, MARION WILSON, JR., Professor Emeritus of History (1969). BA 1964, Texas Christian University; MA 1966, PhD 1971, University of Wisconsin.

GRAY, STACIA, Instructor of English (2006). BA 1995, Hamline University; MA 1998, Kansas State University; PhD 2007, Purdue University.

GRAY, THOMAS J., Professor Emeritus of Physics (1977). BS 1960, MS 1962, North Texas State. University; PhD 1967, Florida State University.

GREASER, COLLIN, Director of Player & Program Development at K-State Athletics (2015). BS 2011, Kansas State University.

GREEN, EMILY N., Extension Agent, Community Development, Rawlins County, Atwood (2015). BS 2009, Kansas State University.

GREEN, JOHN, Associate Director, Housing and Dining Services (2016). BS 2013, University of Kansas.

GREEN, JUSTIN M., Instructor and Director of Debate; Communication Studies (2005). BA 1999, Wake Forest University; MA 2002, Kansas State University.

GREENE, KATHLEEN V., Director, Educational Supportive Services and McNair Scholars Program (1981). BA 1968, Ottawa University; BS 1971, University of Kansas; MS 1977, PhD 2007, Kansas State University.

GRICE, RONNIE, Assistant Vice President, University Police and Public Safety (1994). BA 1979, University of Arkansas-Pine Bluff.

GRIFFIN, DAVID L., Associate Professor Emeritus of Education (1992). BS 1968, Lane College; MS 1972, Central Missouri State University; EdS 1981, University of Missouri-Kansas City; EdD 1994, Kansas State University.

GRIEGER, DAVID M., Professor of Animal Sciences and Industry (1992). BS 1981, MS 1984, Purdue University; PhD 1989, Washington State University.

GRIFFIN, CHARLES L., Research Assistant Professor of Family Studies and Human Services (1995). BS 1972, MS 1982, Kansas State University.

GRIFFIN, JASON J., Professor of Horticulture and Natural Resources (2002). AAS 1991, SUNY-Cobleskill; BS 1996, Cornell University; MS 1999, PhD 2002, North Carolina State University.

GRIFFIN, TERRY W., Associate Professor of Agricultural Economics (2015). BS 1997, MS 1999, University of Arkansas-Fayetteville; PhD 2006, Purdue University.

GRIFFITH, MARY EVAN, Associate Professor Emeritus of Education (1969). BS 1950, Kansas State University; MS 1957, Iowa State University; PhD 1966, Ohio State University.

GRINTER, KRISTOPHER, Assistant Director of Admissions for K-State Polytechnic Campus (2015). BS 2012, MS 2015, Kansas State University.

GRONQUIST, DAVID, Director of Facilities (1985). BS 1971, MBA 1996, Emporia State University.

GROSHEK, JACOB, Associate Professor of Journalism and Mass Communications (2019). BS 2000, University of Wisconsin-Stout; MA 2003, Marquette University; PhD 2008, Indiana University.

GROSS, KIMBERLY, Academic Counselor/Football at K-State Athletics (2017). BA 2015, California State University; MS 2017, Kansas State University.

GROSS, WILLIAM R., Professor of School of Integrated Studies and Chief Pilot (1987). BS 1970, MS 1973, Kansas State University.

GROSSNICKLAUS, ABBIE, Extension Agent, Agriculture, Linn County, Mound City (2006). BS 2006, University of Nebraska.

GROVE, JEFF, Associate Head Volleyball Coach at K-State Athletics (1997). BS 1991, Azusa Pacific University.

GRUENBACHER, DON M., Associate Professor and Head of Electrical and Computer Engineering; Fiedler Professor (1997). BS 1989; MS 1991; PhD 1994, Kansas State University.

GRUNEWALD, ORLEN C., Professor Emeritus of Agricultural Economics (1978). BA 1973, University of Wisconsin-Green Bay; MS 1975, PhD 1980, University of Kentucky.

GULER, KUTAY, Assistant Professor Interior Architecture and Product Design (2018). BFA 2006 Bilkent University, Turkey; MFA 2009, Bilkent University, Turkey; Proficiency in Fine Arts Degree, 2012, Anadolu University, Eskisehir Turkey.

GURGEL, RUTH, Assistant Professor of Music Education, School of Music, Theatre, and Dance (2014). BM 1996, Lawrence University; MA 2001, Colorado Christian University; PhD 2013, University of Wisconsin.

GUGGISBERG, GRANT M., Communications and Marketing Specialist, K-State Global Campus (2016). BS 2010, Kansas State University

GUSTAFSON, DAVID A., Professor Emeritus of Computer Science (1977). B. Math 1967, University of Minnesota; BS 1969, University of Utah; MS 1973, PhD 1979, University of Wisconsin.

GUZEK, FRED, Professor of School of Integrated Studies (2003). BS 1977, Lake Superior State University; MPPM 1995, Yale University, PhD 2003, University of Kansas.

GWINNER, KEVIN P., Professor of Marketing and Edgerly Family Dean in the College of Business Administration (1999). BS 1988, MBA 1992, PhD 1997, Arizona State University.

GWIRTZ, JEFFREY A., Associate Professor of Grain Science and Industry (2006). BS 1979, MS 1992, PhD 1998, Kansas State University.

HAAG, LUCAS A., Assistant Professor, Agronomy, Northwest Area Extension Office (2013). BS 2005, MS 2008, PhD 2013, Kansas State University.

HAAR, SHERRY J., Professor of Interior Design and Fashion Studies (1998). BS 1987, MS 1994, University of Nebraska-Lincoln; PhD 1998, Virginia Tech.

HABLUETZEL, NANCY, Academic Advisor, College of Arts and Sciences (2003). BS 2001, Kansas State University.

HACHIYA, ROBERT F., Associate Professor of Educational Leadership (2012). BS 1980, University of Nebraska; MS 1993, EdD 2010, University of Kansas.

HACKEMANN-BAHLMANN, REBECCA, Associate Professor of Art (2013). BFA 1994, University of Westminster; MFA 1999, Stanford University.

HACKETT, JASON B., Communication Solutions Director, Department of Communications and Agricultural Education (2016). BA 1995 Chadron State College; MA 2011, Jones International University

HADDOCK, BRANDON, Program Coordinator, Intercultural Learning and Development, LGBT Resource Center (2007). BS 2005, MS 2007 Missouri State University, PhD 2016, Kansas State University.

HADDOCK, MICHAEL J., Professor, Assistant Dean, Research, Education and Engagement Division, K-State Libraries (1989). BA 1977, Kansas State University; MLS 1988, Emporia State University.

HADLEY, GREGG L., Associate Professor of Agricultural Economics, Associate Director for Agriculture and Natural Resources for K-State Research and Extension (2011). BS 1989, Purdue University; MS 2001, PhD, 2003 Michigan State University.

HAFEN JR., McARTHUR, Associate Professor of Clinical Sciences, Counseling Services (2017). MS 1999, Utah State University; PhD 2003, Brigham Young University.

HAFT, EVERETT EUGENE, Professor Emeritus of Electrical and Computer Engineering (1961). BS 1947, MS 1951, PhD 1955, University of Wisconsin; Professional Engineer in Wisconsin, 1952.

HAGAN, PATRICIA W., Instructor Emeritus of Art (1971). BS 1970, Kansas State University.

HAGEN, LAWRENCE J., Adjunct Assistant Professor of Biological and Agricultural Engineering (1967).BS 1962, MS 1967, North Dakota State University; PhD 1980, Kansas State University.

HAGEMAN, AMY M., Professor of Accounting (2010). BS 2001, MAcc 2002, Kansas State University; CPA 2002; PhD 2009, University of Central Florida.

HAGENMAIER, DEBRA G., Assistant Director, Conference Management Services, K-State Global Campus (2000). BS 1979, Kansas State University.

HAGER, CRAIG A., Assistant Professor of Military Science (2012). BS 2004, Kansas State University; MA 2009, Webster University.

HAGMANN, SIEGBERT, Professor Emeritus of Physics (1980). MA 1973, University of Munster; PhD 1977, University of Cologne.

HAGSTRUM, DAVID W., Adjunct Professor of Entomology, USDA Grain Marketing Research Center (1983). BS 1965, PhD 1970, University of California-Riverside.

HAHN, HOWARD D., Associate Professor of Landscape Architecture and Regional & Community Planning (2008). BS 1981, University of Kansas; MLA 1985, Kansas State University. Professional Landscape Architect.

HAHN, RICHARD R., Professor Emeritus of Grain Science and Industry (1992). PhD 1957, Kansas State University.

HAKOBYAN, HRANT, Associate Professor Mathematics (2010). BS 2001, Yerevan State University, Armenia; PhD 2006, SUNY-Stony Brook.

HALIBURTON, EBONY, Director of Women's Basketball Student-Athlete Development at K-State Athletics (2017). BA 2008, Oral Roberts University.

HALL, AMY, International Admissions Specialist (2016). BA 2012, Truman State University.

HALL, DEAN G., Associate Professor Emeritus of English (1983). BA 1968, MA 1970, University of Northern Iowa; PhD 1977, Kent State University.

HALLAQ, THOMAS G., Associate Professor of Journalism and Mass Communications (2013). BA 1991, Brigham Young University; MEd, 2003, Eastern Washington University; EdD, 2013, Idaho State University.

HALLAUER, DAVID G., Extension Agent, Agriculture and Natural Resources, Meadowlark District 7, Oskaloosa (1997). BS 1996, Kansas State University.

HALLENBECK, COURTNEY M., Assistant Director of New Student Services (2016). BA 2013, Kansas State University.

HALLER, MARK, Associate Forester (1989). BS 1986, Kansas State University.

HAM, GEORGE E., Professor Emeritus, Associate Dean of Agriculture, Associate Director of Agricultural Experiment Station (1980). BS 1961, MS 1963, PhD 1967, Iowa State University.

HAM, JAY M., Associate Professor of Agronomy, Environmental Physics (1990). BS 1984, Kansas State University; MS 1986, Oklahoma State University; PhD 1989, Texas A&M University.

HAMILTON, JAMES R., Professor of Philosophy (1971). BA 1964, Pfeiffer College; MA 1967, Emory University; MD 1968, Union Theological Seminary; PhD 1974, University of Texas-Austin.

HAMMAKER, ROBERT M., Professor Emeritus of Chemistry (1961). BS 1956, Trinity College; PhD 1960, Northwestern University.

HAMMERLI, BARBARA, Instructor of Family Studies and Human Services (2007). BS 1979, MS 1983, Kansas State University.

HAMMES, LAUREN A., Culinary Operations Manager l – Menu Systems/Registered Dietitian, Housing and Dining Services (2015). BS 2014, Kansas State University.

HAMOR, JAMIE, Academic Counselor at K-State Athletics (2008). BS 1997, MS 2008, Kansas State University.

HAMSCHER, ALBERT N. III, Professor of History (1972). BA 1968, Pennsylvania State University; MA 1970, PhD 1973, Emory University.

HAN, SOO-HYE, Assistant Professor of Communication Studies (2010). BA 1999, Kyoto University of Foreign Studies; MPIA 2001, University of Pittsburgh; PhD 2008, University of Texas-Austin.

HANCOCK, MARJORIE R., Professor Emeritus of Education (1991). BS 1969, MS 1974, EdD 1991, Northern Illinois University.

HANEY, WILLIAM JR., Extension Agent, Agriculture and Natural Resources, Kearny County, Lakin (2006). BS 1994, Oklahoma Panhandle State University.

HANKLEY, WILLIAM JOHN, Professor Emeritus of Computer Science (1972). BSEE 1962, MS 1964, Northwestern University; PhD 1967, Ohio State University.

HANSEN, JANE, Psychologist, Counseling Services (2011). BA 2000, Brown University; PsyD 2008, The Wright Institute.

HANSEN, LAURA, Adjunct Faculty of Grain Science and Industry (2013). BS 1980, University of Oregon; MS 1982, PhD 1987, Kansas State University.

HANSEN, RYAN R., Assistant Professor of Chemical Engineering (2015). BS 2008, Colorado School of Mines; PhD 2008, University of Colorado.

HANSON, JENNIFER A., Assistant Professor of Food, Nutrition, Dietetics and Health (2014). BS 1989, University of Minnesota; MS, 2000, University of Nevada, Reno; PhD, 2011, Kansas State University.

HANSON, ZACHARY, Assistant Football Coach/Tight Ends at K-State Athletics (2018). BS 2010, Kansas State University; MA 2014, Kansas State University.

HANZLICEK, GREGG, Assistant Professor Veterinary Diagnostic Lab (2010). BS 1980, Kansas State University; DVM 1991, Mississippi State University; PhD 2010, Kansas State University.

HAQUE, EKRAMUL, Professor Emeritus of Grain Science and Industry; Grain Processing Technology Scientist (1987). BS 1964, Bangladesh University of Engineering and Technology; MS 1969, Purdue University; PhD 1978, Kansas State University.

HARBERS, CAROLE ANN ZIMMERMAN, Associate Professor Emeritus of Food, Nutrition, Dietetics and Health; Agricultural Experiment Station (1979). BS 1969, Ohio University; MS 1976, Virginia Tech; PhD 1979, Kansas State University.

HARBSTREIT, STEVEN, Associate Professor Emeritus, Department of Communications and Agricultural Education (2008). BS 1971, University of Missouri-Columbia; MS 1976, Northwest Missouri State University-Maryville; PhD 1987, University of Missouri-Columbia.

HARDING, TROY, Professor of School of Integrated Studies (1999). BS 1986, Bethany College, MS 1989, University of Virginia.

HARDING, KRISTA A., Extension Agent, Agriculture and Natural Resources, Southwind District 10, Erie (1999). BS 1997, Kansas State University.

HARDWIDGE, PHILIP, Professor of Diagnostic Medicine/Pathobiology (2012). BS 1997, University of Illinois; PhD 2002, Mayo Clinic Graduate School.

HARDY, NANCY M., Medical Technologist, Lafene Health Center (1997). BS 1978, Marquette University.

HARGRAVE, TRENTON, Farm Management Economist (2013). BS 2010, Kansas State University.

HARGROVE, WILLIAM L., Professor Emeritus of Agronomy (1997). BS 1975, Baylor University; MS 1977, Texas A&M University; PhD 1980, University of Kentucky.

HARKIN, KENNETH R., Hodes Professor of Clinical Sciences, Small Animal Internal Medicine (1997). DVM 1989, Iowa State University; Diplomate, 1997, American College of Veterinary Internal Medicine.

HARLAN, WILLIAM "BILL" L., Technology Specialist, Center for Student Involvement (2003). BA 2001, MS 2006, Kansas State University.

HARL, TARA, Associate Professor of School of Integrated Studies (2015). AA 1978, College of Lake County, BS 1978, University of Dubuque, MEd 1983, Middle Tennessee State University, EdD 2008, St. Mary's University of Minnesota.

HARLOW, TRINA D., Instructor of Curriculum and Instruction (2014). BS 1984 Kansas State University; MAE 2013, Boston University.

HARMONEY, KEITH R., Associate Professor, Research Range Scientist, Agricultural Research Center, Hays (1999). BS 1993, University of Nebraska-Lincoln; PhD 1999, Iowa State University.

HARMS, CRAIG A., Professor and Head of Kinesiology (1997). BS 1979, Nebraska Wesleyan University; MS 1990, Colorado State University; PhD 1994, Indiana University.

HARNER, JOSEPH P., III, Professor and Head of Biological and Agricultural Engineering; State Leader Agricultural Engineering Programs (1983). BS 1979, MS 1981, PhD 1983, Virginia Tech; Professional Engineer, 1983.

HARNETT, MICHAEL R., Professor Emeritus of Industrial and Manufacturing Systems Engineering (1984). BS 1968, Louisiana Tech University; MS 1972, PhD 1974, University of Alabama.

HARP, RUSSELL G., Campus Visits Coordinator (2019). BA 2016, Kansas State University; MA 2019, Kansas State University.

HARPER, KACEY, Associate Director of Football Operations at K-State Athletics (2009). BS 2008, Kansas State University.

HARPER, SKYLER, Associate Director, Housing and Dining Services (1988). BArch 1982, Kansas State University; Registered Architect.

HARRIES, AARON, Adjunct Faculty of Grain Science and Industry (2006). BS 1995, Kansas State University.

HARRINGTON, JOHN A., JR., Professor Emeritus of Geography and Geospatial Sciences (1994). BS 1972, Michigan State University; MA 1974, University of Minnesota; PhD 1980, Michigan State University.

HARRINGTON, LISA M.B., Professor of Geography and Geospatial Sciences (1994). BS 1979, Colorado State University; MRPA 1982, Clemson University; PhD 1986, University of Oklahoma.

HARRIS, BRANDONN S., Assistant Professor of Special Education, Counseling and Student Affairs (2008). BS 2002, Truman State University; MS 2005, MA 2008, PhD 2008, West Virginia University.

HARRIS, KEITH D., Associate Professor of Agricultural Economics (2012). BS 1986, Lincoln University; MAB 2006, Kansas State University; PhD 2012, University of Missouri-Columbia.

HARRIS, RICHARD J., Professor Emeritus of Psychology (1974). BA 1968, College of Wooster; MA 1971, PHD 1974, University of Illinois.

HARRISON, KYLEE J., Extension Agent, Agriculture and Natural Resources, Seward County, Liberal (2012). BS 2008, Colorado State University; MS 2009, Oklahoma State University.

HARTMAN, AMY L., Archivist, Department of Communications and Agricultural Education (1996). BS 1978, MBA 1982, University of Michigan; MLIS 1995, University of Texas.

HARTMAN, JASON, Assistant Forester (2005). BS 2001, Oklahoma State University.

HARTMAN, TERESA, Instructor of School of Integrated Studies (2007). BS 2004, Fort Hays State University; MS 2007, Kansas State University.

HARTNETT, DAVID C., University Distinguished Professor of Biology; Plant Ecologist, Agricultural Experiment Station (1986). BS 1977, MS 1978, Bucknell University; PhD 1983, University of Illinois.

HARVEY, BRANDON, Assistant Athletic Trainer-FB at K-State Athletics (2018), BS 2015, Mid America Nazarene University; MS 2017 University of Tennessee at Chattanooga.

HASEGAWA, URARA, Assistant Professor of Chemical Engineering (2017). BS 2002, MS 2004, Waseda University, Japan; PhD 2007 Tokyo Medical and Dental University, Japan.

HASLER, FRED, Associate Professor of Architectural Engineering and Construction Science and Architectural Engineering Program Coordinator (2006). BSARE 1981, MSARE 2008, Kansas State University; Professional Engineer.

HASSAN, MASUD A., Professor Emeritus of School of Integrated Studies (1983). BS 1954, Punjab University; MS 1957, PhD 1966, University of Manchester, United Kingdom.

HASTINGS, ALLAN J., Professor Emeritus of Interior Architecture and Product Design (1988). BArch 1958, Kansas State University; BPA 1963, Art Center College of Design.

HATCLIFF, JOHN, University Distinguished Professor of Computer Science (1998). BA 1988, Mount Vernon Nazarene College; MSc 1991, Queen's University; PhD 1994, Kansas State University.

HATESOHL, KELSEY M., Extension Agent, Horticulture, River Valley District, Washington (2016). BS 2015, Kansas State University.

HATFIELD, TERESA, Extension Agent, Adult Development and Aging, Sedgwick County, Wichita (2013). BA 1999, MA 2005, Wichita State University.

HAUB, MARK D., Professor and Head of Food, Nutrition, Dietetics and Health (2000). BA 1992, Fort Hays State University; MS 1996, PhD 1998, University of Kansas.

HAUCK, CHRISTINA, Associate Professor of English (1994). BA 1981, Mills College; MA 1990, PhD 1994, University of California-Berkeley.

HAUCK, ROSS, Associate Forester (1979). BS 1978, MS 1984, Kansas State University.

HAUGAARD, ASHLEY, Admissions Representative, K-State Polytechnic (2017), BS 2016, Kansas State University.

HAUKOS, DAVID A., Adjunct Associate Professor of Biology and Director of the Kansas Cooperative Fish and Wildlife Research Unit; fisheries (2011). BS 1986, South Dakota State University; MS 1988, PhD 1991, Texas Tech University.

HAUSE, BEN, Research Assistant Professor of Veterinary Diagnostic Laboratory (2014). BA 1998, University of Minnesota-Morris; MS 2001, University of Minnesota; PhD 2013, South Dakota State University.

HAUSE, NANCY, Assistant Professor Emeritus of Journalism and Mass Communications (1983). AB 1953, University of Colorado; MS 1982, Kansas State University.

HAVENSTEIN, PATRICIA A., Budget/Fiscal Officer, Dean of Engineering (1993). BS 1985, MBA 1992, Kansas State University.

HAWK, DIANE M., Instructor Emeritus of Education (2004). BS 1976, MS 1976, Kansas State Education

HAWKINSON, DALE P., Math Skills Specialist, Academic Assistance Center (1983). BA 1975, MS 1977, MS 1984, Kansas State University.

HAWLEY, M. DALE, Professor Emeritus of Chemistry (1966). BA 1960, MA 1962, University of Northern Iowa; PhD 1965, University of Kansas.

HAYCOCK, GARY E., Professor Emeritus of Interior Architecture and Product Design (1976). BFA 1970, Pratt Institute; MArch 1972, University of Oregon.

HAYEN, BERNIE, Instructor in Management. BA 1996, University of Kansas; MBA 1982, Wichita State University; MPA 1984, Kansas State University.

HEALY, HEATHER, Undergraduate Specialist, K-State Libraries (2013). BA 1997, McPherson College; MA 2005, Kansas State University; MLS 2013, Emporia State University.

HEATH, REBEKAH, Teaching Professor of Accounting.

HECKMAN, STUART, Associate Professor of Family Studies and Human Services (2014). BS 2010, Kansas State University; MS 2012, Ohio State University.

HEDRICK, DONALD K., Professor of English (1976). BA 1969, University of Kansas; MA 1972, PhD 1974, Cornell University.

HEFLEY, TREVOR, Assistant Professor of Statistics (2016). BS 2010, PhD 2014, University of Nebraska.

HEIDBREDER, BRIANNE, Associate Professor of Political Science (2008). BA 2001, Minnesota State University-Moorehead; MA 2004, Kansas State University; PhD 2008, University of Wisconsin-Milwaukee.

HEIKKILA-FURREY, JENNIFER M., Communications and Outreach Coordinator, Instructor, Reference Generalist, K-State Libraries (2004). BA 2002, Emporia State University.

HEIL, ROBERT, Assistant Athletics Director for Development at K-State Athletics (2017). BS 2004, Kansas State University; MS 2006, Kansas State University.

HEIMAN, TRAVIS, Farm Management Economist (2011). BS 2003, MAB 2011, Kansas State University.

HEIN, RANDY V., Extension Agent, Agriculture and Natural Resources, Sumner County, Wellington (2010). BS 1989, Fort Hays State University.

HEINRICH, KATIE M., Associate Professor of Kinesiology (2010). BA 1999, Graceland University; MA 2001, PhD 2004, University of Missouri-Kansas City.

HEIER STAMM, JESSICA, Assistant Professor of Industrial and Manufacturing Systems Engineering (2010). BS 2004, Kansas State University; PhD 2010, Georgia Institute of Technology.

HELIN, JARED, Assistant Women's Golf Coach at K-State Athletics (2016). BS 2016, Kansas State University.

HELLEBUST, GARY, Chief Executive Officer, KSU Foundation (1986). BS 1969, Kansas State University.

HELWIG, DALE R., Extension Agent, Agriculture and Natural Resources, Cherokee County, Columbus (2013). BS 1995, Kansas State University.

HENDERSON, JERMAINE, Director of Men's Basketball Student Athlete Development at K-State Athletics (2017). BS 1997, Miami University, OH.

HENDERSON, NICHOLE, Assistant Athletics Trainer at K-State Athletics (2018), BS 2015, University of Pittsburgh; MS 2017 University of Toledo.

HEDLUND, LOGAN, Farm Management Economist (2018). BS 2012, Kansas State University.

HENDRICKS, NATHAN P., Associate Professor of Agricultural Economics (2011). BS 2005, MS 2007, Kansas State University; PhD 2011, University of California-Davis.

HENDRIX, SCOTT, Instructor of Finance (2000). BS 1985, MBA 1992, University of Tennessee; ABD University of Memphis.

HENNINGSON, JAMIE, Assistant Professor of Diagnostic Medicine/Pathobiology (2011). BS 2002, DVM 2004, Kansas State University; PhD 2008, University of Nebraska; Diplomate 2009, American College of Veterinary Pathologists.

HENRIKSEN, LINDA, Instructor, English Language Program (2011). BA 2007, DePaul University; MA 2010, Southeast Missouri State University.

HENRY, STEVE, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2006). BS 1970, DVM 1972, Kansas State University; Diplomate, American Board of Veterinary Practice.

HENSON, DARL W., Extension Agent, Agriculture and Natural Resources, Coffey County, Burlington (1983). BS 1978, Fort Hays State University.

HENTON, CHARLENE M., Instructor, Kansas Agricultural Mediation Service (1995). BS 1985, MS 1989, Kansas State University.

HENTON, ELLA, Publications Coordinator at K-State Athletics (2014). BS 2013, Kansas State University.

HEPTIG, EDWARD A., Director of Facilities Maintenance (1988). T.S. 1980, Manhattan Area Technical College.

HERBEL, KEVIN L., Kansas Farm Management Association, KFMA Executive Director (1989). AS 1986, Hesston; BS 1988, MS 1991, Kansas State University.

HERINGTON, JONATHAN, Assistant Professor of Philosophy (2014). BA and BSc 2006, BA 2007, University of Queensland; PhD 2013, Australian National University.

HERNANDEZ-PABON, PAMELA, Research Assistant, Grain Science and Industry (1997). MS 1996, California Polytechnic-San Luis Obispo.

HERREN, CHRISTOPHER D., Teaching Assistant Professor of Biology (2012). BS 1994, Virginia Polytechnic Institute & State University; PhD 2000, East Carolina University.

HERRERA, SOCORRO G., Professor of Curriculum and Instruction (1995). BA 1985, MS 1990, East New Mexico State University; PhD 1995, Texas Tech.

HERRON, GEORGE M., Associate Professor Emeritus; Research Agronomist, Soil Testing, Southwest Kansas Branch Agricultural Experiment Station (1956). BS 1949, MS 1950, Oklahoma State University; PhD 1968, University of Nebraska.

HERSPRING, DALE, University Distinguished Professor Emeritus of Political Science (1993). AB 1965, MA 1967, Georgetown University; PhD 1972, University of Southern California.

HERSPRING, MAUREEN C., Academic Advisor Emeritus, College of Architecture, Planning and Design (1995). AB 1965, Stanford University; MS 1972, University of Southern California.

HESSE, RICHARD A., Professor of Veterinary Diagnostic Lab; Director of Diagnostic Virology, Kansas State Veterinary Diagnostic Lab (2006). BS 1975, MS 1983, PhD 1993, University of Nebraska.

HESSONG, CHAQUETTA (CHUCKIE), Extension Agent, Family and Consumer Sciences, Wildcat District 14, Girard (2014). BS 1999, Pittsburg State University.

HETLE, BROOKS, Area Coordinator for Student Recruitment and Academic Support, Housing and Dining Services (2012). BS 2008, University of Mary; MS 2012, Colorado State University.

HETTIARACHCHI, GANGA M., Professor of Agronomy (2008). BS 1992, University of Peradeniya; MS 1995, PhD 2000, Kansas State University.

HEUBLEIN, JOHN, Professor Emeritus of School of Integrated Studies (1981). BS 1964, Kansas State University; MS 1967, Emporia State University.

HIBDON, DARREN D., Extension Agent, Agriculture and Natural Resources, Frontier District 11, Ottawa (1992). BS 1991, Kansas State University.

HICKS, AMELIA, Visiting Assistant Professor of Philosophy (2013). BA 2007, Calvin College; MA 2009, PhD 2013, University of Notre Dame.

HICKSON, ERIC, Assistant Football Coach/Running Backs at K-State Athletics (2018). BS 1998, Kansas State University.

HIEGER, AUDRA, English Language Specialist, English Language Program (2005). BS 2005, Kansas State University.

HIGGINBOTHAM, MARY LYNN, Associate Professor of Clinical Sciences, Oncology (2007). DVM 1998, MS 2004, University of Missouri-Columbia; Diplomate 2003, American College of Veterinary Internal Medicine-Oncology.

HIGGINS, DANIEL A., Professor and Interim Head of Chemistry (1996). BA 1988, Saint Olaf College; PhD 1993, University of Wisconsin- Madison.

HIGGINS, ERIC J., Professor of Finance and Associate Dean of Finance, College of Business (2001). BS 1992, Kansas State University; PhD 1996, Florida State University.

HIGGINS, ERIC J., Professor and Head of Finance (2001). BS 1992, Kansas State University; PhD 1996, Florida State University.

HIGGINS, JAMES J., Professor Emeritus of Statistics (1980). BS 1965, University of Illinois; MS 1967, Illinois State University; PhD 1970, University of Missouri-Columbia.

HIGGINS, MARY, Associate Professor Emeritus of Human Nutrition; Extension Specialist, Nutrition (1999). BS 1975, Purdue University; MS 1979, PhD 1982, Iowa State University.

HIGGINS, MICHAEL J., Assistant Professor of Statistics (2015). BS 2006, Kansas State University; PhD 2013, University of California-Berkeley.

HIGGS, STEPHEN, Associate Vice President for Research, Research Director Biosecurity Research Institute (BRI); University Distinguished Professor and Peine Professor of Biosecurity and Diagnostic Medicine Pathobiology (2010). BSc 1980, London University, UK; PhD 1985 Reading University, UK.

HIGHT, CLIFF, Assistant Professor, University Archivist, K-State Libraries (2011). BS 2002, Weber State University; MSIS 2005, MA 2006, SUNY-Albany.

HIGHTOWER, KARLA J., Extension Agent, 4-H Youth Development Programs, Marais des Cygnes District, Paola (1999). BS 1999, Kansas State University.

HIGHTOWER, RAY E., Assistant Dean Emeritus of Engineering; Assistant Professor Emeritus of Mechanical and Nuclear Engineering (1961). BS 1964, Kansas State University.

HILGERS, MELANIE, Clinical Associate Professor of Family Studies and Human Services and Director of Speech and Hearing Center Clinic (2007). BS 1996, MS 1998, Fort Hays State University.

HILLARD, DEREK H., Professor of German and Head of Modern Languages (2002). BA 1991, University of Washington; MA 1996, PhD 2001, Indiana University.

HILLER CONNELL, KIM, Professor of Interior Design and Fashion Studies (2008). BS 1999, University of Alberta; MA 2003, PhD 2008, Michigan State University.

HINCHEE, LOWELL, Instructor of Aviation (2010). BS 1974, University of Louisiana-Lafayette.

HINES, TRISHA A., Extension Agent, Family and Consumer Sciences, Edwards County, Kinsley (2016). BS 2015, Fort Hays State University.

HINSHAW, BETH A., Instructor, Extension Specialist, 4-H Youth Development Programs, Southeast (1993). BS 1988, MS 1991, Kansas State University.

HINTON, MICHAEL E., Director of Undergraduate Laboratories (2013). BS 1991, Kansas State University; MS 1993, Purdue University.

HITZLER, PASCAL, Professor of Computer Science (2019). Diplom 1998, University of Tübingen; PhD 2001, University College Cork.

HOAG, LINDA A., Professor of Family Studies and Human Services (1986). BA 1969, University of Washington; MA 1974, PhD 1979, University of Illinois-Champaign.

HOAG, RICHARD, Professor of Architecture (1985). BA 1969, MArch 1977, University of Washington.

HOBBS, JAMES A., Professor Emeritus of Agronomy; Soil Management Research Scientist, Agricultural Experiment Station (1950). BS 1935, MS 1940, University of Manitoba, Winnipeg; PhD 1948, Purdue University.

HOBROCK, BRICE G., Professor Emeritus, K-State Libraries (1982). BA 1959, Emporia State University; MS 1961, PhD 1964, Kansas State University; MLS 1973, University of Denver.

HOCK, GAEA A., Associate Professor, Department of Communications and Agricultural Education (2016). BS 2003, MS 2006, Kansas State University; PhD 2012, Texas Tech University.

HODGE, SHERYL, Assistant Professor of Special Education, Counseling and Student Affairs (2012). BS 1984, Emporia State University; MA 1996, PhD 2002, University of Missouri-Kansas City.

HODGES, TEDDY OMAR, Professor Emeritus of Architectural Engineering and Construction Science (1959). BS 1950, Texas A&M University; MS 1951, Iowa State University; PhD 1959, Michigan State University; Professional Engineer in Iowa, 1952; Professional Engineer in Kansas, 1974.

HODGSON, CHERIE P., Program Coordinator, Agricultural Economics (1997). BSE 1974, MS 1976, Emporia State University.

HODGSON, JAMES, Senior Master Glassblower (1996). BS 1982, Kansas State University; AS 1995, Salem County Community College.

HODGSON, DAVID S., Professor of Clinical Sciences, Anesthesiology (1989). DVM 1968, Kansas State University; Diplomate 1985, American College of Veterinary Anesthesiology.

HÖEHN, GERALD H., Associate Professor of Mathematics (2004). Diploma in Mathematics 1992, PhD 1995, University of Bonn.

HOEVE, CASEY D., Assistant Professor, Content Development Librarian, K-State Libraries (2011). BS 2008, Grand Valley State University; MLIS 2000, Drexel University.

HOFFMAN, COURTNEY, Academic Advisor, Professional Education and Outreach, K-State Polytechnic (2018), BS 2017, Kansas State University.

HOFFMAN, MINDY, Associate Athletic Trainer at K-State Athletics (2006). BS 1999, Purdue University; MAT 2006, Texas Tech Health Sciences Center.

HOFFMAN, SANDRA, Director of Facilities Resources (2008). AS 1984, Hutchinson Community College; BS 1996, Manhattan Christian College.

HOFSTRA, RYAN C., Major, Kansas Army National Guard, Assistant Professor of Military Science (2009). BS 2001, University of South Carolina.

HOHENBARY, JAMES L., Director, Office of Nationally Competitive Scholarships (1997). BA 1992, Truman State University; MA 1995, Kansas State University.

HOHN, KEITH L., Professor of Chemical Engineering (1999). BS 1995, University of Kansas; PhD 1999, University of Minnesota.

HOLCOMB, CAROL ANN, Professor Emeritus of Food, Nutrition, Dietetics and Health (1979). AB 1966, Mercer University; MA 1975, PhD 1977, Oregon State University.

HOLCOMB, DEBORAH, Instructor of Social Work (2018). BSW 1996, Kansas State University; MSW 2000, University of Kansas.

HOLCOMB, KELSEY L., Extension Agent, 4-H, Cowley County, Winfield (2005). BS 2002, Oklahoma State University, MS 2005, Kansas State University.

HOLCOMBE, GLORIA J., Editor Emeritus, Department of Communications and Agricultural Education (1986). BS 2000, Manhattan Christian College.

HOLCOMBE, ROBERT, Graphic Designer Emeritus, Department of Communications and Agricultural Education (1995). BFA 1977, Louisiana State University; MFA 1984, Illinois State University.

HOLDEN, JONATHAN, University Distinguished Professor Emeritus of English (1978). BA 1963, Oberlin College; MA 1970, San Francisco State College; PhD 1974, University of Colorado.

HOLDER, MICHAEL S., Extension Agent, Agriculture and Natural Resources, Flint Hills District 13, Cottonwood Falls (1973). BS 1971, Kansas State University.

HOLDERNESS, ERIC, Assistant Director of Development-Annual Giving (2011). BS 2009, MS 2011, Kansas State University.

HOLEN, KATHRYN, Assistant Professor Emeritus of Education (1975). BS 1971, MS 1973, EdD 1975, Oklahoma State University.

HOLEN, MICHAEL C., Dean and Professor Emeritus of Education (1971). BA 1967, Stanford University; MA 1968, PhD 1971, University of Oregon.

HOLL, JACK M., Professor Emeritus of History (1989). BA 1959, Pacific Lutheran University; MA 1961, University of Maine; PhD 1969, Cornell University.

HOLLIDAY, BRENT, Education Abroad Assitant Director (2014). BA 2002, MA 2013, University of Nebraska-Lincoln.

HOLLINBERGER, THOMAS, Instructor in Management. BA 1979, Kansas State University; MS 1998, Naval Postgraduate School.

HOLLINGER, ROBERT D., Professor Emeritus of Finance (1966). BS 1964, MS 1968, PhD 1973, Kansas State University.

HOLLINGSWORTH, CINDY, Executive Director, News and Communications Services, Division of Communications and Marketing (2011). BS 1995 McPherson College, MEd 2003, Wichita State University.

HOLLINGSWORTH, MARK D., Associate Professor of Chemistry (1998). BA 1979, Carleton College; PhD 1986, Yale University.

HOLMAN, JOHNATHON D., Associate Professor Research Cropping Systems Agronomist, Southwest Research Extension Center (2006). BSc 2000, MS 2002, Montana State University; PhD 2005, University of Idaho.

HOLMBERG, TERI K., Instructor/Clinician of Music, School of Music, Theatre, and Dance (2007). BM 1991, University of North Texas; MA 1996, Texas Woman's University.

HOLMBERG, TODD R., Executive Director of McCain Auditorium (2007). 1986 BME, University of Nebraska; 1992 MM, University of North Texas.

HOLMES, CHRISTINA N., Extension Agent, Family and Consumer Sciences, Cherokee County, Columbus (2015). BS 2007, University of Central Missouri.

HOLT, JAY, Director of Information Technology, College of Business Administration. BS 1980, Washburn University; MS 1986, Kansas State University

HOLTHAUS, JODY R., Extension Agent, Agriculture and Natural Resources, Meadowlark District 7, Holton (1980). BS 1980, Kansas State University; MS 2002, Baker University.

HOMBURG, NICK, Instructor of Journalism and Mass Communications (2015). BA 2009, Idaho State University; MS 2017, Kansas State University.

HOMOLKA, ROBERT, Professor Emeritus of School of Integrated Studies (1973). BA 1966, Northern Iowa University, MEd 1971, University of New Mexico.

HONEY, PEGGY L., Associate Professor of Apparel, Textiles, and Interior Design (2003). BA 1982, Brigham Young University; MS 1997, University of Missouri-Columbia.

HONEYCUTT, DARREN, Assistant Strength and Conditioning Coach at K-State Athletics (2007). MS 1994, Appalachian State University.

HONIG, NANCY, Extension Agent, Family and Consumer Sciences, Stevens County, Hugoton (1997). BS 1988, MS 2015, Kansas State University.

HONSTEAD, ARLISS E., Associate Professor Emeritus; Extension Specialist, 4-H and Youth Development Programs (1946). BS 1937, Kansas State University; MA 1960, Columbia University.

HOOVER, WILLIAM J., Professor Emeritus of Grain Science and Industry (1976). BS 1950, MS 1954, PhD 1963, University of Illinois.

HOPE, ANDREW G., Assistant Professor of Biology; Mammalian Biogeography and Molecular Ecology.

HOPKINS, T. L., Professor Emeritus of Entomology; Research Entomologist, Insect Physiology, Biochemistry, Toxicology, Agricultural Experiment Station (1960). BS 1951, MS 1956, Oregon State University; PhD 1960, Kansas State University.

HOPPER, BEN, Director of Office of Fraternity and Sorority Life (2004). BS 2002, MS 2009, Kansas State University.

HOPWOOD, ERICA L., Digital Media Specialist, Housing and Dining Services (2018). BFA 2008, Kansas State University.

HORAK, MICHAEL, Adjunct Associate Professor of Agronomy (1999). BS 1983, MS 1985, University of California-Riverside; PhD 1990, University of Illinois.

HORNE, EVA A., Teaching Associate Professor of Biology and Assistant Director of Konza Prairie; Herpetology (1998). BS 1985, East Tennessee State University; MS 1987, University of Southwestern Louisiana; PhD 1996, Kansas State University.

HORNUNG, MARCIA, Coordinator/Instructor of the Staley School of Leadership Studies (2013). BA 2000, MPA 2008, Kansas State University.

HORTON, MELANIE, Administrative Assistant to the Dean, College of Business Administration. BS 1998, Manhattan Christian College

HORTON, BRETT W., Professor of Practice of Hospitality Management (2017). BS 1991, Kansas State University; MS 1996, Colorado State University; PhD 1999, Purdue University.

HORTON-SMITH, GLENN, Associate Professor of Physics (2004). BS 1989, California Institute of Technology; PhD 1998, Stanford University.

HOSENEY, R. CARL, Professor Emeritus of Grain Science and Industry; Research Cereal Chemist, Agricultural Experiment Station (1971). BS 1957, MS 1960, PhD 1968, Kansas State University.

HOSIE, DARREL D., Extension Agent Emeritus, Cloud County, Concordia (1966). BS 1967, Kansas State University.

HOSNI, MOHAMMAD H., Professor of Mechanical and Nuclear Engineering (1993). BS 1981, Southern University, Louisiana; MS 1984, Louisiana State University; PhD 1989, Mississippi State University.

HOSS-CRUZ, KATHLEEN, Instructor of Food, Nutrition, Dietetics and Health (2014). BS 2003, Missouri State University; MPH 2008, University of Minnesota.

HOSSAIN, ASM MUSTAQUE, Munger Professor of Civil Engineering (1991). BS 1983, MS 1986, Bangladesh University of Engineering and Technology; PhD 1990, Arizona State University; Professional Engineer.

HOSTETTER, JESSE, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2014). DVM 1991, Iowa State University.

HOUSER, TERRY, Associate Professor of Animal Sciences and Industry (2007). BS 1998, University of Nebraska-Lincoln; MS 2001, PhD 2004, Iowa State University.

HOUSH, GERALD, Assistant Director of Planned Giving, KSU Foundation (1991). BA 1956, Manhattan Christian College; MS 1960, Phillips University; D Min 1975, San Francisco Theological Seminary.

HOWARD, THIRKELLE H., Instructor, Provost's Office (1995). BA 1968, Wichita State University; BS 1977, Kansas State University; MPA 1983, University of Kansas.

HOWE, NATHAN J., Associate Professor and Head of Interior Architecture and Product Design (2005). BArch 1997, Kansas State University; MArch 2002, University of Texas.

HOWELL, RODNEY, Associate Professor of Computer Science (1988). BS 1984, Wichita State University; PhD 1988, University of Texas-Austin.

HOWELLS, AMBER, Assistant Professor of Food, Nutrition, Dietetics and Health (2012). BS 2001, MS 2007, PhD 2015, Kansas State University.

HOWERTON, PHYLLIS Y., Extension Agent Emeritus, Family and Consumer Sciences, Reno County, Hutchinson (1966). BA 1963, Southwestern College; MS 1982, Kansas State University.

HOYLE, JARED A., Associate Professor of Horticulture and Natural Resources -Turfgrass Extension Specialist (2013). BS 2006, MS 2009, North Carolina State University; PhD 2012, Auburn University.

HOYT, DANIEL, Professor of English (2010). BJ 1992, MA 1994, University of Missouri-Columbia; PhD 2004, University of Kansas.

HOYT, SARAH MCGREER, Undergraduate Specialist, K-State Libraries (2011). BA 1997, Hastings College; MA 2000, University of Kansas.

HSU, WEI-WEN, Associate Professor of Statistics (2013). BB 1998, Tamkang University, Taiwan; MBA 2000, National Taipei University, Taiwan; PhD 2011, Michigan State University.

HSU, WILLIAM H., Professor of Computer Science (1999). BS 1993, MSE 1993, Johns Hopkins University; PhD 1998, University of Illinois at Urbana-Champaign.

HUA, DUY, University Distinguished Professor of Chemistry (1982). BS 1976, Kyoto University, Japan; PhD 1979, Southern Illinois University-Carbondale.

HUBBELL, NEAL C., Associate Professor of Interior Architecture and Product Design (1997). B of Env Des 1981, University of Colorado; MArch 1992, University of Texas.

HUBLER, ANGELA, Professor and Interim Head of Gender, Women, and Sexuality Studies (1991). BA 1985, College of Wooster; MA 1986, PhD 1992, Duke University.

HUCK, JANICE E., Associate Professor Emeritus of Apparel, Textiles, and Interior Design (1986). BS 1969, MS 1975, PhD 1986, Kansas State University.

HUDGENS, ROBERT, Assistant Dean, International Agricultural Programs (1997). BS 1967, University of California-Davis; MS 1973, PhD 1978, University of Florida.

HUGGANS, DEVYN, Farm Management Economist (2017). BS 2014, Kansas State University.

HUGHES, PETER, Head Baseball Coach at K-State Athletics (2018), BA 1990, Davidson College.

HUGHEY, JUDITH K., Associate Professor of Special Education, Counseling, and Student Affairs (1990). BS 1977, MA 1978, Southeast Missouri State University; EdD 1990, University of Missouri- Columbia.

HUGHEY, KENNETH F., Professor and Chair of Special Education, Counseling, and Student Affairs (1990). BSEd 1972, MAEd 1975, Southeast Missouri State University; PhD 1989, University of Missouri.

HULBERT, LINDSEY, Assistant Professor of Animal Sciences and Industry (2013). BS 2005, MS 2006, PhD 2010, Texas Tech University.

HUND, DUANE, Extension Assistant-Farm Analyst, Agricultural Economics (1985). AS 1976, Cloud County Community College; BS 1995, Friends University.

HUNDLEY, WILLIAM C., JR., County Extension Director Emeritus, Douglas County, Lawrence (1955). BS 1951, MS 1967, Kansas State University.

HUNT, DANIEL, Associate Professor Emeritus of Art (1997). BFA 1983, University of Illinois-Champaign; MFA 1989, Southern Illinois University-Carbondale.

HUNT, JON D., Associate Professor of Landscape Architecture and Regional & Community Planning (2008). BFA 1994, Syracuse University; MLA 2007, University of Colorado.

HUNT, JULIE, Program Coordinator, K-State Global Campus (20___. BME 1980, Youngstown State University, 1980, MS 2003, Kansas State University.

HUNT, PAUL, Professor of Music, School of Music, Theatre, and Dance (1998). BM 1978, BME 1978, University of Northern Colorado; MM 1980, Youngstown State University; DMA 1989, Performer's Certificate 1989, Eastman School of Music.

HUSCHKA, JAMES A., Farm Management Economist (1977). BS 1977, Kansas State University.

HUSER, SHAUN, Clinical Assistant Professor, Livestock Services - Ambulatory (2019). DVM 2004 Kansas State University.

HUTCHINSON, J.M. SHAWN, Professor of Geography and Geospatial Sciences (2002). BS 1990, Colorado State University; MA 1997, PhD 2000, Kansas State University.

HUTCHINSON, STACY L., Professor of Biological and Agricultural Engineering (2000). BS 1990, Montana State University; MS 1996, PhD 1998, Kansas State University.

HWANG, CHERN-HWANG, Assistant Scientist of Agronomy (1985). BA 1977, Tunghai University; MS 1984, Kansas State University.

IBENDAHL, GREGORY K., Associate Professor of Agricultural Economics; Extension Agricultural Economist (2012). BS 1984, Southern Illinois University; 1992 MBNA, Northern Illinois University; PhD 1998, University of Illinois-Urbana-Champaign.

IHNATSYEVA, LIZAVETA, Assistant Professor of Mathematics (2015). Diploma 2003, MS 2004, PhD 2008, Belarusian State University.

IM, JEONGADAE, Assistant Professor of Civil Engineering; BS-Environmental Engineering 2002, MS-Environmental Engineering 2004, Seoul University; PhD-Environmental Engineering 2011, University of Michigan.

INGERSOLL, LUANN J., Original Cataloger, K-State Libraries (1973). BS 1973, Kansas State University; MLS 1994, Emporia State University.

IRETON, DANIEL, Associate Professor, Undergraduate and Community Services Librarian, K-State Libraries (2005). BA 2003, Kansas State University; MLS 2008, Emporia State University.

IRVIN, H. HUGH, Instructor of School of Integrated Studies (2000). BS 1971, Kansas State University.

IRVINE, PAUL BERNARD II, Instructor Agricultural Law and Economics (2008). BA/BS 1990 Kansas State University; JD 1993, Washburn University.

IRWIN, BRANDON C., Assistant Professor of Kinesiology (2012). BS 2004, Colby College; PhD 2012, Michigan State University.

ISRAEL, SYLVIA, Instructor of Theatre, School of Music, Theatre and Dance (2007). BA 1971, State University of New York–Buffalo; MFT 1991, California Institute of Integral Studies.

ITO, TAKASHI, Professor of Chemistry (2004). BS 1993, MS 1995, PhD 1998, University of Tokyo.

IVANOV, ANDREW, Associate Professor of Physics (2009). BS 1996, MS 1998, Moscow Institute of Physics and Technology, Russia; PhD 2004, University of Rochester.

IVES, SAMUEL, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2011). BS 1988, DVM 1990, PhD 2002, Kanas State University.

IWAMOTO, TAKEO, Adjunct Assistant Professor of Biochemistry and Molecular Biophysics; Associate Professor & Director, Division of Biochemistry Core Research Facilities, The Jikei University of Medicine, Japan (1992). BS 1982, PhD 1988, Tokyo Institute of Technology.

JAAX, NANCY K., Professor Emeritus of Diagnostic Medicine/Pathobiology (2000). BS 1971, DVM 1973, Kansas State University.

JABERI-DOURAKI, MAJID, Associate Professor of Mathematics (2015). BSc 2002, University of Isfahan; MSc 2004, Amirkabir University of Technology; PhD 2009, Université Laval.

JACKSON, CHAD, Director, Center for the Advancement of Entrepreneurship, Department of Management (2009). BS 1999, MS 2010, PhD 2015, Kansas State University.

JACKSON, DEREK A., Associate Vice President for Student Life and Director of Housing and Dining Services (1997). BS 1989, Emporia State University; MS 1992, Ph.D 2015, Kansas State University.

JACKSON, KELLIE, Program Associate, National Strategic Selling Institute, College of Business Administration. BS 2014, Kansas State University.

JACKSON, LEON, Director of Annual Giving at K-State Athletics (2015). BS 2007, MEd 2012, Utah State University

JACKSON, MARK M., Professor of School of Integrated Studies (2013). ME 1991, PhD 1995, University of Liverpool and Liverpool Polytechnic, UK.

JACKSON, RONALD D., Program Coordinator, K-State Global Campus (2004). BAB 2000, University of Minnesota; MBA 2003, Wichita State University.

JACKSON, SHAROLYN FLAMING, Extension Specialist, Family and Consumer Sciences; Northeast, Manhattan (1983). BS 1982, Bethel College; MS 1987, Kansas State University.

JACKSON, SUSAN M., Extension Agent Emeritus, Family and Consumer Sciences and Community Development, Harvey County, Newton (1989). BS 1968, MS 1974, Kansas State University.

JACKSON, WILLIAM L., Emeritus Specialist, Department of Communications and Agricultural Education (1994). BA 1976, Freed-Hardeman; MME 1980, University of Mississippi.

JACOBS, HYDE S., Professor Emeritus of Agriculture (1981). BS 1952, MS 1954, PhD 1957, Michigan State University.

JAEGER, JOHN R., Professor of Animal Sciences and Industry; Extension Specialist, Ag Research Center-Hays (2006). BS 1984, MS 1986, PhD 2005, Oregon State University.

JAGER, ABIGAIL L., Teaching Associate Professor (2006). BS 1998, Calvin College; PhD 2006, University of Chicago.

JAGOSZ, THOMAS, Instructor, English Language Program (2006). BA 1979, Sophia University; MEd 1993, Temple University Japan.

JAIN, ASHOK, Associate Research Physicist (1986). PhD 1983, Queen's University of Belfast.

JAING, CRYSTAL, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2014). BS 1992, NanKai University, China; PhD 1997, Indiana University School of Medicine.

JAMES, JONIE R., Farm Management Economist (1999). BS 1991, Kansas State University; MS 2005, Kansas Wesleyan University.

JAMES, MARISA K., Adjunct Faculty of the College of Arts and Sciences; Director of Clinical Laboratory Science, North Kansas City Hospital (2006). BA 2002, University of Central Missouri; MA 2005, University of Missouri-Kansas City.

JANARDHAN, KYATHANAHALLI, Assistant Professor of Pathology, Diagnostic Medicine/Pathobiology (2008). BVSc 1994, MVSc 1994, University of Agricultural Sciences, Bangalore, India; PhD 2006, University of Saskatchewan.

JANDA, BENTE, Assistant Dean for Student Services in the College of Business Administration (1998). BS 1992, MBA 1994, University of Arkansas.

JANDA, SWINDER, Professor of Marketing (1998). BSC 1987, University of Panjab, Chandigarh, India; MBA. 1992, PhD 1996, University of Arkansas.

JANETTE, MICHELE, Professor of English (1997). BA 1988, MA 1991, MPhil 1993, PhD 1997, Yale University.

JANG, SUNG HA, Assistant Professor of Marketing (2012). BA 1998, MS 2001, Korea University; PhD 2011, University of Texas.

JANG, JICHUL, Associate Professor of Hospitality Management (2013). BS, 2003, University of Suwon; MS, 2008, University of North Texas; PhD, 2013, Ohio State University.

JANI, VIBHAVARI, Associate Professor of Interior Architecture and Product Design (2010). BM 1981, Akhil Bharativa Gandharva Maha Vidyalaya, India; BArch 1989, CEPT University, Ahmedabad, India: MArch 1991, Wayne State University.

JANKOWIAK, RYSZARD, University Distinguished Professor of Chemistry (2005). BS 1969, SN-II College of Poznzn; MS 1974, A. Mickiewicz University; PhD 1981, Gdansk University of Technology, Poland.

JANSSEN, KEITH A., Associate Professor of Agronomy; Agronomist in Charge, East Central Kansas Experiment Field (1979). BS 1965, MS 1969, University of Nebraska; PhD 1973, Michigan State University.

JARDINE, DOUGLAS J., Professor of Plant Pathology (1987). BS 1976, MS 1977, PhD 1985, Michigan State University.

JENNINGS, TAYLOR, Instructor,/Advisor, English Language Program (2013). ; BA 2008, The University of Oklahoma; MA 2012, Northeastern State University.

JIA, WEI, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2014). BA 1983, MS 1986, Beijing Agricultural University; PhD 1995, Cornell University.

JOBE, JOHN A., Extension Agent, 4-H, Riley County, Manhattan (2013). BS 2007, MS 2013, Kansas State University.

JOERN, ANTHONY, University Distinguished Professor of Biology Emeritus; Grassland Ecology, Agricultural Experiment Station (2004). BS 1970, University of Wisconsin- Madison; PhD 1977, University of Texas-Austin.

JOGLEKAR, SHREEPAD, Associate Professor of Art (2011). BFA 1998, Sir J.J. Institute of Applied Art, Mumbai, India; MFA 2006, Texas Tech University.

JOHANNES, ELAINE M., Associate Professor of Family Studies and Human Services; Extension Specialist, Youth Development Programs (1992). BS 1979, MS 1982, PhD 2003, Kansas State University.

JOHANSEN, KILEY, Academic Advisor for the College of Business Administration. BS 2013, Fort Hays State University; MS 2015, Oklahoma State University.

JOHNSON, ANASTASIA L., Extension Agent, Agriculture and Natural Resources, Marshall County, Marysville (2014). BS 2014, University of Nebraska-Lincoln.

JOHNSON, ARTHUR R., Extension Agent Emeritus, Jefferson County, Oskaloosa (1958). BS 1958, Kansas State University.

JOHNSON, B. HARDY IV, Assistant Professor of Finance (2013). BS 2000, Auburn University; MBA 2002, University of Alabama; PhD 2013, University of Mississippi.

JOHNSON, BARBARA L., Instructor of Engineering Extension (2000). BS 1983, University of Missouri-Rolla.

JOHNSON, DALLAS E., Professor Emeritus of Statistics (1975). BS 1960, Kearney State College; MA 1966, Western Michigan University; PhD 1970, Colorado State University.

JOHNSON, GARY LEE, Professor Emeritus of Electrical and Computer Engineering (1966). BS 1961, MS 1963, Kansas State University; PhD 1966, Oklahoma State University; Professional Engineer, 1973.

JOHNSON, JEREMIAH R., Captain, Kansas Army National Guard, Assistant professor of Military Science (2010). BA 2005, University of Wyoming.

JOHNSON, JERRY D., Professor and Department Chair of Educational Leadership (2019). BA 1989, MA 1991, Eastern Kentucky University; EdD 2005, Ohio University.

JOHNSON, JESSICA, Admissions Representative, K-State Polytechnic (2017) BS 2008, Southwestern College.

JOHNSON, JILINDA A., Medical Technologist, Lafene Health Center (1985). BS 1966, Kansas State University.

JOHNSON, LAURIE, Professor of Political Science (1991). BA 1985, MA 1987, PhD 1990, Northern Illinois University.

JOHNSON, LINDA, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2015). BS 1979, MS 1983, DVM 1987, Kansas State University; MPH 1990, Post-Doctoral 1990, John Hopkins University.

JOHNSON, LINDA M., Instructor Emeritus, Director of Institute Technology Center, Veterinary Medicine (1970). BS 1969, Ohio University; MS 1978, PhD 1990, Kansas State University.

JOHNSON, LORETTA C., Professor of Biology; Ecological Genomics, Agricultural Experiment Station (1995). BA 1979, Connecticut College; PhD 1992, University of Connecticut.

JOHNSON, LOWELL B., Professor Emeritus of Plant Pathology (1968). BS 1957, University of Illinois; MS 1962, PhD 1964, Purdue University.

JOHNSON, MARC A., Professor Emeritus of Agricultural Economics, Dean Emeritus of Agriculture and Director of Agriculture Experiment Station and Cooperative Extension Services (1985). BA 1970, Emporia State University; MA 1973, PhD 1975, Michigan State University.

JOHNSON, PATRICK, Lieutenant Colonel (Retired), U.S. Army, Assistant Professor of Military Science (2000).

JOHNSON, ROBERT L., Professor Emeritus; Extension Specialist, Program and Staff Development (1965). BS 1951, University of Nebraska; MS 1956, PhD 1958, University of Wisconsin.

JOHNSON, ROBERTA L., Senior Director, Administrative and IT Services, K-State Libraries (2002). BS 1997, Manhattan Christian College.

JOHNSON, SANDRA J., Professor of Animal Sciences and Industry; Extension Specialist, Northwest, Colby (1998). BS 1982, University of Nebraska; MS 1984, University of Missouri; PhD 1991, West Virginia University.

JOHNSON, SUSAN J., Extension Agent, Family and Consumer Sciences, Douglas County, Lawrence (1978). BS 1977, Kansas State University.

JOHNSON, VINCENT, Assistant Track and Field Coach at K-State Athletics (2011). BS 2001, MS 2003, Alcorn State University.

JONES, ANGELA R., County Extension Director, Sedgwick County, Wichita (2014). BA 1993, MA 1999, Wichita State University.

JONES, BYRON W., Professor of Mechanical and Nuclear Engineering; Director, National Gas Machinery Lab (1978). BS 1971, Kansas State University; MS 1973, PhD 1975, Oklahoma State University; Professional Engineer, 1977.

JONES, CAROLYN, Student Life Coordinator of the Office of Student (2018). B.A. 2013, Adams State University; M.S. Kansas State University.

JONES, CASSIE, Associate Professor of Animal Sciences and Industry (2016). BS 2007, MS 2009, Kansas State University; PhD 2012, Iowa State University.

JONES, CHRISTOPHER, Associate Professor of Civil Engineering. BA-Physical Science 2006; BS-CE 2006, MS-CE 2008, PhD-CE 2011, Texas A&M.

JONES, JAMES S., Professor Emeritus of Architecture (1982). BBAdm 1965, University of Puget Sound; MArch 1971, University of Washington; Registered Architect.

JONES, JENNISHA ("JENNI"), Assistant Director of Office of Fraternity and Sorority Life (2011). BS 2008, ME 2011, Virginia Commonwealth University.

JONES, KATHERINE, Assistant Professor of School of Integrated Studies (2015). AA 2010, Colby Community College, BA 2012, Fort Hays State University, MLS 2014, Emporia State University.

JONES, SCOTT H., Acting Title IX Coordinator and Director of the Office of Institutional Equity. BS 1988, MA 1992, South Dakota University; MS 1994, Oregon State University.

JORDAN, JESSIE, Office Specialist III, English Language Program (2015).

JORDAN, SHAWNA K., Assistant Dean and Assistant Professor of Food, Nutrition, Dietetics and Health; Director Athletic Training Education Program (2001). BS 1996, Kansas State University; MS 1998, University of Kansas; PhD 2006, Kansas State University.

JORNS, WILLIAM J., Assistant Professor Emeritus; Coordinator, Extension Education (1971). BS 1954, MS 1961, Kansas State University; EdD 1971, North Carolina State University.

JOSLIN, AUDREY J., Assistant Professor of Geography and Geospatial Sciences (2016). BA 2006, Gustavus Adolphus College; MS 2008, Michigan State University; PhD 2015, Texas A&M University.

JOSEPH, SINY, Associate Professor of School of Integrated Studies (2012). BE 2000, Gujarat University, India; MBA 2003, West Bengal University of Technology, India; MS 2008, PhD 2009; University of Massachusetts Amherst.

JUGAN, MARIA, Assistant Professor of Clinical Sciences, Small Animal Medicine (2018); BS 2009, DVM 2013, University of Tennessee; MS 2017, Ohio State University; Diplomate 2017, American College of Veterinary Internal Medicine (Small Animal Internal Medicine).

JUMPPONEN, ARI M., Professor of Biology; Mycology, Agricultural Experiment Station (1999). MS 1993, University of Joensuu; PhD 1998, Oregon State University.

JUN, JUNG SIM, Assistant Professor of Social Work (2018). B.Ed. 1997, Kang-Nam South Korea; MSW 2012, Wichita State University; PhD 2017, University of Missouri-Columbia.

KAADZE, KETINO, Assistant Professor of Physics (2014). BS 2003, MS 2005 Tbilisi State University, Georgia; PhD 2010, Kansas State University.

KAFF, MARILYN S., Associate Professor of Special Education, Counseling, and Student Affairs (1997). BS 1977, Washburn University; MS 1982, Kansas State University; PhD 1997, University of Kansas.

KAISER, HERBERT EMIL, Professor Emeritus of Education (1961). BS 1941, Concordia Teachers College; MS 1943, Oklahoma State University; PhD 1959, University of Nebraska.

KAMBHAMPATI, SRINIVAS, Adjunct Professor of Entomology, Research Entomologist, Insect Genetics (1992).BS 1979, Andhra Pradesh University; MS 1981, PhD 1987, Simon Fraser University.

KANG, HAIJUN, Associate Professor of Educational Leadership (2011). BS 1996, Inner Mongolia University of Technology, China; MS 2003, Tsinghua University, China; PhD 2009, Pennsylvania State University.

KANG, QING, Assistant Professor and Consulting Lab Director (2019). BS 1998, University of Science and Technology of China; Ph.D. 2001, MS 2002, Ph.D. 2005, Kansas State University.

KANOST, LAURA M., Associate Professor of Spanish (2007). BA 2001, Kansas State University; MA 2003, PhD 2007, University of Kansas.

KANOST, MICHAEL, University Distinguished Professor of Biochemistry and Molecular Biophysics (1991). BS 1979, Colorado State University; PhD 1983, Purdue University.

KARCZ, THOMAS L., Assistant Professor of Aviation (2007). AS 2001, BS 2001, Kansas State University; MS 2007, University of Central Missouri.

KARLIN, KATHERINE L., Associate Professor of English (2009). BA 2000, MFA 2004, University of Pittsburgh; PhD 2009, University of Southern California.

KARY, KEN, Facilities Maintenance Supervisor for Bill Snyder Family Stadium (2013).

KASTENS, TERRY L., Professor Emeritus of Agricultural Economics; Extension Agricultural Economist, Crop and Farm Management (1995). BA 1973, University of Kansas; PhD 1995, Kansas State University.

KASTNER, JUSTIN J., Associate Professor of Diagnostic Medicine/Pathobiology; Co-Director of the Frontier Program (2004). BS 1998, Kansas State University; MS 2000, London South Bank University; PhD 2003, University of Guelph.

KATER, LARRY E., Extension Agent Emeritus, Agriculture and Natural Resources and Community Development, Pratt County, Pratt (1981). BS 1969, Kansas State University.

KAUFMAN, DON W., Professor of Biology; Mammalogy, Agricultural Experiment Station (1980). BS 1965, MS 1967, Fort Hays State University; PhD 1972, University of Georgia.

KAUFMAN, SARAH, Clinical Assistant Professor, Dentistry/Pet Health (2019); BS 1999, The College of William and Mary; MBA 2006, DVM 2008, Colorado State University.

KAUP, MIGETTE L., Professor of Interior Design and Fashion Studies (1999). BS 1990, March 1994, Kansas State University; PhD 2012, University of Wisconsin-Milwaukee.

KAUS, JODI L., Program Director of Powercat Financial (2009). BA 1991, Kansas State University; JD 1994, University of Kansas.

KAUS, MARGARET, Associate Professor, Metadata Librarian, K-State Libraries (2005). BA 1989, Marymount College of Kansas; MLS 1990, Indiana University.

KEANE, TIMOTHY D., Professor of Landscape Architecture and Regional & Community Planning (1984). BSLA 1981, Iowa State University; MLA 1983, PhD 1990, University of Michigan.

KEARNS, DAVID, Assistant Director for Training, Counseling Services (2011). BS 1973 Fort Hays State; MA 1979, Wichita State University; PhD 1990, Georgia State University.

KEARNS, SARA K., Professor, Head, Undergraduate and Community Services, K-State Libraries (2001). BA 1994, Kansas State University; MLS 1997, Catholic University of America.

KEATING, JAMES L., Professor Emeritus of School of Integrated Studies (1993). BS 1972, Southern Illinois University; MS 1973, Cleveland State University; PhD 1993, University of Alabama; Professional Engineer.

KEATING, KAREN D., Teaching Assistant Professor (2013). BS 1977, Arkansas State University; MA 1981, University of Maryland; PhD 2012, Kansas State University.

KEATLEY, SARAH, Extension Associate, 4-H Youth Development Programs (2006). BS 2006, Kansas State University.

KEELER, GARRY L., County Extension Director Emeritus, Douglas County, Lawrence (1967). BS 1966, MS 1993, Kansas State University.

KEELEY, STEVEN J., Professor of Horticulture and Natural Resources (1996). BS 1984, Colorado State University; MS 1991, Michigan State University; PhD 1996, Colorado State University.

KEEN, JULIA A., Professor of Architectural Engineering and Construction Science (2003). BS 1998, MS 2005, PhD 2010, Kansas State University; Professional Engineer.

KEIL, DANIEL J., Adjunct Faculty of Diagnostic Medicine/Pathobiology (2000). DVM 1991, University of Minnesota; PhD 1999, Kansas State University; Diplomate 1999, American College of Veterinary Microbiologists.

KEISER, GEORGE R., Professor Emeritus of English (1973). BA 1962, MA 1964, PhD 1971, Lehigh University.

KEITHLEY, CLAUDE A., Professor Emeritus of Landscape Architecture and Regional & Community Planning (1970). BArch 1965, MRCP 1973, MArch 1973, Kansas State University. Certified Planner.

KELLER, GLENDA L., Extension Agent Emeritus, River Valley District 4, Washington (1965). BS 1965, MS 1996, Kansas State University

KELLER, JOHN W., Professor Emeritus of Landscape Architecture and Regional & Community Planning (1972). BA 1966, St. Benedict's; MA 1967, Kansas State University; MS 1971, PhD 1973, Rutgers University. Certified Planner.

KELLER, KERRI DAY, Director of Career Center (2002). BS 1988, Pittsburg State University; MS 1990, Indiana State University; PhD 2012, Kansas State University.

KELLER, LEWIS, Adjunct Faculty of Grain Science and Industry (2009). BS 1974, MS 1976, Brigham Young University; PhD 1981, University of Nebraska.

KELLETT, CAROL E., Dean Emeritus of Human Ecology and Professor Emeritus of Family Studies and Human Services (1998). BS 1969, Kansas State University; MEd 1975, PhD 1980, University of Missouri-Columbia.

KELLEY, KENNETH W., Professor Emeritus; Crops and Soils Research Scientist, Southeast Kansas Agricultural Research Center (1975). BS 1967, MS 1973, Kansas State University.

KELLY, SMOKY, Instructor, English Language Program (2014). BA 2008, Ashford University; MA 2013, Anaheim University.

KELLS, SARAH, Admissions Representative, K-State Global Campus (2019). BS 2012, Kansas State University.

KELLSTROM, MARTHA, Assistant Professor Emeritus of Education (1987). BS 1953, MS 1983, PhD 1985, Kansas State University.

KEMP, KENNETH E., Professor Emeritus of Statistics (1968). BS 1963, MS 1965, PhD 1967, Michigan State University.

KEMPTON, PAMELA D., Professor and Head of Geology (2013). BS 1977, James Madison University; MS 1980, PhD 1984, Southern Methodist University.

KENNEDY, CAROL Y., Director of Health Education, Lafene Health Center (1999). BS 1980, Pennsylvania State University; MS 1998, Kansas State University.

KENNEDY, GEORGE A., Professor Emeritus of Veterinary Diagnostic Pathology, Director Emeritus of Diagnostic Lab, Department of Veterinary Diagnosis; Research Pathologist (1970). DVM 1967, Washington State University; PhD 1975, Kansas State University; Diplomate 1976, American College of Veterinary Pathologists.

KENNEDY, TAYLOR M., Public Information Officer, Department of Communications and Agricultural Education (2019), BS 2016, Tarleton State University; MS 2018, Oklahoma State University.

KENNELLY, MEGAN M., Professor of Plant Pathology; Extension Horticultural Plant Pathologist (2006). BS 1999, University of Wisconsin; PhD 2005, Cornell University.

KENT, NANCY JO, Extension Agent Emeritus, Family and Consumer Sciences, Ford County, Dodge City (1959). BS 1959, Fort Hays State University.

KERR, GABRIEL D., Assistant Professor of Mathematics (2013). BS 2000, University of Michigan; MA 2003, PhD 2007, University of Chicago.

KERSTETTER, K. TODD, Professor of Music, School of Music, Theatre, and Dance (1999). BM 1985, Furman University; MM 1987, Indiana University; DMA 1995, University of Georgia.

KEY, DAVID V., District Extension Director, Meadowlark 7, Seneca (1988). BS 1986, MS 1987, Kansas State University.

KHAN, SAEED, Professor of School of Integrated Studies (1997). BS 1984, Bangladesh University; MS 1989, PhD 1994, University of Connecticut.

KIBBY, JIMMIE R., County Extension Director Emeritus, Wyandotte County, Kansas City (1966). BS 1965, MS 1966, Oklahoma State University.

KIDD, TANDALAYO, Associate Professor of Food, Nutrition, Dietetics and Health; Extension Specialist, Youth Obesity Prevention (2005). BS 1997, MS 2002, PhD 2005, Kansas State University.

KIEFER, STEPHEN W., Professor Emeritus of Psychology (1082). BA 1973, Washington University-St. Louis; MA 1975, PhD 1978, Arizona State University.

KIENSTRA, THERESE, Assistant Athletic Trainer at K-State Athletics (2018), BS 2012, MS 2013, Saint Louis University.

KILGORE, GARY L., Professor Emeritus of Agronomy, Extension Specialist, Crops and Soils, Southeast (1972). BS 1964, MS 1966, Kansas State University.

KIM, HYUNGCHAN, Professor of Interior Design and Fashion Studies (2008). BFA 2002, MFA 2005, Iowa State University.

KIM, MYUNG KYO, Assistant Professor of Management (2013). BS 2005, Hanyang University-Korea; MS 2008, Seoul National University-Korea; PhD 2013, Michigan State University.

KIM, YUNJEONG, Research Assistant Professor of Diagnostic Medicine/Pathobiology (2009). BS 1993, MS 1995, Seoul National University; PhD 1975, Ohio State University; Diplomate 2007, American College of Veterinary Microbiologists.

KIMBLE, MYRANDA, Content Manager, Career Development, College of Business Administration. BS 2006, Kansas State University.

KINDLER, BEVERLY L., Extension Agent Emeritus, Family and Consumer Sciences, Norton County, Norton (1952). BS 1952, Kansas State University; MS 1967, Michigan State University.

KING, AUDREY, Instructor, Department of Communications and Agricultural Education (2016). BS 2013, MS 2016, Kansas State University.

KING, BARNEY, Professor Emeritus, School of Integrated Studies (1998). BS 1969, United States Military Academy; MEd 1975, Georgia State University; MA 1996, Webster University Master Instructor 2001.

KING, NANCY, Instructor of Hospitality Management (2008). BS 1980, Wichita State University; MS 1998, Kansas State University.

KINGERY-PAGE, MARY CATHERINE, Associate Professor of Landscape Architecture and Regional & Community Planning (2004). BGS 1996, Wichita State University; MLA 2006, Kansas State University. Professional Landscape Architect.

KINSLER, LESLIE, Professor Emeritus of School of Integrated Studies (1980). BA 1972 Emporia State University, MCS 1988 Wichita State University.

KIRKHAM, MARY BETH, Professor of Agronomy; Crops Physiologist (1980). BA 1966, Wellesley College; MS 1969, PhD 1971, University of Wisconsin.

KIRKPATRICK, KIMBERLY K., Professor of Psychological Sciences (2008). BS 1989, Iowa State University; MA 1992, PhD 1995, University of Iowa.

KISANGANI, EMIZET, Professor of Political Science (1994). BA 1976, University of Kinshasa; MA 1983, University of Oregon; PhD 1994, University of Iowa.

KISER, HARVEY L., Emeritus Senior Agriculture Economist (1979). BS 1959, MS 1963, PhD 1966, Ohio State University.

KISS, DIANE E. (ELIZABETH), Associate Professor of Family Studies and Human Services and Extension Specialist (2012). BS 1983, Iowa State University; BS 1991, MS 1993, PhD 2001, University of Illinois-Urbana-Champaign

KISSICK, BEVERLEE, Professor and Director Emeritus of Libraries, College of Aviation and Technology (1987). BS 1959, MS 1981, PhD 1985, Kansas State University.

KLEBBA, PHILLIP E., University Distinguished Professor of Biochemistry and Molecular Biophysics (2012). BS 1975, University of Notre Dame; PhD 1982, University of California-Berkeley.

KLEIN, COLLIN, Co-Offensive Coordinator Pass Game/Quarterbacks at K-State Athletics (2017). BS 2011, Kansas State University.

KLEINBECK, SAMUEL, Professor of Practice of School of Integrated Studies (2018). BA 2005, Excelsior College.

KLEINHENZ, MICHAEL, Assistant Professor of Clinical Sciences, Beef Production Medicine (2019); BS 2004, DVM 2009, Ohio State University; Ph.D. 2018 Kansas State University.

KLEMPA, JOHN D., Assistant Forester (2008). BS 1994, Syracuse University.

KLIEWER, BRANDON, Assistant Professor of the Staley School of Leadership Studies (2014). AA 2004, Marion Military Institute; BA 2006, MA 2008, Virginia Polytechnic Institute and State University; PhD 2011, University of Georgia.

KLIMEK, JUDY, Associate Professor of Anatomy and Physiology (1997). BS 1984, DVM 1988, MS 1996, Purdue University.

KLOCKE, EMILY, Clinical Professor, Small Animal Surgery (2005). BS 1995, John Carroll University; DVM 1999, Michigan State University; Diplomate 2004, American College of Veterinary Surgeons.

KLOCKE, NORMAN L., Professor Emeritus, Irrigation, Southwest Research Extension Center (2002). BS 1971, University of Illinois; MS 1976, University of Kansas; PhD 1983, Colorado State University.

KLONTZ, BRAD, Associate Professor of Family Studies and Human Services (2010). BS 1993, Olivet Nazarene University; MS 1995, South Dakota State University; PsyD 1999, Wright State University.

KLOPFENSTEIN, CAROL F., Professor Emeritus of Grain Science and Industry, Research Cereal Chemist (1977). BS 1959, MS 1963, Pennsylvania State University; PhD 1978, Kansas State University.

KLOSS, A.J., Assistant Strength & Conditioning Coach at K-State Athletics (2016). BS 2013, University of Iowa; MS 2016, Kansas State University.

KLUITENBERG, GERARD J., Professor of Agronomy, Soil Physics (1989). BS 1982, MS 1984, University of California-Davis; PhD 1989, Iowa State University.

KNACKENDOFFEL, ELIZABETH A., Assistant Professor of Special Education, Counseling, and Student Affairs (1986). BS 1978, MS 1979, Emporia State University; PhD 1989, University of Kansas.

KNAPP, MARY C., Associate, State Climatologist Weather Data Librarian, Agronomy (1985). BVS 1977, Kansas State University.

KNIFFIN, LORI, Advisor of the Staley School of Leadership Studies (2012). BS 2009, MS 2014, Kansas State University.

KNIGHT, KRISTIN, Head Women's Golf Coach at K-State Athletics (1995). BA 1988, MS 1993, University of Oklahoma.

KNIGHT, PATRICK A., Associate Professor of Psychological Sciences (1980). BS 1976, Michigan State University; MS 1979, PhD 1981, Purdue University.

KNOBLAUCH, A. ABBY, Associate Professor of English (2008). BA 1999, Northland College; MA 2001, PhD 2008, University of New Hampshire.

KNOPP, KALEEN S., Instructor of School of Integrated Studies (2001). BA 1983, MA 1998, Kansas State University.

KNOX, MATTHEW A., Professor and Head of Architecture (1990). BArch 1987, Kansas State University; MArch 1990, University of Virginia. Licensed Architect.

KOEHLE, JOE, Director of Debate and Instructor of Communication Studies (2012) BA 2009, University of West Georgia; MA 2011, Kansas State University.

KOELLIKER, JAMES K., Professor Emeritus of Biological and Agricultural Engineering (1973). BS 1967, Kansas State University; MS 1969, PhD 1972, Iowa State University; Professional Engineer, 1972.

KOERNER, PRESTON, Video Producer at K-State Athletics (2008). BS 2008, Kansas State University.

KOERS, WALTER, Adjunct Professor of Grain Science and Industry (2003). BS 1964, South Dakota State University; MS 1970, PhD 1972, University of Nebraska.

KOFOID, KENNETH D., Associate Professor Emeritus (1986). BS 1973, Purdue University; MS 1975, PhD 1979, University of Nebraska.

KOHLS, ANDREW, Assistant Director, Career Center (2012). BA 2010, Kansas Wesleyan University; MS 2016, Kansas State University.

KOHMAN, ROBERT, Farm Management Executive Economist (2013). BS 2006, Kansas State University.

KOHN, MARY, Associate Professor of English (2013). BA 2002, Appalachian State University; MA 2008, North Carolina State University; PhD 2012, University of North Carolina at Chapel Hill.

KOLLHOFF, LUCY M., Coordinator of Career Services (2000). BS 1987, MS 1999, Fort Hays State University.

KOLONOSKY, PATRICIA A., Instructor Emeritus of English (1983). BA 1963, Roberts Wesleyan College; MA 1977, Kansas State University.

KOO, DAL-HOE, Research Assistant Professor of Plant Pathology (2013). BS 2000 Soonchunhyang University, MS 2003, PhD 2006 Chungnam National University.

KOO, SUNG, Professor Emeritus of Food, Nutrition, Dietetics and Health (1990). BS 1970, Kon-Kuk University; MS 1973, University of New Hampshire; PhD 1976, Clemson University.

KOONS, JANEL K., Program Coordinator, K-State Global Campus (2016). AAS 2004, Barton Community College; BS 2007; MS 2015, Kansas State University.

KOPFER, GINGER D., Extension Agent, 4-H, Geary County, Junction City (2001). BS 2001, Kansas State University.

KOPP, RICHARD F., Research Assistant of Forestry (1986). BS 1984, SUNY-College of Environmental Science and Forestry; MS 1986, Pennsylvania State University.

KOPPEL, KADRI, Associate Professor of Food, Nutrition, Dietetics and Health (2012). BSc 2003, MSc 2005, PhD 2011, Tallinn University of Technology.

KORENEK, CAMILLE T., Assistant Director, Housing and Dining Services and Instructor, Food, Nutrition, Dietetics and Health (1989). BS 1987, University of Southwest Louisiana; MAg 1989, Texas A&M University.

KORN, BRAD, Assistant Men's Basketball Coach at K-State Athletics (2016). BS 2004, Southern Illinois University; MS 2016 Missouri State University.

KORTEN, MARIANNE K., Professor of Mathematics (2000). MS 1984, PhD 1993, University of Buenos Aires.

KOUBA, JOANN M., Associate Professor of Animal Sciences and Industry (2001). BS 1993, Truman State University; MS 1995, Clemson University; PhD 2001, Texas A&M University.

KOUDELE, DAREN, Associate Athletics Director for Compliance at K-State Athletics (2012). BS 2001, Kansas State University; JD 2004, West Virginia University.

KOVAR, BRIAN R., Instructor of Management (1997). BA 1990, Washburn University; MBA 1995, Oklahoma State University.

KOVAR, STACY E., Professor of Accounting and Associate Dean for Academic Administration (1997). BBA 1990, Washburn University; MS 1992, PhD 1996, Oklahoma State University; CPA 1991, Kansas.

KOWALIK, RANDALL P., Media Production Specialist, Department of Communications and Agricultural Education (1995). BS 1991, University of Texas.

KRAINBILL, MILTON L., Instructor Emeritus, Extension Watershed Specialist, Northeast (1972). BS 1971, MS 1992, Kansas State University.

KRAMER, BRADLEY A., Professor and Head of Industrial and Manufacturing Systems Engineering and Director of Advanced Manufacturing Institute (1985). BS 1980, MS 1981, PhD 1985, Kansas State University.

KRAMER, KARL J., Adjunct Professor Emeritus of Biochemistry and Molecular Biophysics; Research Chemist, Grain Marketing Research Center (1974). BS 1964, Purdue University; PhD 1971, University of Arizona.

KRAMER, KIMBERLY W., Associate Professor of Architectural Engineering and Construction Science (2002). BS 1989, Kansas State University; MS 1999, University of Texas-Arlington; Professional Engineer.

KRAUSE, JOSEPH, Coordinator Emeritus of K-State Global Campus and Media Services, K-State Polytechnic Campus (1994). BS 1972, Marymount College; MS 1978, University of Kansas.

KREMER, EUGENE R., Professor Emeritus of Architecture (1973). BArch 1960, Rensselaer Polytechnic Institute; MArch 1967, University of California-Berkeley. Licensed Architect.

KREMER, KRISTEN, Assistant Professor of Social Work (2018). BS 2011, Saint Louis University; PhD 2018, Saint Louis University.

KREMER, S. LILLIAN, University Distinguished Professor Emeritus of English (1987). BA 1959, SUNY-Albany; MA 1964, City University of New York; PhD 1979, Kansas State University.

KREN, MARGO, Professor Emeritus of Art (1971). BS 1966, University of Wisconsin; MA 1969, Kansas State University; MFA 1979, University of Iowa.

KRIER, KELLI, Assistant Director of Football Recruiting at K-State Athletics (2014). BS 2009, Kansas State University.

KRIESEL, PHYLLIS M., Extension Agent Emeritus, 4-H, Cherokee County, Columbus (1981). BS 1979, University of Nebraska.

KROMM, DAVID E., Professor Emeritus of Geography and Geospatial Sciences (1967). BS 1960, Eastern Michigan University; MA 1964, PhD 1967, Michigan State University.

KRSTIC, VLADIMIR, Professor of Architecture/Director Kansas City Design Center (1988). Diploma 1979, University of Sarajevo, Yugoslavia; MEngArch 1985, Kyoto University, Japan.

KRUG, DONNA R., Extension Agent, Family and Consumer Sciences; Barton County, Great Bend (1989). BS 1977, Kansas State University.

KRUH, JANET J., Director Emeritus of Kansas Regents Network TELENET (1971). BA 1948, MA 1949, Washington University-St. Louis.

KRUH, ROBERT F., Dean Emeritus and Professor Emeritus of Chemistry (1967). AB 1948, PhD 1951, Washington University-St. Louis.

KRUMME, JOAN, Extension Agent, 4-H Youth Development; Reno County, South Hutchison (2012). BS 1979, Missouri Western State University; MS 2011, Northwest Missouri State University.

KRYSKO, MICHAEL, Associate Professor and Chair of History (2006). BA 1991, MA 1993, PhD 2001, Stony Brook University.

KUBINA, LINDSAY M., Access Advisor and Outreach Coordinator, Student Access Center (2016). AA 2000, AS 2000, Hutchison Community College; BA 2002, MS 2007, PhD 2014, Kansas State University.

KUECK, DON L., County Extension Director Emeritus, Agriculture and Natural Resources, Reno County, Hutchinson (1966). BS 1966, MS 1969, Kansas State University.

KUEHN, LOWELL D., Assistant Professor Emeritus; Extension Television Producer (1962). BS 1950, Iowa State University; MS 1974, Wichita State University.

KUESTER, DANIEL D., Assistant Professor, Director of Undergraduate Studies, and Trenary Chair of Economics (2004). BA 1994, Drury College; MA 1996, PhD 2000, University of Missouri-Columbia.

KUHLMAN, DENNIS K., CEO and Dean Emeritus of K-State Polytechnic Campus (1976). BS 1970, MS 1975, Kansas State University; PhD 1985, Oklahoma State University; Professional Engineer, 1981.

KUHN, CYNDI L., Instructor of Curriculum and Instruction (2008). BS 1975, Florida State University; MFA 1998, Fort Hays State University.

KUHN, WILLIAM B., Associate Professor of Electrical and Computer Engineering (1996). BS 1979, Virginia Tech; MS 1982, Georgia Tech; PhD 1995, Virginia Tech.

KUKANICH, S. BUTCH, Professor and Assistant Head of Anatomy and Physiology (2005). BS 1994, DVM 1997, Virginia Tech; PhD 2005, North Carolina State University. Diplomate 2004, American College of Veterinary Clinical Pharmacology.

KuKANICH, KATE, Associate Professor, Small Animal Internal Medicine (2008). DVM 2002, University of Minnesota; PhD 2008, University of Tennessee; Diplomate 2006, American College of Veterinary Internal Medicine.

KULAKOW, PETER A., Research Assistant Professor of Agronomy (1994). BS 1981, PhD 1986, University of California-Davis.

KULESZA, STACEY E., Associate Professor of Civil Engineering (2013). BS 2008, ME 2009, PhD 2013, Texas A&M University.

KUMARAPPAN, VINOD, Associate Professor of Physics (2007). BS 1999, University of Calicut, India; MS 1996, Indian Institute of Technology, Madras, India; PhD 2002, Tata Institute of Fundamental Research, India.

KUMARI, MEENA, Associate Professor of Anatomy and Physiology (2002). BSc 1975, MSc 1977, MPhil 1979, PhD 1985, Delhi University-India.

KUREY, MEGAN, Assistant Tennis Coach at K-State Athletics (2018), BS 2016, Georgia Institute of Technology.

KURTZ, DON L., Professor of Social Work and Interim Head of Sociology, (2008). BSW 1997, Washburn University; MSW 1999, University of Kansas; PhD 2006, Kansas State University.

KURTZ, VERNON RAY, Professor Emeritus of Education (1970). BS 1955, MS 1959, Fort Hays State University; EdD 1967, University of Nebraska.

KUTZ, CHRIS, Director of Social Media & Creative Services at K-State Athletics (2017). BA 2011, Kansas State University; MRCP 2017, Kansas State University.

KWON, JUNEHEE, Associate Professor of Hospitality Management (2008). BS 1991, Seoul National University; MS 1995, PhD 1999, Iowa State University.

KYLE, BENJAMIN GAYLE, Professor Emeritus of Chemical Engineering (1958). BS 1950, Georgia Tech; MS 1955, PhD 1958, University of Florida.

LACKEY, RYAN, Assistant Director of Athletics Communications at K-State Athletics (2007). BS 2007, Kansas State University.

LACROIX, BRICE, Assistant Professor of Geology (2015). PhD 2011, University of Barcelona, Spain and University Franche-Comté, France.

LADD, CARL RAY, Extension Agent, Agriculture and Natural Resources, Atchison County, Effingham (1978). BS 1978, Kansas State University.

LADD, DALE L., Extension Agent Emeritus, Agriculture and Natural Resources and Community Development, McPherson County, McPherson (1986). BS 1972, Kansas State University.

LAFLEUR, CAMILLE T., Research Associate in Family Studies and Human Services (2012). BA 1999, University of Kansas; MS 2003, Oklahoma Baptist University; PhD 2009, Kansas State University.

LAGREE, DANIELLE MYERS, Assistant Professor of Journalism and Mass Communications (2017). BS 2011, University of Central Missouri; MA 2013; University of Central Missouri; PhD 2017, University of Missouri-Columbia.

LaHAYE, SPENCER, Graphic Designer for Football at K-State Athletics (2017). BA 2017, North Central College.

LAIO, SHENVI, Visiting Assistant Professor of Philosophy (2012). BA 2005, Rutgers University; PhD 2011, University of Michigan.

LAIRD, SCOTT, Farm Management Economist (2011). BS 1986, Mid America Nazarene College; MS 1994, Iowa State University.

LAKE, CHRISTOPHER J., Assistant Professor of Psychological Sciences (2016). BA 2008, Central Washington University MA 2012, PhD 2014, Bowling Green State University.

LAKE, JEANINE, Senior Director of Information Services, K-State Alumni Association (1987).

LAMBERT, JOHN P., Associate Professor Emeritus; Director of Public Safety (1964). BS 1959, Lebanon Valley College; MPH 1963, University of Michigan; PhD 1975, Kansas State University.

LAMBERT, MICHAEL, Teaching Assistant Professor of Geology (2006). PhD 1992, University of Kansas.

LAMM, FREDDIE R., Research Engineer, Biological and Agricultural Engineering (1979). BS 1978, MS 1979, University of Missouri; PhD 1991, Kansas State University.

LAMSAL, BUDDHI, Adjunct Assistant Professor of Grain Science and Industry (2008). BS 1992, Tamlu Nadu Agricultural University, India; MS 1994, Asian Institute of Technology, Thailand; PhD 2004, University of Wisconsin-Madison.

LANGELO, RISA, Recruitment Coordinator, College of Business Administration. BA 2012, George Washington University; MS 2015, Kansas State University.

LANDER, NICK, Associate Director, Housing and Dining Services (2006). BS 2001, Kansas State University; MA 2003, Ball State University.

LANE, THOMAS, Vice President for Student Life and Dean of Students (2019). BS 1991, Illinois State University; M.S. Ed. 1995, Illinois State University; Ed.D. 2010, University of Missouri.

LANE, AARON, Computer Information Specialist at K-State Athletics (2013). BS 2012, Kansas State University.

LANE, JERALD L., Director of Facilities Services, Division of Facilities (1989). BS 1974, University of South Dakota.

LANE, JESSICA J., Assistant Professor of Special Education, Counseling, and Student Affairs (2008). BA 2002, Hastings College; PhD 2009, Kansas State University.

LANE, SUZANNE, Admissions Representative, K-State Global Campus (2018).

LANE, THOMAS, Vice President for Student Life and Dean of Students (2019). BS 1991, Illinois State University; M.S. Ed. 1995, Illinois State University; Ed.D. 2010, University of Missouri.

LANG, DENNIS, Teaching Assistant Professor Computer Science (2011). BS 1984, MEd 1986, PhD 2005, University of Missouri.

LANG, TERESA A., Extension Agent Emeritus, Family and Consumer Sciences, Sedgwick County, Wichita (1982). BS 1971, MS 1973, Kansas State University.

LANGSTON, ABIGAIL L., Assistant Professor of Geography and Geospatial Sciences (2016). BS 2006, University of Maryland; MS 2009, University of Florida; PhD 2014, University of Colorado.

LANHAM, DALE L., Extension Agent, Agriculture and Natural Resources, Woodson County, Yates Center (1974). BS 1973, Kansas State University.

LANHAM, K. EUGENE, County Extension Director Emeritus, Wyandotte County, Kansas City (1971). BS 1970, Kansas State University; MBA 1994, Baker University.

LANNOU, KENNY, Associate Athletic Director for Athletic Communications at K-State Athletics (2003). BA 2001, Baylor University.

LARA, AMY, Associate Professor Emeritus of Philosophy (2004). BA 1992, Humboldt State University; MA 1998, PhD 1999, University of California-Irvine.

LARGE, KAREN MCLAUGHLIN, Assistant Professor of Music, School of Music, Theatre, and Dance (2011). BM 2003, BS 2003, MM 2006, DM 2010, Florida State University.

LARIMER, ANNA L., Teaching Assistant Professor of Biology (2015). Ph.D. 2012, Indiana University.

LARMER, OSCAR VANCE, Professor Emeritus of Art (1950). BFA 1949, University of Kansas; MFA 1955, Wichita State University.

LARSON, CHRISTIAN R., Instructor of Kinesiology (2007). BS 1996, MS 1998, Kansas State University.

LARSON, KIM C., Extension Agent, Crop Production, River Valley District #4, Concordia (2013). BS 2011, College of Ozarks; MS 2013, Kansas State University.

LARSON, LOTTA C., Associate Professor of Curriculum and Instruction (2005). BA 1992, BS 1999, MS 2003, PhD 2007, Kansas State University.

LARSON, MARISA, Adjunct instructor of Journalsim and Mass Communcations BA 1993, MA 2016, Kansas State University.

LARSON, NANCY, Instructor of Engineering Extension (2000). BS 1988, Montana State University.

LARSON, ROBERT L., Coleman Chair of Production Medicine and Professor of Clinical Sciences/Executive Director, Veterinary Medical K-State Global Campus (2006). DVM 1987, PhD 1992, Kansas State University; Diplomate 1993, American College of Theriogenology; Diplomate 2000, American College of Animal Nutrition; Diplomate 2004, American College of Veterinary Preventative Medicine (Epidemiology).

LAST, LISA S., Director of Academic Services and Academic Advisor of the College of Architecture, Planning and Design (2010). BS 1990, Baker University; MS 2000, Fort Hays State University.

LATIMORE, MARION "MO", Assistant Football Coach/Interior Defensive Line at K-State Athletics (1994). BS 1976, Kansas State University.

LATTIMER, JAMES, Assistant Professor of Animal Sciences and Industry (2015). BS 2002, Kansas State University; MS 2004, Oklahoma State University; PhD 2012, Kansas State University.

LaTOUSH, ELIZABETH J., Extension Agent Emeritus, Family and Consumer Sciences, Scott County, Scott City (1986). BS 1962, University of Wyoming; MS 1969, University of Nebraska.

LATTA, SUSAN A., Extension Agent, Family and Consumer Sciences, Marshall County, Marysville (1992). BS 1991, BS 1992, University of Nebraska; MS 2004, Kansas State University.

LAUGHLIN, J. BRUCE, Director Emeritus, Career Planning and Placement Center (1962). BS 1950, University of Kansas; MS 1961, Kansas State University; JD 1967, Washburn Law School.

LAUNCHBAUGH, JOHN L., JR., Professor Emeritus; Range Research Ecologist, Agricultural Research Center-Hays (1955). AB 1947, MS 1948, Fort Hays State University; PhD 1952, Texas A&M University.

LAUNIUS, CHRISITIE, Associate Professor and Head of Gender, Women, and Sexuality Studies (2018). BA 1991, MA 1994, Illinois State University; MA 1996, University of Cincinnati, PhD 2003, University of Wisconsin Milwaukee.

LAURIE, DAVID R., Professor Emeritus of Education (1968). BS 1963, MS 1966, Kansas State University; EdD 1974, Oklahoma State University.

LAVERTY, JAMES T. (J.T.), Assistant Professor of Physics (2016). BS 2006, University of Toledo; MS 2008, PhD 2013, Michigan State University.

LAVIS, CATHERINE C., Associate Professor of Horticulture and Natural Resources (1991). BS Oklahoma State University; MS 1993, PhD 2005, Kansas State University.

LAW, ANDREA, Instructor, English Language Program (2013). BS 1991, Kansas State University; MA 1998, Texas Wesleyan University; MBA 2002, Kansas State University.

LAW, BRUCE M., Professor of Physics (1989). BS 1978, PhD 1985, Victoria University, New Zealand.

LAW, DENNIS L., Dean Emeritus of the College of Architecture, Planning and Design and Professor Emeritus of Landscape Architecture and Regional & Community Planning (1974). BS 1967, Texas Tech University; MLA 1976, Kansas State University; Professional Landscape Architect.

LAW-DELROSSO, OLIVIA, Instructor in Management. BS 2005, Kansas State University; MPA 2010, Kansas State University.

LE, ANH-THU, Research Associate Professor of Physics (2001). PhD 1994, Belarusian State University, Belarus.

LEACH, GLINDA B., Extension Agent Emeritus, Family and Consumer Sciences, Shawnee County, Topeka (1967). BS 1950, Southeast Missouri State College; MS 1961, MEd 1966, University of Missouri.

LEACH-KROUSE, GRAHAM, Associate Professor of Philosophy (2013). BA 2005, Amherst College; PhD 2013 University of Notre Dame.

LEADER-PICONE, CAMERON, Associate Professor of English (2011). BA 2003, Yale University; MA 2006, PhD 2009, Harvard University.

LEASE, KEVIN B., Associate Professor of Mechanical and Nuclear Engineering (1994). BS 1988, MS 1990, PhD 1994, University of Iowa.

LEATHERMAN, JOHN C., Professor of Agricultural Economics; Extension Agricultural Economist, Local Government Specialist (1995). BA 1980, University of Wisconsin-Milwaukee; MS 1985, University of Wisconsin-Stevens Point; PhD 1995, University of Wisconsin-Madison.

LEATHERMAN, NATHAN J., Video Production Specialist, Department of Communications and Agricultural Education (2019). BS 2018, Murray State University.

LECHTENBERG, KELLY F., Adjunct Faculty of Diagnostic Medicine/Pathobiology (1988). DVM 1987, PhD 1988, Kansas State University.

LEE, CHARLES D., Instructor of Animal Sciences and Industry, Extension Specialist (1995). BS 1975, MS 1988, Kansas State University.

LEE, JIN, Assistant Professor of Psychological Sciences (2016). BA 2006, MA 2008, Yonsei University; MA 2013, PhD 2014, University of Connecticut.

LEE, E. STANLEY, Professor Emeritus of Industrial and Manufacturing Systems Engineering (1966). BS 1953, Ordinance Engineering College, China; MS 1957, North Carolina State College; PhD 1962, Princeton University.

LEE, RONALD, Adjunct Professor of Physics (1967). BA 1961, Luther College; PhD 1967, Iowa State University.

LEE, SONNY T.M., Assistant Professor of Biology; Metagenomics, Bioinformatics, and Microbial Ecology.

LEE, STELLA YU-CHEN, Assistant Professor of Biology; Cell Biology (2011). BS 1991, Chinese Culture University, Taiwan; MS 1993, National Tsing Hua University, Taiwan; PhD 2000, Dalhousie University, Canada.

LEE, YOON-JIN, Associate Professor of Economics (2014). BA 1996, Yonsei University; MA 1999, Tokyo University; PhD 2006, Cornell University.

LEE, YU-LEE, Professor Emeritus of Mathematics (1967). BS 1955, MA 1959, National Taiwan University; PhD 1964, University of Oregon.

LEEDS, CLAUDIA, Office Specialist II, Department of Marketing. BA, 1975, University of Wisconsin-Parkside.

LeHEW, MELODY, Professor of Interior Design and Fashion Studies (1996). BS 1986, MS 1989, Ohio State University; PhD 1996, University of Tennessee.

LEHMAN, DAVID, Instructor of Marketing (2006). BS 1989, Kansas State University; MBA 2000, University of Missouri.

LEHNING, EMILY M., Assistant Vice President for Student Life and Director of New Student Services (2000). BS 1998, MS 2000, PhD 2008, Kansas State University.

LEI, SHUTING, Professor of Industrial and Manufacturing Systems Engineering (1999). BS 1987, MS 1989, Tsinghua University of China; PhD 1999, Purdue University.

LEIKAM, DALE F., Adjunct Associate Professor of Agronomy; Extension Specialist, Nutrient Management (2001). BS 1973, MS 1977, PhD 1980, Kansas State University.

LEITH, DAVID E., Regents Distinguished Professor Emeritus of Clinical Sciences (1987). BA 1953, Lehigh University; MD 1957, Harvard Medical School; Diplomate 1964, American Board of Anesthesiology.

LEITNAKER, GARY, Associate Vice President for Human Resources and Parking Services (1994). BS 1973, MS 1974, Emporia State University.

LEKIE, DANIEL S., County Extension Director, Johnson County, Olathe (2005). BS 1985, University of Wisconsin-Stevens Point; MS 1993, University of Kansas.

LELAND, STANLEY E., JR., Professor Emeritus of Parasitology, Department of Pathology and Microbiology; Research Pathologist (1967). BS 1949, MS 1950, University of Illinois; PhD 1953, Michigan State University.

LeMAIR, KATELYN, Assistant Sports Dietitian/Nutritionist at K-State Athletics (2018), BS 2015 South Dakota State University; MS 2017 University of Nebraska-Lincoln.

LeMAY, JENNEEN A., Instructor of Special Education, Counseling, and Student Affairs (2015). BS 1995, MS 2002, Kansas State University.

LENHERT, DONALD HOWARD, Professor Emeritus of Electrical and Computer Engineering (1966). BS 1956, Kansas State University; MS 1958, Syracuse University; PhD 1966, University of New Mexico; Professional Engineer, 1973.

LEON, DIANNE, Communications and Marketing Specialist, K-State Global Campus (2019). BA 2017, San Diego State University; M Ed 2018, Point Loma Nazarene University.

LESLIE, JOHN F., University Distinguished Professor of Plant Pathology (1984). BA 1975, University of Dallas; MS 1977, PhD 1979, University of Wisconsin-Madison.

LEUTHOLD, LARRY D., Professor Emeritus of Horticulture; Extension Horticulturist, Turfgrass and Home Floriculture (1966). BS 1959, MS 1966, Kansas State University.

LeVALLEY, GERALD E., JR., Extension Agent Emeritus, Agriculture and Natural Resources and 4-H, Sumner County, Wellington (1967). BS 1967, Oklahoma State University.

LeVALLEY, GREG, Director Emeritus, University Printing, Department of Communications and Agricultural Education (1995).

LEVIN, LORI M., Assistant Professor of Curriculum and Instruction (2009). BS 1993, Pennsylvania State University; MS 1995, University of Michigan; PhD 2000, Kansas State University.

LEVITT, RACHEL, Assistant Professor of Gender, Women, and Sexuality Studies (2017) BA 2006, MA 2008 California State University, Northridge; PhD 2018 University of New Mexico.

LEWIS, KATRINA M., Associate Professor of Interior Architecture and Product Design (2000). BIA 1998, MRCP 2001, Kansas State University.

LEY, STEPHEN, Instructor of Aviation (2013). BS 1988, Purdue University; MS 1994, Embry-Riddle Aeronautical University.

LHUILLIER, STACEY, Instructor in Finance. AA 1995, Johnson County Community College; BBA 1998, Pittsburg State University; MBA 2008, Pittsburg State University.

LI, JUN, Associate Professor of Chemistry (2007). BS 1987, Wuhan University; MS 1991, PhD 1995, Princeton University.

LI, LIGE, Associate Professor Emeritus of Mathematics (1986). BS 1964, Shanghai Normal University; MS 1983, PhD 1986, Tulane University.

LI, PING, Assistant Professor of Chemistry (2011). BS 1995, Hangzhou University; MS 1998, Shanghai Institute of Organic Chemistry; PhD 2004, Duke University.

LI, XIANGHONG, Adjunct Professor of Agricultural Economics (2006). BS 1995, MS 1998, China Agricultural University; PhD 2005, University of California-Davis.

LIANG, GEORGE H. L., Professor Emeritus of Agronomy; Cytogeneticist (1964). BS 1956, Taiwan Provincial College; MS 1961, University of Wyoming; PhD 1964, University of Wisconsin.

LIANG, (GRACE) JIA, Assistant Professor of Educational Leadership (2015). BA 1999, Hunan University-China; MS 2005, Marshall University; PhD 2014, University of Georgia.

LI, XIANNAN, Assistant Professor of Mathematics (2016). BS 2006, University of Waterloo; PhD 2011, Stanford University.

LIDDLE, DREW, Assistant Director of Football Recruiting/Offensive Quality Control at K-State Athletics (2017). BS 2014, Kansas State University.

LIEBSCH, ANDREW, Assistant Director of Video Services at K-State Athletics (2013). BS 2004, Kansas State University.

LILJA, NINA K., Professor of Agricultural Economics and Director of International Agricultural Programs (2008). BA 1987, World College West; MSc 1992, University of Illinois-Champaign-Urbana; PhD 1996, Purdue University.

LILLICH, JIM, Associate Professor of Anatomy and Physiology (2013). BS 1985, University of New Mexico; DVM 1991, Colorado State University; MS 1995, Ohio State University.

LILLICH, KATHY, Advisor of Political Science (2015). BS 2004, MA 2007, Kansas State University.

LILYHORN, BARBARA G., Extension Agent Emeritus, Family and Consumer Sciences/Youth Development Programs, Reno County, Hutchinson (1984). BS 1977, Kansas State University; MS 2008, University of Kansas.

LIN, CHII-DONG, University Distinguished Professor of Physics (1976). BA 1969, National Taiwan University, Taiwan; MS 1970, PhD 1974, University of Chicago.

LIN, DONG, Assistant Professor of Industrial and Manufacturing Systems Engineering (2015). BS 2004, Harbin Institute of Technology; MS 2007, Huazhong University of Science and Technology; MS 2009, University of Nebraska-Lincoln; PhD 2013, Purdue University.

LIN, JINGYU, Adjunct Professor of Physics (1992). BS 1982, SUNY-Oneonta; MS 1985, PhD 1989, Syracuse University.

LIN, ZHOUMENG, Assistant Professor of Anatomy and Physiology (2015). BMed 2009, Southern Medical University, Guangzhou, China; PhD 2013, University of Georgia.

LIN, ZONGZHU, Professor of Mathematics (1993). MS 1987, PhD 1989, University of Massachusetts.

LINCK, LISA L., Occupational Safety Manager, Environmental Health and Safety (2001). BS 2001, Kansas State University.

LIND, COLENE, Assistant Professor of Communication Studies (2014). BA 1993 Hasting College; MA 1998, Kansas State University; PhD 2013, University of Texas-Austin.

LINDEMUTH, JAMES T., Editor of K-Stater Magazine, K-State Alumni Association (1992). BA 1972, University of New York-Potsdam; MS 1977, Kansas State University.

LINDER, KATIE, Executive Director for Program Development, K-State Global Campus (2020). BA 2005, Whitworth University; MA 2007, Ohio State University; PhD 2011, Ohio State University.

LINDER, ROBERT D., University Distinguished Professor of History (1965). BS 1956, Emporia State University; MDiv, MRE 1958, Central Baptist Theological Seminary; MA 1960, PhD 1963, University of Iowa.

LINDHOLM, JOHN C., Professor Emeritus of Mechanical and Nuclear Engineering (1960). BS 1949, Kansas State University; MS 1957, University of Kansas; PhD 1961, Purdue University; Professional Engineer, 1954.

LINDQUIST, JAMES L., Assistant Director, Extension Field Operations. (1974). BS 1973, MS 1974, PhD 1987, Kansas State University.

LINDQUIST, JACK W., Graduate Project Director Emeritus of Kansas Agricultural and Rural Leadership Development (1981). BS 1980, Kansas State University.

LINDQUIST, LINDY R., Associate Extension Specialist Emeritus, 4-H Youth Development Programs (1973). BS 1973, Kansas State University.

LINDSEY, TRUMANUE, Director of Diversity and Multicultural Student Life (2018). BS 2006, M.Ed. 2010, University of Minnesota, Twin-Cities.

LINDSHIELD, BRIAN, Associate Professor of Food, Nutrition, Dietetics and Health (2008). AS 2001, Pratt Community College; BS 2003, Kansas State University; PhD 2008, University of Illinois at Urbana-Champaign.

LINNEMANN, TRAVIS L., Assistant Professor of Sociology (2019). BS 1997, Emporia State University; MS 2006, Kansas State University; PhD 2011, Kansas State University.

LINVILLE, MARK E., Associate Professor Accounting (2002). BS 1979, MBA 1984, University of Idaho; PhD 1995, University of Washington; CPA 1980, CMA 1982, CIA 1985.

LITTLE, CHRISTOPHER R., Professor of Plant Pathology (2007). BS 1996, University of Kentucky; PhD 2002, Texas A&M University.

LITTRELL, DAVID, University Distinguished Professor of Music, School of Music, Theatre, and Dance (1987). BM 1971, Kansas State University; MM 1972, DMA 1979, University of Texas.

LITTRELL, LAUREL, Professor, Strategic Planning and Assessment Librarian, K-State Libraries (1997). BA 1985, MA 1987, Kansas State University; MLS 1997, Emporia State University; Doctor of Music 1990, University of Missouri.

LIU, BIN, Associate Professor of Chemical Engineering (2013). BS 2003, Dalian University of Technology; PhD 2008, Colorado School of Mines.

LIU, SANZHEN, Associate Professor of Plant Pathology (2013). BS 1997, MS 2000, Xiamen University; PhD 2010, Iowa State University.

LIU, XUMING, Research Assistant Professor of Molecular Biology and Department of Entomology (1998). BS 1984, Hunan Agricultural University; MS 1989, China Agricultural University; PhD 2001, Kansas State University.

LIU, ZIFEI, Assistant Professor of Biological and Agricultural Engineering (2012). BS 1992, Nanjing University, China, MS 2005, University of Cincinnati, PhD, 2009, North Carolina State University.

LLEWELYN, RICHARD V., Extension Assistant, Department of Agricultural Economics (2006). BS 1984, MS 1988, PhD 1995, Kansas State University.

LOCKETT, LORENZA, Assistant Professor of Social Work (2008). BS 1994, Kansas State University; MSW 1999, Arizona State University.

LOCKLEAR, STEVEN, Teaching Assistant Professor of School of Integrated Studies (2017). AS 1998, Southern Arkansas University Tech, BS 2001, College of the Ozarks, MS 2007, University of Central Missouri.

LOGAN, BRAD, Research Associate Professor (1998). BA 1974, M.Philo 1981, PhD 1985, University of Kansas; MA 1977, University of Nevada-Reno.

LOGAN, CYNTHIA, Assistant Professor, Undergraduate and Community Services Librarian, K-State Libraries (1987). BS 1986, MS 1993, Kansas State University; MLS 2006, Emporia State University.

LOGAN, SHAY, Assistant Professor of Philosophy. PhD in Philosophy University of Minnesota 2015. MS in Mathematics, University of Minnesota 2013. MA in Philosophy, University of Minnesota 2013.

LOGAN, THOMAS D., Associate Professor Emeritus of Architectural Engineering and Construction Science (2000). BS 1977, Kansas State University; MS 2003, University of Kansas.

LOHMAN, KAROL L., Extension Agent, Agriculture and Natural Resources, Leavenworth, Lansing (2014). BS 1980, Kansas State University.

LOMAS, LYLE W., Professor and Head of Southeast Agricultural Research Center, Research Animal Scientist (1979). BS 1975, MS 1976, University of Missouri; PhD 1979, Michigan State University.

LONERAGAN, GUY, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2016). BVSc 1994, University of Sydney; MS 1998, PhD 2001, Colorado State University.

LONG, ANDREW G., Associate Professor of Political Science (2007). BA 1998, University of Nebraska-Lincoln; MS 2000, PhD 2004, Florida State University.

LONG, CHRISTOPHER, Extension Agent, Agriculture and Natural Resources, Walnut Creek District 2, Ness City (2009). BS 2003, Kansas State University.

LONG, JAMES H., Associate Professor Emeritus (1983). BS 1976, Missouri Southern State College; MS 1980, PhD 1981, University of Arkansas.

LONG, KAITLIN, Coordinator/Instructor of the Staley School of Leadership Studies (2016).

LONGMUIR, ANNE, Professor of English (2006). MA 1996, PhD 2003, University of Edinburgh.

LOOKHART, GEORGE, Adjunct Professor Emeritus of Grain Science and Industry (1982). BS 1968, Kearney State College; PhD 1973, University of Wyoming.

LOOMIS, DIANA, Director of Operations for Women's Volleyball and Tennis at K-State Athletics (1984). BS 2003, Manhattan Christian College.

LOPEZ, ESTEFANIA, Culinary Operations Manager ll/Registered Dietitian, Housing and Dining Services (2017). BS 2016, Kansas State University.

LORSON, MEGAN, Instructor of School of Integrated Studies (2015).

LOSCHKY, LESTER C., Professor of Psychological Sciences (2004). BFA 1986, Columbia College; MA 1989, University of Hawaii; PhD 2003, University of Illinois.

LOSINSKI, MICKEY L., Associate Professor of Special Education, Counseling, and Student Affairs (2013). BA 1995, Southern Oregon University; MFA 1997, Washington State University; PhD 2013, Clemson University.

LOUB, ARTHUR F., President Emeritus and Consultant, KSU Foundation (1979). BA 1952, Duke University.

LOUCKS, WILLIAM L., Professor Emeritus of Forestry; Tree Planting Program Leader (1967). BS 1963, Colorado State University; MS 1971, Kansas State University.

LOUGHARY, LYNN M., Extension Agent, Horticulture, Wyandotte County, Kansas City (2003). BS 1982, Ottawa University; MS 1983, Kansas State University.

LOUGHMILLER, KATIE, Instructor of Architectural Engineering and Construction Science (2013). BS 2001, Kansas State University.

LOVE, JUDITH, Assistant Professor Emeritus of Art (1970). AA 1961, Cottey College; BFA 1964, Kansas City Art Institute; MFA 1969, University of Nebraska.

LOVITT, SAMANTHA A., Program Administrator, K-State Global Campus UFM (2012). BA, 2003, University of Kansas; MS 2011, Kansas State University.

LOWE, PAUL R., Assistant Director of Pre-Award Services; Research and Sponsored Programs (1987). BS 1985, Eastern Illinois University.

LOWERY, CHRISTOPHER, Associate Head Men's Basketball Coach at K-State Athletics (2012). BS 1996, Southern Illinois University.

LU, MAX, Professor of Geography and Geospatial Science (1996). BS 1983, Hangzhou University of China; MA 1986, University of Science and Technology of China; PhD 1996, Indiana University.

LUBBERS, BRIAN, Associate Professor of Clinical Sciences, Food Animal Therapeutics Outreach (2019). BS 1997, University of Kansas; DVM 2002, Ph.D. 2009, Kansas State University; Diplomate 2011, American College of Veterinary Clinical Pharmacology.

LUCAS, MICHAEL S. P., Professor Emeritus of Electrical and Computer Engineering (1968). MS 1962, PhD 1964, Duke University.

LUDLUM, ANN, Extension Agent Emeritus, Family and Consumer Sciences, Southwind District 10, Fort Scott (1995). BS 1970, Pittsburg State University.

LUDWIG, KYLIE, Extension Agent, Family and Consumer Sciences, Wildcat District 14, Altamount (2008). BS 2002, Kansas State University.

LULLA, KAMLESH, Ancillary Professor of Geography (1992). BA 1970, MA 1972, PhD 1977, India; PhD 1983, Indiana State University.

LULY, SARA, Assistant Professor of German (2012). BA 2002, SUNY-Oswego; MA 2004, Michigan State University; PhD 2011, Ohio State University.

LUNDQUIST, MARVIN C., Assistant Professor Emeritus of Agronomy; Research Agronomist in Charge, Cornbelt Experimental Field-Powhattan, Agricultural Experiment Station (1951). BS 1950, MS 1952, Kansas State University.

LUNDEEN, MALEAH M., Assistant Director of Recruitment, K-State Global Campus (2013). BS 2012, MS 2013, Kansas State University.

LUNDEEN, STEPHEN R., Adjunct Professor of Physics (2001). BS 1969, Trinity College; AM 1970, PhD 1975, Harvard University.

LUPFER-NIELSEN, KATHRYN L., Extension Agent Emeritus, Family and Consumer Sciences, Post Rock District 1, Lincoln (1977). BA 1976, Sterling College; MS 1998, Kansas State University.

LUTTER, J. DYLAN, Clinical Assistant Professor, Large Animal Emergency (2014). BS 2005, South Dakota State University; MS 2014, Washington State University; DVM 2009, Kansas State University; Diplomate 2015, American College of Veterinary Surgeons.

LYLE, JOHANNA D., Instructor Emeritus of Accounting (1983). BA 1965, University of Kansas; MAcc 1983, Kansas State University; CPA 1983, Kansas-Certified; Government Financial Manager, 1995.

LYNN, QUINTEN, Psychologist, Counseling Services (2008). BA 2001, MA 2006, PhD 2009, Bowling Green State University.

LYNN-SHEROW, BONNIE, Associate Professor of History (1998). BA 1981, University of Windsor; MA 1991, Purdue University; MA 1992, PhD 1998, Northwestern University.

MA, WENJUN, Associate Professor of Diagnostic Medicine/Pathobiology (2011). BVSc 1996, Northeast Agricultural University, China; MS 1999, Chinese Academy of Agricultural Sciences; PhD 2003, Justus Liebig University, Germany.

MAASS, SARAH E., Extension Agent, 4-H, Central Kansas District 3, Salina (2004). BS 2001, Oklahoma State University; MS 2003, University of Florida.

MACDONALD, MAURICE MARCUS, Professor Emeritus of Family Studies and Human Services (2009). AA 1967, Modesto Junior College; AB 1969, University of California-Santa Cruz; AM 1971, PhD 1974, University of Michigan.

MACFADYEN, JENNIFER, Instructor of Food, Nutrition, Dietetics and Health (2015). BS 2011, Western Illinois University; MS 2014, Kansas State University.

MACFARLAND, CHARLOTTE, Associate Professor Emeritus of Theatre, School of Music, Theatre, and Dance (1978). BA 1968, MA 1969, University of Wisconsin.

MACFARLAND, DAVID T., Associate Professor Emeritus of Journalism and Mass Communications (1972). BA 1965, MA 1966, Stetson University; PhD 1972, University of Wisconsin.

MACHOR, JAMES L., Professor of English (1990). BA 1972, Ohio University; MA 1974, University of Idaho; PhD 1980, University of Illinois.

MACK, DIANE D., Instructor, Extension Specialist, 4-H Youth Development Programs, Northeast (1986). BS 1983, MS 1995, Kansas State University.

MACKAY, DAVID, Assistant Professor, School of Music, Theatre, and Dance (2015). B.F.A., 1990, University of British Columbia; M.F.A., 2011 Temple University.

MACRITCHIE, FINLAY, Professor Emeritus of Grain Science and Industry (1997). BS 1958, University of Australia; PhD 1962, University of Sydney.

MADAN, ANUJA, Assistant Professor of English (2016). BA 2003, MA 2005, MPhil 2008, University of Delhi; PhD 2016, University of Florida.

MADDUX, LARRY D., Professor Emeritus of Agronomy, Agronomist in Charge, Kansas River Valley Experimental Field (Topeka) (1975). BS 1965, MS 1967, Oklahoma State University; PhD 1973, University of Nebraska.

MADDY, PATSY, Extension Agent, 4-H Youth Development, Twin Creeks District 9, Norton (2012). BS 1979, Kansas State University.

MADSEN, DEBORA L., Professor Emeritus, Licensing and Metadata Librarian, K-State Libraries (1983). BA 1970, University of California-Los Angeles; MLS 1979, University of Arizona.

MAES, SUE C., Dean Emeritus of K-State Global Campus (1969). BS 1969, MS 1973, PhD 1998, Kansas State University.

MAGGARD, MARGARET H., Extension Agent Emeritus, Family and Consumer Sciences, Butler County, El Dorado (1963). BS 1963, Kansas State University.

MAGHIRANG, RONALDO G., Associate Dean for Research and Graduate Programs and Professor of Biological and Agricultural Engineering (1994). BS 1982, MS 1986, University of the Philippines; PhD 1992, Pennsylvania State University.

MAGINNIS, JOHN, Professor of Mathematics (1990). BS 1980, Massachusetts Institute of Technology; PhD 1987, Stanford University.

MAGNIN-BISSEL, GERALDINE C., Research Assistant Professor of Anatomy and Physiology (2017). BS 1989, MS 1991, Phd 1995, Université Louis Pasteur Strasbourg, France.

MAGYAR, PETER, Emeritus Professor of Architecture (2007). MArch and Urban Design 1967, DArch 1993, University of Budapest, Hungary.

MAHONEY, JONATHON, Professor of Philosophy (2004). BA, Fresno State University; PhD 2000, SUNY-Binghamton.

MAIER, DIRK E., Professor of Grain Science and Industry (2008). AS 1985, Grand Rapids Junior College; BS 1987, MS 1988, PhD 1992, Michigan State University.

MAILEY, EMILY L., Assistant Professor of Kinesiology (2012). BA 2005, Saint Olaf College; MS 2007, Ball State University; PhD 2012, University of Illinois-Urbana-Champaign.

MALDONADO, DIEGO, Professor of Mathematics (2006). MS 2002, National University of the Littoral, Argentina; MS 2004, PhD 2005, University of Kansas.

MALEK, KRISTIN, Assistant Professor of Hospitality Management (2015). BS 2008, Art Institute of Charlotte; MIHTM 2012, University of South Carolina; PhD 2015, University of Nevada.

MALEY, ALVIN E., Extension Agent Emeritus, Agriculture and Natural Resources, Lyon County, Emporia (1953). BS 1950, Kansas State University.

MILLÁAN, ISABEL, Assistant Professor of American Ethnic Studies (2014). BA 2004, University of California-Santa Barbara; MA 2007, San Francisco State University; PhD 2013, University of Michigan.

MALREDDY, PRADEEP, Instructor of Anatomy and Physiology (2013). BVSc, AH 2001, Angrau University-India; MS 2009, Kansas State University.

MAMEDOVA, LAMAN, Research Assistant Professor of Animal Sciences and Industry (2008). BS 1984, MS 1987, Baku State University; PhD 1994, Azerbaijan National Academy of Science.

MANEOTIS, SARINA M., Teaching Assistant Professor of Psychological Sciences (2020). BS 2008, Colorado State University; PhD 2014, Pennsylvania State University.

MANER, BRENT, Associate Professor of History (2002). BA 1992, Central College; MA 1993, Washington University; PhD 2001, University of Illinois at Urbana-Champaign.

MANGES, HARRY LEO, Professor Emeritus of Biological and Agricultural Engineering; Agricultural Experiment Station (1956). BS 1949, MS 1959, Kansas State University; PhD 1969, Oklahoma State University; Professional Engineer, 1960.

MANIGAT, CLODUALDO "ODY", Adjunct Faculty of Grain Science and Industry (2010). BS 1976, Adamson University, Philippines; MS 1984, University of the Philippines; PhD 1986, Kansas State University.

MANN, RAY H., Professor Emeritus; Area Extension Director (1956). BS 1951, Oklahoma State University; MS 1965, Kansas State University.

MANNELL, TERRENCE L., Extension Agent Emeritus, Horticulture, Ellis County, Hays (1978). BS 1973, Kansas State University; MS 1977, Ohio State University.

MANNEY, THOMAS R., Professor Emeritus of Physics (1971). BA 1958, Western Washington State College; PhD 1964, University of California.

MANNING, DAVID R., Research Assistant of Biochemistry (1979). BS 1979, Kansas State University.

MANNY, BRYAN L., Farm Management Economist (1988). BS 1983, Iowa State University; MS 1988, University of Missouri.

MARAVIN, YURII, Associate Professor of Physics (2005). BS 1995, Moscow Institute of Physics and Technology, Russia; PhD 2002, Southern Methodist University.

MARCUS, DANIEL C., Emeritus Professor of Anatomy and Physiology (1998). BS 1968, Antioch College; MS 1971, DSc 1976, Washington University-St. Louis.

MARKHAM, MELINDA, Associate Professor of Family Studies and Human Services (2009). BS 2003, Kansas State University; MS 2005, PhD 2010, University of Missouri.

MARKLEY, TARA J., Extension Agent, 4-H Youth Development, Johnson County, Olathe (2013). BS 1998, West Illinois University; MS 2001, Northern Illinois University.

MARLOW, DENVER, Director, Comparative Medicine Group; Courtesy Faculty Appointment, Diagnostic Medicine/Pathobiology (2011). BS 1974, DVM 1978, Kansas State University.

MARNEY, AMANDA S., District Extension Director, Wildcat District, Girard (2016). BS 1994, MS 2012, PhD 2015, University of Missouri.

MARR, CHARLES W., Professor Emeritus of Horticulture and Natural Resources; Extension Horticulturist, Vegetable Crops, Agricultural Experiment Station (1971). BS 1963, MS 1967, Southern Illinois University; PhD 1970, University of Tennessee.

MARSELINE, DEBRA, Instructor of School of Integrated Studies (2014). BA 1992, Bethany College; MSW 2000, Washburn University.

MARSH, HARRY D., Professor Emeritus of Journalism and Mass Communications (1980). BA 1949, Baylor University; MS 1957, Columbia University; PhD 1974, University of Texas.

MARSH, PAUL M., Adjunct Professor of Entomology, Systematics and Biological Control of Insects (1998). BS 1958, MS 1960, PhD 1964, University of California-Davis.

MARSHALL, JANE P., Instructor of Hospitality Management (2006). BS 1967, Kansas State University; MLA 2005, University of St. Thomas.

MARSHALL, JEREMY L., Associate Professor of Entomology, Integrative Behavioral Ecology (2006). BS 1994, Piedmont College; MS 1997, University of Mississippi; PhD 2000, University of Louisiana-Lafayette.

MARSON, LANDON, PE, Assistant Professor of Civil Engineering. BS-CE 2007, MBA 2008, University of Kentucky; MS-CE 2009, Texas A&M; PhD-CE & Environmental 2017, University of Illinois at Urbana-Champaign.

MARSTON, LINDA M., Digital Collections Coordinator, K-State Libraries (2005). BS 1975, California State University-Stanislaus; MS 1977, Oregon State University.

MARSTON, MARY, Program/Project Coordinator, College of Education, Curriuclum and Instruction (2019). BS; MS, Kansas State University.

MARSTON, RICHARD A., University Distinguished Professor Emeritus of Geography and Geospatial Sciences (2005). BA 1974, University of California-Los Angeles; MS 1976, PhD 1980, Oregon State University.

MARTENS, ROXANNE, Instructor of Family Studies and Human Services (2013). BS 2011, MS 2013, Kansas State University.

MARTIN, ASHLEY, Executive Director, University Marketing and Creative Services, Division of Communications and Marketing (2012). B.A. 2007, M.S. 2014, Kansas State University.

MARTIN, CHARLES R., Adjunct Assistant Professor of Biological and Agricultural Engineering (1985). BS 1958, Purdue University.

MARTIN, CHARLES W., Professor and Head of Geography and Geospatial Sciences (1989). AB 1982, Dartmouth College; MA 1985, PhD 1990, University of Kansas.

MARTIN, DARCHELLE, Events and Programs Coordinator, K-State Libraries (2011). BA 2005, Kansas State University; MLS 2007, Indiana University.

MARTIN, DAWNE, Instructor of Marketing; Assistant Dean for Diversity; Director, Center for Economic Education (1999). BS 1976, MS 1982, Colorado State University; PhD 1989, University of Colorado.

MARTIN, LISA, Extension Agent, Family and Consumer Sciences. EFNEP, Shawnee County, Topeka (1997). BS 1983, Washburn University; MS 2007, Kansas State University.

MARTIN, ROBERT KEITH, Extension Agent, Agriculture and Natural Resources, Wildcat District 14, Altamont (1993). BS 1982, Oklahoma State University.

MARTIN, T. JOE, Professor; Wheat Research Geneticist, Agricultural Research Center-Hays (1974). BS 1970, Pittsburg State University; MS 1971, Kansas State University; PhD 1974, Michigan State University.

MARTINEZ DIENTE, PABLO, Assistant Professor of Spanish (2015). BA 2001, Universidad de Valladolid; MA 2003, West Virginia University; PhD 2013, University of Iowa.

MARTINEZ MACHAIN, CARLA M., Assistant Professor of Political Science (2012). BA 2007, MA 2009, PhD 2012, Rice University.

MARTINEZ, TONNIE, Coordinator and Assistant Professor of Curriculum and Instruction (2004). BS 1983, MS 2000, PhD 2002, Kansas State University.

MARTINI, STEVE, Director, Recreational Services (1980). BA 1974, MA 1977, California State University-Chico.

MARTINIE, SHERRI L., Associate Professor of Curriculum and Instruction (2011). BS 1990, MS 1998, University of Kansas; PhD 2007 Kansas State University.

MARTINSON, JILL, Extension Agent, 4-H Youth Development, Dickinson County, Abilene (2007). BS 2000, Kansas State University.

MARZLUF, PHILLIP P., Professor of English (2003). BA 1991, Ohio State University; MA 1994, University of Nevada; PhD 2002, University of Oklahoma.

MASEBERG-TOMLINSON JASON, Director, Student Access Center (2016). BA 2000, Grand View College; MS 2003, Kansas State University, PhD 2019, Kansas State University.

MASEBERG-TOMLINSON, JO A., Program Administration Coordinator, K-State Global Campus (2013). BA 2001, Fort Hays State University; MA 2003, Kansas State University.

MASON, APRIL C., Provost and Senior Vice President; Professor of Food, Nutrition, Dietetics and Health (2010). BS 1977, Mount Union College; MS 1980, PhD 1984 Purdue University.

MASON, DIANE E., Clinical Professor, Anesthesiology (1999). BS 1976, DVM 1983, MS 1987, Ohio State University; PhD 1999, Kansas State University; Diplomate 1988, American College of Veterinary Anesthesiologists.

MASON, SARAH, Instructor of Accounting. MAcc 2015, Florida State University.

MASON, TERRY W., Associate Professor of Accounting (2015). BBA 2004, Harding University; MAcc 2011, PhD 2015, Florida State University.

MATHER, MARTHA E., Professor of Biology and Kansas Cooperative Fish and Wildlife Research Unit; Zoology (2010). BS 1978, Denison University; MS 1985, PhD 1990, Ohio State University.

MATHEWS, ALEXANDER P., Professor of Civil Engineering (1979). BS 1966, University of Madras-India; MS 1968, University of Rhode Island-Kingston; PhD 1975, University of Michigan-Ann Arbor; Professional Engineer, 1977.

MATLOCK, WENDY A., Associate Professor of English (2008). BA 1995, Northwestern University; MA 1997, University of Wyoming; PhD 2003, Ohio State University.

MATTHEWS, GEORGE W., Instructor/Theatre Scene Shop Supervisor, School of Music, Theatre, and Dance (2007). BA 2003, Trinity University.

MATTHEWS, JOEL E., Instructor of School of Integrated Studies (2002). BA 1988, Nebraska Wesleyan University; MS 1990, Emporia State University.

MATTHEWS, JOHN CARTER, Professor Emeritus of Chemical Engineering (1962). BS 1959, DSc 1965, Washington University.

MATTHEWS, WENDY, Assistant Director and Senior Coordinator of Special Programs/Sponsored Students (2013). BES 1983, Saint Cloud State University; MS 1989, Kansas State University.

MATZKE, SUAN, Senior Administrative Assistant (2014). BA 2002, Kansas State University.

MAU, PHYLICA D., Graphic Designer, Department of Communications and Agricultural Education (2015). BA 2009, Briar Cliff University.

MAUPIN, JAYME, Program Manager, Career Development, College of Business Administration. BSBA 2012, Kansas State University; MBA 2014, Kansas State University.

MAXSON, MEGAN S., Extension Agent, Family and Consumer Sciences, Harper County, Anthony (2011). BS 2008, Oklahoma State University.

MAXWELL, STEVEN PATRICK, Associate Professor of Music, School of Music, Theatre, and Dance (2008). BME 2000, Iowa State University; MM 2002, Kansas State University; DMA 2006, University of Missouri-Kansas City.

MAXWELL, THOMAS M., Extension Agent, Agriculture and Natural Resources, Central Kansas District 3, Salina (1981). BS 1978, MS 1980, Kansas State University.

MAYER, KARALINE, Extension Agent, Agriculture and Natural Resources, Wabaunsee County, Alma (2008). BS 2005, Kansas State University; MS 2007, University of Nebraska-Lincoln.

MAZIN, MIKHAIL, Assistant Professor of Mathematics (2015). MSc 2004, Moscow State University; PhD 2010, University of Toronto.

McADOO, ROBERT STANDISH, Associate Specialist Emeritus; Extension PRIDE Program Coordinator (1989). BS 1967, Emporia State University; MS 1970, Kansas State University.

McCARTY, KEVIN, Director of Digital Media/Internet Services at K-State Athletics (2017). BS 2008 Kansas State University; MS 2010, Illinois State University.

McCARTY, TRINA S., Instructional Designer, K-State Global Campus (1990). BS 1990, BS 2011, Kansas State University.

McCLOSKEY, **BENJAMIN,** Instructor of Latin (2013). BA 2002, University of Missouri-Columbia; MA 2008, PhD 2012, Ohio State University.

McCLURE, GREGORY W., Extension Agent, Agriculture and Natural Resources, Riley County, Manhattan (1986). BS 1980, Kansas State University.

McCONNELL, JOLENE, Instructor, English Language Program (2012). BA 2001, Point Park University; MA 2006, Ball State University.

McCORNACK, BRIAN P., Professor of Entomology; Field Crops IPM (2008). BS 1998, Luther College; MS 2002, Michigan State University; PhD 2007, University of Minnesota.

McCOWAN, JOSHUA, Senior Associate Athletics Director for Development at K-State Athletics (2013). BS 2009, MS 2011, Kansas State University.

McCREA, HEATHER, Associate Professor of History (2006). BA 1992, University of Kansas; MA 1994, PhD 2002, Stony Brook University.

MCCULLOCH, EVE, Teaching Associate Professor and Advisor of Biology (2014). PhD 2012, Louisiana State University.

McCULLOH, JOHN M., Professor Emeritus of History (1973). BA 1965, Kansas University; MA 1966, PhD 1971, University of California-Berkeley.

McCULLOUGH, ELIZABETH, Professor Emeritus of Apparel, Textiles, and Interior Design; Co-Director, Institute for Environmental Research (1978). BS 1974, Ohio State University; MS 1975, PhD 1978, University of Tennessee.

McDANIEL, JENNIFER, Extension Agent, 4-H Youth Development/Community Development, Rolling Prairie District 8, Sedan (2013), BS 2006, Oklahoma State University.

McDANIEL, LAUREN E., Instructor of Kinesiology (2008). BS 2006, MS 2008, Kansas State University.

MCDONALD, JOCELYN A., Associate Professor of Biology; Molecular, Cellular and Developmental Genetics (2015). BS 1993, Marquette University; PhD 1998, University of Illinois-Urbana-Champaign.

McDONNELL, TIMOTHY E., Community Forestry Coordinator and District Community Forester, SC and SE (1999). BS 1981, Kansas State University.

MCDOWELL, STEPHANIE, Assistant Director of Fiscal Services, K-State Polytechnic Campus (2013) BS 2008, Kansas State University.

McELHANEY, EMMA, Program Assistant, K-State Global Campus (2017). BS 2014 Kansas State University.

McELROY, MARY A., Professor of Kinesiology (1978). BA 1974, Queens College, New York; MA 1975, Ohio State University; PhD 1978, University of Maryland.

McELWAIN, SCOTT, Director K-State Gardens, Horticulture and Natural Resources (1997). BA 1994, Johnson County Community College; BS 1996, Kansas State University.

McEWAN, KATHY S., Extension Agent, Family and Consumer Sciences, Southwind District 10, Iola (2004). BS 1987, Southwest Baptist University.

McFALL, KENDALL L., Adjunct Instructor of Grain Science and Industry (2001). BS 1984, Kansas State University.

McFARLAND, MARCIA R., Professor Emeritus, Extension Specialist, 4-H Youth Development Programs (1980). BS 1975, MS 1977, Wichita State University.

McFARLAND, REBECCA S., Extension Agent, Family and Consumer Sciences, Frontier District 11, Ottawa (1996). BS 1994, Kansas State University.

McGAUGHEY, MOLLY A., Director of Admissions (2006). BS 1995, Graduate Certificate 2010, Kansas State University.

McGAUGHEY, WILLIAM H., Adjunct Professor Emeritus of Entomology; Research Entomologist, USDA ARS (1973). BS 1963, Texas Tech University; MS 1965, PhD 1967, Iowa State University.

McGILL, JODIE, Assistant Professor of Diagnostic Medicine/Pathobiology (2014). BS 2005, Iowa State University; MS 2007, PhD 2010, University of Iowa.

McGLYNN, MICHAEL J., Associate Professor of Architecture (2007). BEnvDesign 1990, Miami University of Ohio; MArch 1998, University of Oregon. Licensed Architect.

McGRATH, DIANE, Professor Emeritus of Education (1987). AB 1963, Oberlin College; MS 1969, MEd 1983, PhD 1973, University of Illinois.

McGREGOR, DOUGLAS S., University Distinguished Professor of Mechanical and Nuclear Engineering (2002). BS 1985, MS 1989, Texas A&M University; MS 1992, PhD 1993, University of Michigan.

McGREGOR, JANICE M., Assistant Professor of German and Language Program Coordinator (2013). BA 2004, Wilfrid Laurier University, Canada; MA 2006, University of Waterloo, Canada; PhD 2012, Pennsylvania State University.

McHANEY, ROGER W., Professor of Management (1995). BS 1984, MBA 1989 Lake Superior State. University; PhD 1995, University of Arkansas.

McINTOSH, MICHAEL, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2011). BS 1987, Pennsylvania State University; PhD 1995, Medical College of Pennsylvania and Hahnemann University.

McKEEMAN, LEAH, Assistant Professor of Curriculum and Instruction (2009). BS 2001, PhD 2008, Kansas State University; MA 2003, Baker University.

McKERNAN, MATTHEW R., Extension Agent, Horticulture, Sedgwick County, Wichita (2015). BS 2015, Kansas State University.

McKINNEY, JANA R., Extension Agent, Family and Consumer Sciences, McPherson County, McPherson (1985). BS 1985, University of Idaho.

McKINNEY, LELAND J., Associate Professor of Grain Science and Industry (2005). BS 1998, MS 2000, Kansas State University; PhD 2005, Oklahoma State University.

McLAUCHLAN, KENDRA K., Professor of Geography and Geospatial Sciences (2007). BA Carleton College; MS 2000, PhD 2004, University of Minnesota.

McLAURIN, EMILY J., Assistant Professor of Chemistry (2013). BS 2005, University of California-San Diego; PhD 2011, Massachusetts Institute of Technology.

McMAHON, REBECCA, Extension Agent, Horticulture, Sedgwick County, Wichita (2007). BS 2006, Iowa State University.

McMURPHY, ROSE M., Professor of Clinical Sciences, Anesthesiology (1989). DVM 1982, Washington State University; Diplomate 1989, American College of Veterinary Anesthesiology; Diplomate 2006, American College of Veterinary Emergency Medicine and Critical Care.

McNALLY, JANAE, Extension Agent, 4-H Youth Development, Frontier District 11, Ottawa (2007). BS 2005, Kansas State University.

McNALLY, PATRICIA A., Professor Emeritus of Extension (1993). BS 1970, Colorado State University; MS 1980, EdD 1989, Oklahoma State University.

McNAMARA, AZIAH, Instructor, English Language Program (2008). B.Ed. 2000, Malaysia-UK; MA 2007, Northeastern Illinois University.

McNAMARA, MICHAEL C., Professor Emeritus of Architecture (1988). BArch 1969, North Carolina State University; MA 1974, University of California-Los Angeles. Licensed Architect.

MCNEIL, WALTER J., Assistant Professor of Mechanical and Nuclear Engineering (2015). BS 2004, PhD 2010, Kansas State University.

McNUTT, J. D., Area Extension Director, Southeast (1995). BS 1976, Oklahoma State University; MED 1978, East Central University-Oklahoma; EdD 1986, Oklahoma State University.

McPHETER, CHRISTINE J., Extension Agent, Family and Consumer Sciences, Meade County, Meade (2002). BS 1975, Kansas State University.

McREYNOLDS, KENNETH L., Area Extension Economist Emeritus (1949). BS 1950, MS 1954, Kansas State University.

McVEY, D. SCOTT, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2011). BS 1977, DVM 1980, University of Tennessee; PhD 1986, Texas A&M University; Diplomate 1989, American College of Veterinary Immunology; Diplomate 1990, American College of Veterinary Bacteriology/Mycology.

McWILLIAMS, DONALD D., Extension Agent Emeritus, Agriculture and Natural Resources, Wallace County, Sharon Springs (1956). BS 1948, Kansas State University.

MEDEIROS, DENIS M., Associate Dean of Human Ecology and Professor Emeritus of Food, Nutrition, Dietetics and Health (2000). BS 1974, Central Connecticut State University; MS 1976, Illinois State University; PhD 1981, Clemson University.

MEEKINS, JESSICA M., Associate Professor of Clinical Sciences, Ophthalmology (2012). BS 2004, Spalding University; DVM 2008, Ohio State University; MS 2012, Purdue University; Diplomate 2012, American College of Veterinary Ophthalmologists.

MEERPOHL, CANDIS, Extension Agent, 4-H Youth Development, Shawnee County, Topeka (2012). BS 2006, University of Kansas.

MEIREIS, CLIFFORD L., Extension Agent Emeritus, Agriculture and Natural Resources, Norton County, Norton (1955). BS 1953, Kansas State University; MEd 1962, Colorado State University.

MEISNER, ROBERT G., Professor Emeritus of Education (1969). BS 1948, Oklahoma A&M College; MS 1957, Oklahoma State. University; EdD 1967, University of California-Berkeley.

MEISENHEIMER, AARON, Farm Management Economist (2016). BS 2012, Southwest Baptist University.

MEITLER, REBEKAH A., Instructor of Family Studies and Human Services (2012). BS 2007, MS 2011, Kansas State University.

MELANDER, LISA, Associate Professor of Sociology (2010). BA 2000, Cornell College; MA 2007, PhD 2010, University of Nebraska-Lincoln.

MELGARES, PATRICK J., Public Information Officer, Department of Communications and Agricultural Education (1998). BA 1989, Adams State College; MS 2006, Kansas State University.

MELHEM, HANI G., Professor of Civil Engineering (1991). BS 1981, Cairo University; MS 1987, PhD 1989, University of Pittsburg; Professional Engineer.

MELOAN, CLIFTON E., Professor Emeritus of Chemistry (1959). BS 1953, Iowa State University; PhD 1959, Purdue University.

MENDONCA, LUIS, Associate Professor of Animal Sciences and Industry; State Dairy Extension Specialist (2013). DVM 2006, Universidade Estadual de Maringa; MS 2012, University of Minnesota.

MENGARELLI, JIMMIE J., Extension Agent Emeritus, 4-H, Wildcat District, Girard (1985). BS 1976, Kansas State University.

MERCER, DEBBIE K., Professor and Dean of College of Education (2010). BS 1984, BS 1988, MS 1996, PhD 1999, Kansas State University.

MEREDITH, MICHAEL "COREY", Assistant Strength and Conditioning Coach at K-State Athletics (2010). BA 2000, Bethany College; MS 2008, University of Kansas.

MEREDITH, WILLIAM H., Associate Dean Emeritus of Human Ecology and Professor Emeritus of Family Studies and Human Services (1999). BS 1971, MS 1971, Kansas State University; MSW 1979, PhD 1983, University of Nebraska.

MERITT, NICOLE., Instructor of Special Education, Counseling and Student Affairs (2019). BS 2007, MS 2009, Kansas State University.

MERKLIN, JOSEPH F., Professor Emeritus of Mechanical and Nuclear Engineering (1967). BS 1957, Manhattan College of New York; PhD 1963, University of Minnesota.

MERRICK, THERESA, Instructor of English (2014). BA 2008, Redeemer University College; MA 2009, University of Waterloo, Ontario.

MERRIMAN, SCHARON V., Extension Agent Emeritus, Family and Consumer Sciences, Reno County, Hutchinson (1971). BS 1970, MS 1977, Kansas State University.

MERTZ, THOMAS, Associate Professor, School of Integrated Studies (2002). BA 1977, MS 1981, University of Kansas.

MEYER, SALLY K., Instructor of Family Studies and Human Studies (1989). BA 1986, MS 1989, South Dakota State University.

MICHAUD, J. P., Associate Professor of Entomology, Research Entomologist, Integrated Pest Management/Insect Ecology, Agricultural Research Center-Hays (2002). BS 1977, McGill University; MS 1990, PhD 1996, Simon Fraser University.

MICHEL, KRISTIN, Associate Professor of Biology; Vector Biology, Agricultural Experiment Station (2007). MS 1995, Christian Albrechts University, Germany; PhD 2002, University of California-Riverside.

MICHIE, ARUNA NAYYAR, Associate Professor Emeritus of Political Science (1976). AB 1966, Smith College; MA 1969, PhD 1975, Michigan State University.

MIDDENDORF, GERAD, Professor of Sociology, Anthropology and Social Work (2001). BS 1987, Southern Illinois State University; MA 1992, Ohio University; PhD 2001, Michigan State University.

MIESNER, MATT, Clinical Professor, Agricultural Practices (2006). DVM 1999, Washington State University; MS 2003, Ohio State University; Diplomate 2005, American College of Veterinary Internal Medicine.

MILLER, CHAD T., Associate Professor of Horticulture and Natural Resources - Ornamental Horticulture (2011). BS 2002, University of Wisconsin-River Falls; MS 2005, PhD 2010, Cornell University.

MILLER, CHARLENE M., Extension Agent, 4-H Youth Development, Butler County, El Dorado (2013). BS 2010, Friends University.

MILLER, CHARLES L., JR., Extension Agent Emeritus, Central Kansas District 3 (1985). BS 1969, MS 1981, Kansas State University.

MILLER, CHIQUITA, Extension Agent, Family and Consumer Sciences, Wyandotte County, Kansas City (2000). BS 1996, MS 1999, PhD 2015, Kansas State University.

MILLER, CHRISTOPHER L., Instructor of Grain Science and Industry (2009). BS 2003, MS 2008, Kansas State University

MILLER, CODY, District Extension Agent, Agriculture and Natural Resources, Phillips-Rooks District 5, Phillipsburg (2008). BS 2007, Kansas State University.

MILLER, FORREST R., Professor Emeritus of Mathematics (1968). BS 1962, University of Oklahoma; MA 1965, PhD 1968, University of Massachusetts.

MILLER, JILL A., Assistant, Network Engineer, Biosecurity Research Institute (1999).

MILLER, JUDITH L., Professor Emeritus of Hospitality Management (1989). BS 1967, Ouachita Baptist University; MBA 1984, Southern Illinois University; PhD 1986, Texas Women's University.

MILLER, KEITH B., Research Assistant Professor of Geology (1995). BA 1978, Franklin and Marshall College; MA 1982, SUNY-Binghamton; PhD 1988, University of Rochester.

MILLER, KENT B., Farm Management Economist Emeritus (1983). BS 1980, Oklahoma State University.

MILLER REGAN, REBECCA, Assistant Professor of Grain Science and Industry (2006). BS 1990, MS 1992, PhD 1996, Kansas State University.

MILLER, RUTH D., Associate Professor of Electrical and Computer Engineering (1995). BS 1984, Lafayette College; MS 1985, PhD 1990, University of Rochester.

MILLIKEN, GEORGE A., Professor Emeritus of Statistics (1969). BS 1965, MS 1968, PhD 1969, Colorado State University.

MILOSTAN, JOE, Director of Education Abroad (2009). BA 2003, Michigan State University; MA 2009, SIT Graduate Institute.

MILTON, ROSS, Assistant Professor of Economics (2016). BA 2008, Macalester College; MA 2014, PhD 2016, Conell University.

MINICK, DANIEL J., Instructor of Management (2012). BA 1987, Kansas State University; MBA 1997, Kansas Wesleyan University.

MINIHAN, DANA, Instructor of Agronomy (2001). BS 1998, Manhattan Christian College; MS 2000, Kansas State University.

MINOCHA, HARISH C., Professor Emeritus of Virology, Department of Diagnostic Medicine/Pathobiology; Research Virologist (1969). BVSc 1955, Punjab University, India; MS 1963, PhD 1967, Kansas State University.

MINSON, STACIE L., Instructor, Extension Watershed Specialist, Northwest (1996). BS 1995, Kansas State University.

MINTON, J. ERNEST, Dean and Director of Kansas State Research and Extension (2010). BS 1977, Western Kentucky University; MS 1980, PhD 1983, Oklahoma State University.

MIRAFZAL, BEHROOZ, Associate Professor of Electrical and Computer Engineering (2011). BSc 1994, Isfahan University of Technology; MSc 1997, University of Mazandaran; PhD 2005, Marquette University.

MIRT, LINDA J., Extension Agent Emeritus, Family and Consumer Sciences and 4-H, Sumner County, Wellington (1976). BS 1972, Kansas State University; MEd 1975, Pennsylvania State University.

MISRA, SAURAV, Adjunct Associate Professor of Biochemistry and Molecular Biophysics (2015) BS 1991, Ohio University-Athens, PhD 1997, University of Illinois-Urbana Champaign.

MITTIE, JEFFREY, Head Women's Basketball Coach at K-State Athletics (2014). BS 1989, Missouri Western State University; MS 1992, United States Sports Academy.

MITZNER, TRESSIE M., Extension Agent, Agriculture and Natural Resources, Graham County, Hill City (2014). BS 2007, Fort Hays State University.

MIXER, VIRGINIA K., Assistant to the Dean Emeritus of Education (1975). BS Ed. 1969, Pittsburg State University; MS 1975, Kansas State University.

MIZUNO, MASAAKI, Professor of Computer Science (1987). BS 1978, Keio University, Japan; MS 1982, Pennsylvania State University; PhD 1987, Iowa State University.

MOEDER, LAWRENCE E., Assistant Vice President for Student Life (1977). BS 1977, MS 1980, Kansas State University.

MOLINA, ADRIANA, Visiting Assistant Professor of Architecture (2015). BArch 2007, Kansas State University; BHistoric Restoration 2014, Escuela Tania de Madrid.

MOLINE, JAY, Director of Social Media/Digital Engagement at K-State Athletics (2011). BS 2007, Missouri State University.

MOLT, MARY, Associate Director, Housing and Dining Services and Assistant Professor, Food, Nutrition, Dietetics, Health and Hospitality Management (1973). BS 1971, University of Nebraska-Kearney; MS 1977, Oklahoma State University; PhD 1995, Kansas State University.

MONACO, GREGORY E., Emeritus Research Associate Professor, Psychological Sciences (2004). BSS 1973, Northwestern University; MS 1976, PhD 1978, Kansas State University.

MONTEIRO-RIVIERE, NANCY, Emeritus, Regents Distinguished Research Scholar, University Distinguished Professor of Anatomy and Physiology, Director of Nanotechnology Innovation Center of Kansas State; MS, PhD 1981, Purdue University.

MONTELONE, BETH A., Associate Dean of Arts and Sciences, and Professor of Biology (1988). BS 1976, Rensselaer Polytechnic Institute; MS 1978, PhD 1982, University of Rochester.

MOODIE, KEVIN, Academic Advisor for the College of Business Administration. BS 2009, Davenport University; MS 2015, Grand Valley State University.

MOODY, KILEY, (2010). BA 2007, Fort Hays State University; MS 2010, University of Central Missouri.

MOODY, LAUREL, Assistant Dean and Assistant Director of the Office of Student Life (2010). BA 2009, Kansas State University; MS 2013, Kansas State University.

MOORE, MARY S., Medical Administrator, Lafene Health Center (1998). BS 1996, Kansas State University.

MOORE, MICHAEL, Operations Manager of Grain Science and Industry (2011). BS 1975, Southwestern State University Minnesota.

MOORE, SUSAN, Clinical Assistant Professor of Diagnostic Medicine/Pathobiology (2015). BS 1981, Kansas State University; 1981 Certificate in Medical Technology, St. Margaret Health Center; Certificate Specialist in Blood Banking 1989; MS 2005, PhD 2015, Kansas State University.

MOORE, TRISHA L., Assistant Professor of Biological and Agricultural Engineering (2015). BS 2006, MS 2008, Kansas State University, PhD 2011, North Carolina State University.

MOORE, WILLIAM E., Professor Emeritus of Pathology and Microbiology, Research Clinical Pathologist (1968). BS 1956, DVM 1958, Cornell University; PhD 1968, University of Minnesota; Diplomate 1972, American College of Veterinary Pathologists.

MORCOS, MEDHAT M., Distinguished Teaching Scholar, Professor of Electrical and Computer Engineering (1986). BS 1966, Military Academy; BS 1966, MS 1978, Cairo University; PhD 1984, University of Waterloo.

MORCOS, SHARON K., Instructor Emeritus of Food, Nutrition, Dietetics and Health (1983). BS 1977, Texas Tech University; MS 1984, Kansas State University.

MORELAND, RACHEL S., Professor Emeritus, K-State Libraries (1971). BS 1955, University of Arizona; MS 1970, Kansas State University; MLS 1988, University of Missouri.

MORENO, MARIA, Assistant Director of Ticketing Services at K-State Athletics (2018). BA 2009, University of Florida; MS 2012, Texas A & M.

MORGAN, DAN, Instructor, English Language Program (2011). BA 2007, Brigham Young University; MA 2011, University of Texas El Paso.

MORGAN, JILL A., Extension Agent, Family and Consumer Sciences, Rolling Prairie District 8, Howard (2013). BS 2012, Wichita State University.

MORGAN, KIMBERLY A., Instructor of Social Work (1992). BA 1976, Kansas State University; MSW 1987, The University of Kansas.

MORGAN, STEVE, Project Manager Emeritus, Department of Communications and Agricultural Education (1973). BA 1965, University of Omaha; MA 1968, University of Nebraska.

MORGAN, THEODORE, Associate Professor of Biology; Ecological Genomics (2006). BS 1997, University of Arizona; PhD 2002, Washington State University.

MORO, NIKHIL, Associate Professor of Journalism and Mass Communications (2018). BA 1995, MA 1997, University of Mysore; PhD 2006, Ohio State University.

MORRIS, JEFFERY B., Vice President of Communications and Marketing (2010). BS 1980, Kansas State University; MS 2000, University of Kansas.

MORRIS, JOHN J., Associate Professor of Accounting (2007). BS 1976, University of South Dakota; CPA 1978, South Dakota; MBA 2003, PhD 2007, Kent State University.

MORRIS, PETER, Director Emeritus of Fiscal Affairs/Grants and Contracts/Information Systems, K-State Polytechnic Campus (1990). BS 1973, ME 1989, Wichita State University.

MORROW, NANCY A., Associate Professor of Art (2002). BFA 1983, MFA 1991, University of Washington.

MORSE, JULIA, Associate Professor of School of Integrated Studies (2003). BS 1993, University of Tennessee-Knoxville; MS 1996, Auburn University.

MOSER, HERBERT CHARLES, Professor Emeritus of Chemistry (1957). BA 1952, San Jose State University; PhD 1957, Iowa State University.

MOSER, LISA, Instructor, Department of Communications and Agricultural Education (2002). BS 1991, Michigan State University.

MOSHER, ROBIN A., Instructor of English (1983). BA 1975 Washburn University; MA 1983, Kansas State University.

MOSIER, DEREK A., Professor of Diagnostic Medicine/Pathobiology (1990). BS 1976, DVM 1978, Kansas State University; MS 1982, PhD 1985, Oklahoma State University; Diplomate 1986, American College of Veterinary Pathologists.

MOSIER, NANCY K., Associate Dean Emeritus, Assistant Professor Emeritus for School of Integrated Studies (1981). BA 1967, Wichita State University; MS 1987, Kansas State University.

MOSLEY, DION, Admissions Representative, K-State Polytechnic (2017), 2008 BA, MA 2011, Clark Atlanta University.

MOSTELLER, ROSS E., Extension Agent, 4-H Youth Development, Meadowlark District 7, Seneca (2002). BS 2001, Kansas State University.

MOXLEY, VIRGINIA M., Dean Emeritus of Human Ecology and Professor Emeritus of Family Studies and Human Services (1985). BS 1968, MS 1969, PhD 1977, Kansas State University.

MROZEK, DONALD J., Professor of History (1972). AB 1966, Georgetown University; MA 1968, PhD 1972, Rutgers University.

MUDRACK, PETER, Associate Professor of Management (1999). BCommerce 1979, MBA 1981, University of Windsor, Canada; PhD 1991, University of Toronto, Canada.

MUELLER, DELBERT D., Associate Professor Emeritus of Biochemistry and Molecular Biophysics; (1968). BS 1962, PhD 1966, University of Oklahoma.

MUENZENBERGER, THOMAS B., Associate Professor Emeritus of Mathematics (1973). BS 1965, MS 1967, University of Florida, PhD 1972, University of Wyoming.

MUIR, ANNA E., Extension Agent, Family and Consumer Sciences, Phillips-Rooks District 5, Stockton (1999). BS 1999, Pittsburg State University.

MULDER, RANDOLPH, Instructor of Theatre, School of Music, Theatre, and Dance (2007). BA Music, 1982, University of California-Santa Barbara; MA 2004, New York University.

MULLEN, GALE, Farm Management Economist Emeritus (1961). BS 1950, Kansas State University.

MULLER, JAMES, Director of Venue Operations and Security at K-State Athletics (1988). BA 1979, Rockhurst College.

MULLINIX, CHRISTOPHER, Instructor of Animal Sciences and Industry (2013). BS 1996, Kansas State University.

MULREADY-STONE, KRISTIN, Associate Professor of History (2008). BA 1992, Tufts University; MA 1998, PhD 2008, Yale University.

MUNCE, JAMES C., Professor Emeritus of Art (1972). BFA 1966, Minneapolis School of Art; MFA 1971, Indiana University.

MUNIR, ARSLAN, Assistant Professor of Computer Science (2017). BSc 2004, University of Engineering and Technology, Lahore; MASc 2007, University of British Columbia; PhD 2014, Rice University.

MUNSON, DEANNA M., Associate Professor Emeritus of Apparel, Textiles, and Interior Design; Extension Specialist, Textiles (1967). BS 1966, MS 1967, PhD 1980, Kansas State University.

MUR, LINA, Research Assistant Professor of Diagnostic Medicine/Pathobiology (2016). DVM 2009, MSc 2010, PhD 2014, Universidad Complutense de Madrid, Spain.

MURPHY, JAMES PATRICK, Professor Emeritus of Biological and Agricultural Engineering (1971). BS 1968, MS 1970, Kansas State University; Professional Engineer, 1972.

MURPHY, JENNIFER K., Extension Agent, 4-H Youth Development, Southwind District 10, Erie (2013). BS 2009, Pittsburg State University.

MURPHY, STEPHEN M., Professor Emeritus of Interior Architecture and Product Design (1968). BS 1968, Kansas State University; MEd 1974, University of Missouri.

MURRAY, ANN D., Associate Professor Emeritus of Family Studies and Human Services (1988). BS 1967, Hollis College; MA 1971, Catholic University; PhD 1978, Macquarie University.

MURRAY, DEBORAH A., Instructor of English (1988). BA 1983, Central State University, MA 1986, Kansas State University.

MURRAY, JOHN, Meeting Planner, K-State Global Campus (2018). AA 1984, Northeastern Oklahoma A&M College; BA 1986, East Central University.

MURRAY, JOHN P., Professor Emeritus of Family Studies and Human Services (1985). BA 1965, John Carroll University; MA 1967, PhD 1970, The Catholic University of America.

MURRAY, ROBERT, Assistant Men's Golf Coach at K-State Athletics (2017). BA 2011, Washington State University; MA 2013, Concordia University.

MURRY, KEVIN G., Professor of Curriculum and Instruction (1995). BS 1979, University of Texas-Austin; MBA 1991, EdD 1995, Texas Tech University.

MUSCH, TIMOTHY, Professor of Kinesiology and Anatomy and Physiology (1993). BA 1972, MA 1974, University of California-Berkeley; PhD 1981, University of Wisconsin-Madison.

MUSIL, ELIZABETH, Instructor, English Language Program (2014). BA 2007, University of Nebraska-Lincoln; MA 2011 University of Illinois Urbana-Champaign.

MUTHUKRISHNAN, SUBBARATNAM, University Distinguished Professor Emeritus of Biochemistry and Molecular Biophysics (1980). BSc 1963, MSc 1965, Madras; PhD 1970, Indian Institute of Science.

MUTURI, NANCY, Professor of Journalism and Mass Communications (2005). BA 1989, MA 1996, University of Nairobi; MA 1996, PhD 2002, University of Iowa.

MWANGI, SAM CHEGE, Associate Professor of Journalism and Mass Communications (2006). BA 1988, Nairobi University; MA, 1998, University of Iowa; PhD 2003, University of South Carolina.

MYER, CHELSI D., Extension Agent, Family and Consumer Sciences, Dickinson County, Abilene (2012). BS 2010, Kansas State University.

MYERS, KAYLEE L., Instructor of Curriculum and Instruction (2014). BS 1995, MS 2016, Kansas State University.

MYERS, MOLLY, Office Specialist II, Department of Management, College of Business Administration. BA, The University of the South; MBA 2017, Kansas State University.

MYERS, RICHARD B., President (2016). BS 1965, Kansas State University; MBA 1977, Auburn University; 1977, Air Command and Staff College; 1981, U.S. Army War College.

MYERS, SANDRA, Farm Management Economist (2015). BS 2014, Kansas State University.

NAGAI, NAHO, International Admissions Specialist (2011). BS 2005, Kansas State University.

NAGARAJA, T. G., University Distinguished Professor of Diagnostic Medicine/Pathobiology (1980). BVSc 1970, MVSc 1972, University of Agricultural Science, India; PhD 1977, Kansas State University.

NAGEL, BARBARA A., Assistant Registrar (2011). BS 1980, Kansas State University.

NAGY, GABRIEL, Professor of Mathematics (1992). BS 1985, University of Bucharest; PhD 1992, University of California-Berkeley.

NAIBO, VIRGINIA, Professor of Mathematics (2006). PhD 2002, University Nacional del Litoral.

NAKAMURA, KUMIKO, Instructor of Japanese (2007). BA 1996, Kansai Gaidai University; MA 2000, Syracuse University.

NASSER, TAREQUE, Associate Professor of Finance (2012). BBA 1994, Assumption University; MComm 1997, University of Wollongong; PhD 2010, University of Alabama.

NATARAJAN, BALASUBRAMANIAM, Professor of Electrical and Computer Engineering (2002). BE 1997, Birla Institute of Technology and Science; PhD 2002, Colorado State University.

NAUGHTON, GARY G., Professor Emeritus of Forestry, District Forester, Northeast (1966). BS 1959, Utah State University; MS 1969, University of Missouri; LLB 1972, LaSalle University.

NAYDUCH, DANA, Research Molecular Biologist of Entomology, Arthropod-Borne Animal Disease Research Unit, USDA-ARS Center for Grain and Animal Health Research (2012). BS 1992, Cook College, Rutgers University; PhD 2001, Clemson University.

NAYYERIAMIRI, SHAHIN, Instructor of Civil Engineering (2015). BSc 2000, University of Tabriz; MS 2010, PhD 2011, Kansas State University.

NEAL, MARGARET A., Extension Agent Emeritus, Family and Consumer Sciences, Cowley County, Winfield (1977). BS 1967, MS, Kansas State University.

NECHOLS, JAMES R., Professor of Entomology; Research Entomologist, Biological Control, Horticultural Entomology, Ecology of Natural Enemy-Pest Interactions (1984). BS 1973, Baldwin-Wallace College; MS 1977, PhD 1980, Cornell University.

NEELY, MARGERY A., Professor Emeritus of Education (1974). AB 1955, Southwest Missouri State University; MEd 1968, PhD 1971, University of Missouri-Columbia.

NEIDERWERDER, MEGAN, Clinical Assistant Professor of Diagnostic Medicine/Pathobiology (2015). BS 2005, Northwest Missouri State University; DVM 2009, PhD 2015, Kansas State University.

NEILL, JAMES W., Professor of Statistics (1986). BS 1971, Eastern Illinois University; MS 1973, University of Missouri-Rolla; PhD 1982, Kansas State University.

NEILSEN, MITCHELL L., Professor of Computer Science (1996). MS 1988, MS 1989, PhD 1992, Kansas State University.

NEL, PHILIP W., University Distinguished Professor of English (2000). BA 1992, University of Rochester; MA 1993, PhD 1997, Vanderbilt University.

NELSEN, CHERI D., Extension Agent, Agriculture and Natural Resources, Wilson County, Fredonia (1993). BS 1990, Oklahoma State University.

NELSON, BONNIE A., Associate Professor Emeritus of English (1983). BA 1965, City College of New York; MAT 1967, City University of New York; PhD 1981, Pennsylvania State University.

NELSON, CHRISTOPHER L., Instructor of English (2015). BA 2004, Appalachian State University; MFA 2008, North Carolina State University.

NELSON, JAMES C., Associate Professor Emeritus of Plant Pathology (2000). BS 1988, Texas A&M University; MS 1991, PhD 1994, Cornell University.

NELSON, KATHERINE S., Assistant Professor of Geography and Geospatial Sciences (2018). BS 2006, University of Oklahoma; MS 2009, Washington University; PhD 2018, Vanderbilt University.

NELSON, NANCY C., Extension Agent, Family and Consumer Sciences, Meadowlark District 7, Holton (1978). BS 1977, Kansas State University.

NELSON, NATHAN O., Assistant Professor of Agronomy (2005). BS 1998, Kansas State University; MS 2000, North Carolina State University; PhD 2004, North Carolina State University.

NELSON, PAUL I., Professor Emeritus of Statistics (1983). BS 1963, Queens College-CUNY; MS 1965, PhD 1969, Rutgers University.

NELSON, RICHARD G., Associate Professor Emeritus of Engineering; Extension Specialist, Energy (1989). BS 1981, MS 1982, PhD 1989, Oklahoma State University.

NELSON, ROBERT F., Executive Director of Video and Engineering Services, Division of Communications and Marketing (2006). BS 1986, Washburn University; MEM 2012, Kansas State University.

NELSON, ROSS M., Extension Agent Emeritus, Agriculture and Natural Resources, Ellis County, Hays (1957). BS 1957, Kansas State University.

NELSON, SUSAN, Clinical Professor, Pet Health (2003). BA 1985, Hastings College; DVM 1989, Kansas State University.

NELSON-GOFF, BRIANA S., Professor of Family Studies and Human Services (1998). BS 1991, MS 1993, Kansas State University; PhD 1998, Texas Tech University.

NELSSEN, JIM L., Professor of Animal Sciences and Industry; Extension Specialist, Swine (1983). BS 1978, MS 1980, Kansas State University; PhD 1983, University of Nebraska.

NEMECEK, CARLA S., Extension Agent, Agriculture and Natural Resources, Southwind District 10, Iola (1997). BS 1996, MS 1999, Kansas State University.

NEUFELD, DOROTHY H., Professor Emeritus; Area Extension Home Economist (1957). BS 1950, Texas Technological College; MS 1964, Kansas State University.

NEUSCHWANDER, OCIE A., Extension Home Economist Emeritus, Greeley County, Tribune (1958). BS 1943, Kansas State University.

NEVILLE, MELISSA A., Instructor/Theatre Costume Shop Supervisor, School of Music Theatre, and Dance (2010). BA 2007, New Mexico State University; MFA 2010, University of Cincinnati College-Conservatory of Music.

NEWBY, FRANCES ANN, Assistant Professor Emeritus of Apparel, Textiles, and Interior Design (1963). BFA 1961, Kansas City Art Institute; MArch 1970, Kansas State University.

NEWCOMER, GLENN A., Extension Agent Emeritus, Agriculture and Natural Resources, Bourbon County, Fort Scott (1965). BS 1965, Kansas State University.

NEWDIGGER, GLENN E., Extension Agent, Agriculture and Natural Resources, Stafford County, St. John (1988). BS 1986, Kansas State University.

NEWELL, CINDY, Financial Aid Coordinator, K-State Polytechnic Campus (2005). BS 1995, MBA 1997, Emporia State University.

NEWELL, KATHLEEN, Professor Emeritus of Food, Nutrition, Dietetics and Health; Agricultural Experiment Station (1962). BS 1944, Kansas State University; MS 1951, University of Wisconsin; PhD 1973, University of Tennessee.

NEWHOUSE, ROBERT C., Professor Emeritus of Education (1972). BS 1967, MA 1969, Western Michigan University; PhD 1972, University of Oregon.

NEWMAN, LISA M., Extension Agent, Family and Consumer Sciences, Central Kansas District 3, Salina (2012). BS 2000, MS 2002, Kansas State University.

NEWMARK, GREGORY, Assistant Professor of Regional & Community Planning (2015). BA 1997, Yale University; MSc 2006, Technion Israel Institute of Technology; PhD 2001, University of California-Berkeley.

NEWSOME, BOB W., Professor Emeritus; Area Extension Director (1955). BS 1951, Oklahoma State University; MS 1962, Kansas State University; EdD 1965, Oklahoma State University.

NEWTON, SALETE, Research Professor of Biochemistry and Molecular Biophysics (2012). BS 1981, PhD 1986, Universidade de Sao Paulo, Brazil.

NEWTON, RUTH, International Student Advisor (2013). BS 2005, National University of Asuncion, Paraguay.

NG, HO LEUNG, Associate Professor of Biochemistry and Molecular Biophysics (2017). AB 1994, Harvard University, PhD 2001, University of California-Los Angeles.

NGUYEN, DINH-LIEM, Assistant Professor of Mathematics (2017). BS 2008, Ho Chi Minh City University of Education, MS 2017, Université d'Orléans; PhD 2013, École Polytechnique.

NGUYEN, HUYEN, Instructor of Journalism and Mass Communications (2018). BA 2006, Vietnam National University; MA 2011, PhD 2019, Ohio University.

NGUYEN, THU ANNELISE, Associate Professor of Diagnostic Medicine, Toxicology (2005). BS 1996, PhD 2001, Texas A&M University; MBA 2007, Kansas State University.

NICHOLS, DAVID A., Professor of Animal Sciences and Industry, Department Teaching Coordinator (1981). BS 1976, Purdue University; MS 1979, PhD 1981, Kansas State University.

NICHOLS, RANDY, Professor of Practice of School of Integrated Studies (2017). BS 1967, Tulane University, 1970, MBA University of Houston, MSChE 1991, Texas A&M.

NICKEL, DUANE F., Assistant Director Emeritus, Information Systems Office (1970). BS 1967, Kansas State University.

NICKELL, JASON, Adjunct Professor of Diagnostic Medicine/Pathobiology (2013). BS 1999, DVM 2003, University of Missouri; PhD 2010, Kansas State University.

NIEDERWERDER, JEREMY, Senior Associate Athletics Director for Facilities and Capital Projects at K-State Athletics (2016). AA 2005, Kansas State University.

NIEDFELDT, ALICE, Administrative Specialist, College of Business Administration. BS 1967, Tulane University,

NIEHOFF, BRIAN P., Associate Provost and Professor of Management (1988). BS 1977, St. Joseph's College; MBA 1986, PhD 1988, Indiana University.

NIELSEN, MONTY E., Emeritus University Registrar (2019). BA 1971, Kearney State College; EdS 1976, University of Northern Colorado; EdD 1981, University of Nebraska.

NIELSEN, SAMARA JOY, Assistant Professor of Food, Nutrition, Dietetics and Health (2010). BS 1996, Massachusetts Institute of Technology; PhD 2005, University of North Carolina-Chapel Hill; MDiv 2010, Duke University

NIELSON, DIANE A., Extension Agent, Family and Consumer Sciences, Atchison County, Effingham (1984). BS 1981, Northwest Missouri State University.

NIETFELD, ASHLEY N., Marketing Manager, K-State Global Campus (2013). BA 2005, Kansas State University.

NIGHSWONGER, JAMES J., Professor Emeritus of Forestry; Urban and Community Forestry Program Leader (1961). BS 1960, MLA 1970, Kansas State University.

NIKKEL, JANICE, Program Coordinator, K-State Global Campus (1985). BS 1985, Kansas State University.

NIPPERT, JESSE B., Professor of Biology, Plant Physiological Ecology (2007). BS 1998, Kansas State University; MS 2002, University of Idaho; PhD 2006, Colorado State University.

NIXON, REGINA L., Business Manager, Department of Communications and Agricultural Education (1989). BS 2009, Friends University.

NIXON, ROBERT M., Director, University Printing, Department of Communications and Agricultural Education (1986).

NOBLE, M. LARRY, Professor Emeritus of Kinesiology (1972). BS 1966, Eastern Kentucky University; MS 1968, University of Maryland; PhD 1970, University of Texas.

NOBLETT, DUANE P., Professor Emeritus of Art (1973). BFA 1966, Minneapolis College of Art and Design; MA 1970, MFA 1972, University of Iowa.

NOFFSINGER, KAREN S., Assistant Director, Information Systems Office (1987). BS 1987, Kansas State University.

NOLL, ASHLEY N., Graduate Student Retention Coordinator. BS 2008, Psychology, Kansas State University; BS 2008, Social work, Kansas State University

NORHEIM, TORGEIR, Associate Professor of Architecture (1992). BS 1978, MArch 1978, California Polytechnic University.

NORMAN, DAVID W., Professor Emeritus of Agricultural Economics; Research Agricultural Economics, International Agricultural Development, Agricultural Experiment Station (1968). BS 1961, Wye College; MS 1963, PhD 1965, Oregon State University.

NORRIS-BAKER, CAROLYN, Professor Emeritus of Architecture (1982). BA 1971, BArch 1972, Rice University; MA 1978, PhD 1980, University of Houston.

NORTHWAY, KARA, Associate Professor of English (2010). BA 1994, Reed College; MA 2000, PhD 2004, University of Kansas.

NORWOOD, BRIAN, Co-Defensive Coordinator/Defensive Backs at K-State Athletics (2018). BA 1988, University of Hawaii-Honolulu.

NORWOOD, CHARLES A., Associate Professor Emeritus; Research Agronomist, Dryland Soils, SW Research-Extension Center (1972). BS 1961, Texas A&M University; MS 1969, PhD 1971, Oklahoma State University.

NOTERMAN, LACEY, Extension Agent, Agriculture and Natural Resources, Haskell County, Sublette (2008). BS 2008, Fort Hays State University.

NOWLIN, EDWARD L., Assistant Professor of Marketing (2015). BA 1991, Dennison University; MA 1994, Ohio State University; MBA 2002, Clarion University; PhD 2009, University of Nebraska-Lincoln.

NUTSCH, ABBEY, Assistant Professor of Animal Sciences and Industry (2005). BS 1994, PhD 1998, Kansas State University.

NUTT, CHARLIE L., Executive Director, NACADA; Assistant Professor of Special Education, Counseling, and Student Affairs (2002). BS 1977, University of Georgia; MEd 1986, EdD 1999, Georgia Southern University.

NYBERG, BENJAMIN M., Professor Emeritus of English (1965). BA 1955, Wichita State University; MA 1958, University of Arizona; PhD 1965, University of Colorado.

NYHART, SYLVESTER, Extension Agent Emeritus, Agriculture and Natural Resources, Leavenworth County, Leavenworth (1958). BS 1959, MS 1972, Kansas State University.

O, VIEN, Clinical Assistant Professor of Clinical Sciences, Small Animal Emergency (2020). BA 2012, Macalester College; DVM 2017, Kansas State University.

OBERHEIDE, KRISTIN, Director of International Admissions and Recruitment (2014). BA 2002, University of Michigan; MA 2010, Cornell University.

OBERRIEDER, HEIDI, Instructor of Food, Nutrition, Dietetics and Health (2016). BS 1989, Kansas State University; MS 1993, University of Kansas.

OBERST, RICHARD D., Professor Emeritus, Molecular Diagnostics (1987). DVM 1983, Oklahoma State University: PhD 1987, University of California.

O'BRIEN, DANIEL M., Associate Professor of Agricultural Economics, Extension Specialist Agricultural Economist, Northwest Area (1995). BS 1978, MS 1980, University of Nebraska-Lincoln; PhD 1993, Iowa State University.

ODDE, KENNETH G., Professor of Animal Sciences and Industry (2007). BS 1973, South Dakota State University; MS 1978, DVM 1982, PhD 1983, Kansas State University.

O'DEA, DYNA, Medical Technologist, Lafene Health Center (1978). BS 1978, Kansas State University.

O'DELL, IRMA, Associate Professor of the Staley School of Leadership Studies (2003). BS 1977, George Williams College; MSEd 1979, Southern Illinois University; PhD 1992, University of New Mexico.

O'DONNELL, BEN, Assistant Strength & Conditioning Coach at K-State Athletics (2016). BA 2011, University of Central Florida; MA 2013, University of South Florida.

ODLE, MARY LOU, Extension Agent Emeritus, Central Kansas District 3 (1970). BS 1970, Fort Hays State University; MS 1981, Kansas State University.

OEHME, FREDERICK W., Professor Emeritus of Toxicology and Diagnostic Medicine/Pathobiology (1959). BS 1957, DVM 1958, Cornell University; PhD 1968, University of Missouri; Diplomate 1968, American Board of Veterinary Toxicology; 1980, American Board of Toxicology; 1982, American Academy of Toxicological Sciences.

OETKEN, MICHAEL, Teaching Assistant Professor of School of Integrated Studies (2017). BFA 1999, MLS 2011, Fort Hays State University.

OGG, ROSELLA A., Assistant Professor Emeritus of Art (1965). BA 1958, MA 1963, Kansas State University.

OH, JUNG R., Professor of School of Integrated Studies (1998). BS 1981, Sogang University; PhD 1981, University of California-Los Angeles.

OHLENBUSCH, PAUL D., Associate Professor Emeritus of Agronomy; Extension Specialist, Range and Pasture Management (1975). BS 1963, Texas State University; MS 1965, PhD 1975, Texas A&M University.

OHLSEN, ROBERT L., Associate Professor Emeritus of Education (1976). BA 1952, Ottawa University; ME 1957, Wichita State University; EdD 1963, University of Kansas.

OLDFATHER, MICHAEL, Professor Emeritus of Economics (1983), AB 1962, Oberlin College, MA, University of Nebraska, PhD 1980, Ohio University.

OLDHAM, BELINDA K., Extension Agent Emeritus, Family and Consumer Sciences, Wichita County, Leoti (1989). BS 1974, Kansas State University.

OLEEN, JENNY, Assistant Professor, Scholarly Communications Librarian, K-State Libraries (2008). BS 2002, Kansas State University; MS Environmental Science 2004, University of Arizona; MLS 2006, Indiana University.

OLEWNIK, MAUREEN, Adjunct Faculty of Grain Science and Industry (2013). BS 1979, MS 1983, PhD 2003, Kansas State University.

OLIBE, KINGSLEY O., Associate Professor of Accounting (2007). BS 1981, Alabama State University; MBA 1984, Auburn University; PhD 1999, Texas A&M University.

OLLINGTON, DAVID, Associate Professor Emeritus of Dance, School of Music, Theatre, and Dance (2001). BA 1983, Kansas State University; MFA 1989, Texas Christian University.

OLSEN, CHARLOTTE SHOUP, Professor of Family Studies and Human Services (1981). BS 1969, MS 1979, PhD 1993, Kansas State University.

OLSEN, KATIE, Teaching Assistant Professor of Journalism and Mass Communications (2010). BA 2006, University of Missouri-Columbia; MBA 2009, Rockhurst University.

OLSEN, LIVIA, Associate Professor, Faculty and Graduate Services Librarian, K-State Libraries (2005). BS 2000, University of Nebraska; MLS 2006, University of North Texas.

OLSON, BRADLEY J. S. C., Associate Professor of Biology; Cell and Molecular Biology, Genomics (2011). BS 2001, University of Nebraska-Lincoln; PhD 2008, Michigan State University.

OLSON, EDWIN (ED) G., Professor Emeritus of Economics (1969). BA 1956, MA 1960, University of California; PhD 1972, University of Washington.

OLSON, KC, Professor of Animal Sciences and Industry (2006). BS 1990, Minnesota State University-Moorehead; MS 1994, North Dakota State University; PhD 1998, Kansas State University.

OLSON, SALLY, Assistant Director of Comparative Medicine; Courtesy Faculty Appointment, Diagnostic Medicine/Pathobiology (2009). BS 1992, DVM 1996, Kansas State University.

OLSON, WILLARD G., Extension Assistant Emeritus, Live Animal Evaluations (1977). BS 1970, Kansas State University.

O'MARA, JUDITH L., Instructor of Plant Pathology (1989). BS 1984, MS 1987, New Mexico State University.

O'NEIL, JAY, Senior Agriculture Economist of Grain Science and Industry (2006). BS 1973, San Jose State University.

OPITZ, WESTON, Adjunct Associate Professor of Entomology (1996). BS 1963, Kansas State University; MS 1966, PhD 1972, Rutgers University.

OPPELT, TIFFANY D., Culinary Operations Manager I, Housing and Dining Services (2014). BS 2010, Kansas State University.

OPPENHEIM, JOSHUA J., Assistant Professor of Music, School of Music, Theatre, and Dance (2008). BM 1997 Western Michigan University; MM 2002, University of Mississippi; DMA 2006, University of North Texas.

OPPERUD, SARA, Computer Information Specialist, Educational and Personal Development Programs (1985). BA 1983, BBA 1983, Washburn University.

O'QUINN, TRAVIS, Associate Professor of Animal Sciences and Industry (2014). BS 2008, MS 2010, Texas Tech University; PhD 2012, Colorado State University.

O'REILLY, FAYE, E-Resources Access Specialist, K-State Libraries (2012). BA 2009, Dana College; MLIS 2012, University of Missouri- Columbia.

ORNELAS, WENDY, Professor of Architecture (1989). BSArch 1980 California Poly. University; MArch 1989, Oklahoma State University. Licensed Architect.

ORR, ANDREW, Assistant Professor of History (2013). BA 1999, Claremont McKenna College; MA 2004, PhD 2009, Notre Dame University.

ORR, V. BRYCE, Extension Agent Emeritus, Agriculture and Natural Resources, Sedgwick County, Wichita (1952). BS 1952, Kansas State University.

OSEN, AVERY, Adjunct instructor of Journalsim and Mass Communcations (2019). BS 2017, MA 2019, Kansas State University.

O'SHEA, JOHN WILLIAM, Assistant Professor Emeritus of Art (1956). BFA 1954, Denver University; MFA 1956, Iowa State University.

O'SHEA, MICHAEL J., Professor of Physics and Associate Head (1983). BA 1977, University of East Anglia, England; PhD 1981, University of Sussex, England.

OSSAR, MICHAEL, Professor Emeritus of Modern Languages (1971). AB 1961, Cornell University; MS 1963, MA 1967, PhD 1973, University of Pennsylvania.

OSTERMANN, BRIAN, Associate Head Women's Basketball Coach at K-State Athletics (2014). BS 1988, University of Wisconsin-La Crosse; MS 1991, Northwest Missouri State University.

OTT, NATHAN, Assistant Track & Field Coach at K-State Athletics (2018), BS 2007, Southern Utah University.

OTT, RICHARD L., Professor of Accounting (1986). BA 1969, University of St. Thomas; MBA 1980, University of Houston-Clear Lake City; MAcc 1982, PhD 1986, Texas Tech University; CPA 1989, Kansas.

OTTE, CHARLES E., Extension Agent, Geary County, Junction City (1982). BS 1979, MS 1981, University of Nebraska.

OTTE, ERIC T., Extension Agent Emeritus, 4-H Youth Development Programs, Sedgwick County, Wichita (1982). BS 1969, MS 1975, University of Nebraska.

OTTENBACHER, MICHAEL C., Mary L. Vanier Endowed Professor of Hospitality Management. BS 1996, MS 1997, Florida International University; PhD 2003, University of Otago.

OTTENHEIMER, HARRIET J., Professor Emeritus of Anthropology (1969). BA 1962, Bennington College; PhD 1973, Tulane University.

OTTENHEIMER, MARTIN, Professor Emeritus of Anthropology (1969). BA 1962, Rensselaer Polytechnic Institute; MA 1964, PhD 1971, Tulane University.

OUKROP, CAROL E., Professor Emeritus of Journalism and Mass Communications (1969). BA 1956, University of North Dakota; MA 1965, PhD 1969, University of Iowa.

OVERLEY, FRANK L., Assistant Professor Emeritus; Extension Economist, Northwest (1960). BS 1950, Kansas State University; MS 1957, Michigan State University.

OVERLEY, VICKY I., Extension Agent Emeritus, Phillips-Rooks District 5, Phillipsburg (1979). BS 1966, Fort Hays State University.

OVIATT, CHARLES G., Professor Emeritus of Geology and Adjunct Professor Emeritus of Geography (1985). BS 1973, MS 1977, University of Wyoming; PhD 1984, University of Utah.

OWENS-WILSON, GWEN, Associate Professor Emeritus of Interior Architecture and Product Design (1982). BA 1959, University of Oklahoma; BArch 1972, Howard University; MS 1980, PhD 1982, University of Tennessee. Licensed Architect.

OWENSBY, CLENTON E., Professor of Agronomy; Range Management (1964). BS 1964, New Mexico State University; PhD 1969, Kansas State University.

PACEY, DAVID A., Professor of Mechanical and Nuclear Engineering (1978). BS 1974, MS 1979, PhD 1989, Kansas State University; Professional Engineer, 1981.

PADILLA CARROLL, VALERIE, Associate Professor of Gender, Women, and Sexuality Studies (2016).BA 1994, University of Texas at San Antonio; MA 1997, PhD 2005, Saint Louis University.

PAEZ, PAOLA, Research Associate Professor of Hospitality Management (2015). BS 2000, University of Costa Rica; MS 2006, PhD 2010, Iowa State University.

PAHWA, ANIL, Professor of Electrical and Computer Engineering (1983). BS 1975, Birla Institute of Technology; MS 1979, University of Maine; PhD 1983, Texas A&M University.

PAKASTE, MERVI, Associate Professor of Art (2007). BFA 2000, Edinboro University of Pennsylvania; MFA 2004, Pennsylvania State University.

PALMER, GUY, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2014). BS 1977, Kansas State University; PhD 1984, Washington State University.

PANZER, MIRANDA, International Student Advisor, International Student and Scholar Services (2012). BA 2010, MS 2012, University of Wisconsin-LaCrosse.

PAPH, SONYA, Business Manager, Vice President for Student Life (1990). AA 1989, Highland Community College.

PARAMESWARAN, PRATHAP, Assistant Professor of Civil Engineering (2015). BTech 2003, Coimbatore Institute of Technology; MS 2005, Illinois Institute of Technology; PhD 2010, Arizona State University.

PARILLO, MARK P., Professor of History (1992). BA 1978, Notre Dame University; MA 1981, PhD 1987, Ohio State University.

PARISH, THOMAS S., Professor Emeritus of Education (1976). BA 1968, Northern Illinois University; MA 1969, Illinois State University; PhD 1972, University of Illinois.

PARK, SUNGHUN, Associate Professor of Horticulture and Natural Resources (2007). BS 1987, MS 1989, Seoul National University; PhD 1995, Texas A&M University.

PARK, YOONSEONG, Associate Professor of Entomology, Research Entomologist, Insect Physiology (2002). BS 1990, Chonbuk National University; MS 1994, University of California; PhD 1998, University of Arizona.

PARKER, CRAIG B., Associate Professor of Music, School of Music, Theatre, and Dance (1983). BM 1973, University of Georgia; MM 1976, PhD 1981, University of California-Los Angeles.

PARKER, JIM, Director of Lafene Health Center (2013). BA 1987, Bethany College; MBA 1995, Kansas State University.

PARKER, LEONARD C., Professor Emeritus Extension; Administrator, Farm Management Association Program (1956). BS 1952, MS 1967, Kansas State University.

PARK FUHRMANN, KELLI D., Meeting Planner, K-State Global Campus (2010). BS 1988, Kansas State University.

PARSONS, MARY, International Recruiting Coordinator (2013). BA 2008, Alma College; MA 2012, Grand Valley State University.

PASCHAL, JOANN A., Extension Agent Emeritus, Family and Consumer Sciences, Russell County, Russell (1976). BS 1976, Kansas State University.

PASSARELLI, A. LORENA, Associate Director and Professor of Biology; Virology, Agricultural Experiment Station (1998). BS 1982, Simmons College; MS 1986, University of Connecticut; PhD 1993, University of Georgia.

PASUPULETI, VIJAI, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2015).

PATELL, YASMIN, Teaching Professor of Chemistry (2000). BS 1991, MS 1993, University of Sussex, United Kingdom; PhD 1996, Queen's University, Belfast.

PATHAK, SAURAV, Assistant Professor of Entrepreneurship. BS 2000, Birla Institute of Technology; MS 2003, Ohio University; PhD 2007, University of Florida; PhD 2011, Imperial College Business School.

PATTERSON, CORRINE L., Extension Agent, 4-H Youth Development, Lyon County, Emporia (2010). BS 2002, Kansas State University.

PATTON, DENNIS L., Extension Agent, Horticulture and 4-H, Johnson County, Olathe (1983). BS 1982, MS 1989, Kansas State University.

PAUKSTELIS, MARIA, Instructor Emerita of Chemistry (1968). BS 1965, Notre Dame College of Ohio; MS 1967, Kansas State University.

PAUKSTELIS, PETER, Associate General Counsel (2008). BA 1992, University of Kansas; JD 1995, University of Michigan.

PAUL, BIMAL K., Professor of Geography and Geospatial Sciences (1990). BS 1970, MS 1973, University of Dhaka; MA 1980, University of Waterloo; PhD 1988, Kent State University.

PAUL, CHELSEA M., Culinary Operations Manager l, Housing and Dining Services (2018). BS 2018, MS 2018, Kansas State University.

PAUL, GREGORY, Associate Professor of Communication Studies (2013). BA 2003, MA 2005, PhD 2009, Texas A&M University.

PAULSEN, GARY M., Professor Emeritus of Agronomy; Crops Research Physiologist, Agricultural Experiment Station (1965). BS 1961, MS 1963, PhD 1965, University of Wisconsin.

PAULSEN, PAMELA J., Extension Agent, Horticulture, Reno County, Hutchinson (1999). BS 1991, Kansas State University; MS 1999, University of Hawaii.

PAYNE, ANIA, Instructor of English (2017). BA 2013, Hendrix College; MFA, 2016, Northern Michigan University.

PAYNE, PATRICIA A., Associate Professor Emeritus of Diagnostic Medicine/Pathobiology (2000). BS 1969, DVM 1971, PhD 2000, Kansas State University; Diplomate 2011, American College of Veterinary Microbiologists.

PAYNE, PHILLIP D., Assistant Professor of Music, School of Music, Theatre, and Dance (2010). BME 2001, MM 2002, Southwestern Oklahoma State University; PhD 2009, University of Oklahoma.

PAZ, REBECA, Assistant Director, Career and Employment Services (1997). BS 1986, The College of the Ozarks; MS 1988, Southwest Missouri State University.

PEARCE, ANN, Assistant Director; Student Access Center (2012). BA 1979, Tennessee State University.

PEARCE, R. CHARLES, Associate Professor Emeritus of Journalism and Mass Communications (1986). BFA 1972, MA 1975, University of Alabama; PhD 1984, University of Tennessee.

PEARSON, BARBARA, Psychologist, Counseling Services (1998). BA 1984, Castleton State College; MA 1986, PsyD 1998, Antioch New England Graduate School.

PEARSON, THOMAS C., Adjunct Assistant Professor of Biological and Agricultural Engineering. BS 1987, California State University-Fresno; PhD 1998, University of California-Davis.

PECENKA, NICK, Building Manager, College of Business Administration.

PECK, ERNEST G., Associate Professor Emeritus; Extension Communications Instructional Media Specialist (1955). BS 1950, MS 1965, Kansas State University.

PEDDIREDDI, LALITHA, Research Assistant Professor of Veterinary Diagnostic Laboratory (2010). BVSc 2001, ANGR Agricultural University, India; MS 2004, Purdue University; PhD 2009, Kansas State University.

PEDERSEN, JOHN R., Professor Emeritus of Grain Science and Industry; Stored Grain Research Entomologist, Agricultural Experiment Station (1968). BS 1954, MS 1959, PhD 1979, Kansas State University.

PEDERSEN, KAREN L., Dean of K-State Global Campus, K-State Global Campus (2018). BS 1984; MS 1986, University of Nebraska-Lincoln; PhD 1991, Oklahoma State University.

PEDERSON-ARCHULETA, KRISTY L., Associate Professor of Family Studies and Human Services (2008). BS 2001, Oklahoma State University; PhD 2008, Kansas State University.

PEI, ZHIJIAN, Professor of Industrial and Manufacturing Systems Engineering (2000). BS 1982, Zhengzhou Institute of Technology, China; MS 1984, Beijing Institute of Technology, China; PhD 1995, University of Illinois at Urbana-Champaign.

PEINE, KAITLYN, Extension Agent, 4-H Youth Development Programs, Douglas County, Lawrence (2009). BS 2009, Kansas State University.

PELCZARSKI, KRISTIN M., Associate Professor of Family Studies and Human Services (2013). BA 1997, George Washington University; MA 2003, PhD 2011, University of Pittsburgh.

PENCE, JOHN T., Senior Associate Director Emeritus, Housing and Dining Services and Instructor, Food, Nutrition, Dietetics and Health (1963-2019). BS 1963, Purdue University; MS 1970, Kansas State University.

PENCE, KAREN T., Retired Assistant Dean for College of Health and Human Sciences and Instructor of Health and Human Sciences (1977). BSE 1971, Emporia State University; MS 1972, Kansas State University.

PENDELL, DUSTIN L., Associate Professor of Agricultural Economics (2015). BS 2000, Illinois State University; MS 2002, Southern Illinois University; PhD 2006, Kansas State University.

PENNER, KRISTIN, Extension Agent, Family and Consumer Sciences, Haskell County, Sublette (2007). BS 2002, Kansas State University.

PENNINGTON, NATALIE, Assistant Professor of Communication Studies (2015). BS 2008, Missouri State University; MA 2010, Kansas State University; PhD 2015, University of Kansas.

PENTZ, JULIE L., Professor and Program Director of Dance, School of Music, Theatre, and Dance (2004). BFA 2000, Shenandoah University; MFA 2004, University of Arizona.

PEREZ, MICHELLE M. V., Project Coordinator in Family Studies and Human Services (2002). BS 1994, MS 1995, Kansas State University.

PERIC, DUNJA, Associate Professor of Civil Engineering (2001). Dip. Ing. 1981, University of Zagreb, Croatia; MS 1988, PhD 1990, University of Colorado-Boulder.

PERKINS, SHELBY S., Extension Agent Emeritus, Family and Consumer Sciences, Elk County, Howard (1986). BS 1981, Kansas State University.

PERL, MICHAEL F., Associate Professor Emeritus of Education (1976). BA 1966, St. Mary's College, Minnesota; MS 1970, Winona State College, Minnesota; PhD 1976, University of South Carolina.

PERRY, ANGELIA L., Arts and Sciences Advisor (2000). BA 1997, MA 1999, Kansas State University.

PERRY, EDWARD D., Assistant Professor of Agricultural Economics (2016). BA 2007, St. Norbert College; MS 2009, Marquette University; PhD 2016, Iowa State University.

PESCI, PATRICK, Instructor Emeritus of Hospitality Management (1975). BS 1973, Indiana University of Pennsylvania; MS 1981, Kansas State University.

PETER, MARY LOU, Communication and Marketing Specialist, Department of Communications and Agricultural Education (1999). BS 1979, Kansas State University.

PETERMAN, ROBERT J., Mark & Margaret Hulijgs Chair in Engineering (1998). BS 1987, Lafayette College; MS 1989, PhD 1996, Purdue University; Professional Engineer.

PETERS, PAULA K., Associate Professor of Food, Nutrition, Dietetics and Health; Assistant Director, Extension Family and Consumer Sciences (1990). BS 1977, MS 1985, South Dakota State University; PhD 1990, Ohio State University.

PETERSILIE, ERIN J., Extension Agent, Family and Consumer Sciences, Walnut Creek District 2, Dighton (2013), BS 2006, Kansas State University; MS 2011, Fort Hays State University.

PETERSILIE, JARED R., Extension Agent, Agriculture and Natural Resources, Walnut Creek Extension District, LaCrosse (2011). BS 2000, Oklahoma Panhandle State University.

PETERSON, DALLAS E., Professor of Agronomy; Extension Specialist, Weed Science (1989). BS 1981, MS 1983, Kansas State University; PhD 1987, North Dakota State University.

PETERSON, NANCY B., Communications Specialist Emeritus, Department of Communications and Agricultural Education (1996). BS 1965, Purdue University.

PETERSON, RANDY, Assistant Director of Athletic Communications at K-State Athletics (2004). MS 2004, Western Illinois University.

PETERSON, SUSAN, Assistant to the President for Governmental Relations (1989). BS 1976, Kansas State University; MA 1982, University of Kansas.

PETTAY, ROBERT F., Instructor of Kinesiology (1998). BS 1985, Emporia State University; MS 1993, PhD 2008, Kansas State University.

PETTIJOHN, LINDA K., Extension Agent Emeritus, Family and Consumer Sciences and Horticulture, McPherson County, McPherson (1971). BS 1965, MS 1969, Kansas State University.

PETTY, CHRISTOPHER, Extension Agent, Agriculture and Natural Resources, Southwind District 10, Fort Scott, (2014). BS 2001, Central Missouri State University; BS 2007, Kansas State University.

PEVERILL, TIMOTHY, Instructor, English Language Program (2014). MA 1989, Linguistics; University of Iowa.

PEVERILL, RANAE D., Instructor, English Language Program (2014). BA 1982, English Education, Indiana Wesleyan University; MA 1988, TESL, Oklahoma State University.

PFAFF, CHARLOTTE, Associate Registrar, Student Systems (1981). BS 2003, Kansas State University.

PFEIFER, WENDY, Career Coach, Career Development, College of Business Administration. BS, Kansas State University.

PFORTMILLER, JENNIFER D., Admissions Representative, K-State Global Campus (2002). BS 1996, Kansas State University; MS 1998, University of Georgia.

PHAM, HUONG, International Student Advisor (2014). BA 1993, Hanoi National University, Vietnam; BA 2000, Foreign Trade University.

PHEBUS, RANDALL K., Professor of Animal Sciences and Industry (1992) and Interim Director of Food Science Institute. BS 1986, MS 1988, PhD 1992, University of Tennessee.

PHILLIPI, DONALD, Associate Professor of Architectural Engineering and Construction Science (2010). BS 1984, BArch 1989, MS 2004, California State Polytechnic University-Pomona; PhD 2010, University of California-San Diego.

PHILLIPS, ANNE K., Professor of English (1993). BA 1984, MA 1986, University of Nevada; PhD 1993, University of Connecticut.

PHILLIPS, MARGARET E., Assistant Program Leader Emeritus, Extension Administration (1986). BS 1972, MS 1978, Kansas State University.

PHILLIPS, RICHARD, Professor Emeritus of Agricultural Economics; Research Agricultural Economics, International Agricultural Development, Agricultural Experiment Station (1970). BS 1948, MS 1949, PhD 1952, Iowa State University.

PHILLIPS, ROBERT M., Professor Emeritus of Veterinary Diagnostic Investigation; Research Virologist (1975). DVM 1951, Kansas State University; PhD 1972, University of Georgia.

PHILLIPS, THOMAS W., Professor of Entomology (2007). BS 1978, Juniata College; MS 1981, PhD 1984, SUNY-College of Environmental Science and Forestry.

PHILLIPS, WILLIAM M., Professor Emeritus and Head of Agricultural Research Center-Hays; Research Agronomist, Weed Control (1952). BS 1947, MS 1949, Kansas State University.

PICKENS, CHARLES L., Associate Professor of Psychological Sciences (2013). BS 2001, York College of Pennsylvania; MA 2003, PhD 2008, Johns Hopkins University.

PICKERING, DAVID C., Associate Professor of Music, School of Music, Theatre, and Dance (2010). BM 1997, Brigham Young University; MM 2000, DMA 2001, University of Kansas.

PICKERING, JEFFREY J., Professor and Head of Political Science (1997). BA 1990, University of Missouri-St. Louis; PhD 1995, Indiana University.

PICKRELL, JOHN A., Associate Professor Emeritus of Diagnostic Medicine/Pathobiology (1988). BS 1963, DVM 1965, MS 1996, PhD 1968, University of Illinois; Diplomate 1983, American Board of Toxicology.

PIERZYNSKI, GARY M., University Distinguished Professor and Head of Agronomy (1989). BS 1982, MS 1985, Michigan State University; PhD 1989, Ohio State University.

PIGNO, LOUIS, Professor Emeritus of Mathematics (1969). BS 1961, Polytechnic Institute of Brooklyn; MA 1965, University of Connecticut; PhD 1969, SUNY-Stony Brook.

PINKALL, BRYAN, Instructor of Music, School of Music, Theatre, and Dance (2013). BA 2007, MM 2010, Kansas State University; DMA 2013, University of Missouri-Kansas City.

PINKERTON, LESTER R., Professor Emeritus of Forestry; Forest Management Program Leader (1964). BS 1964, MS 1967, Colorado State University.

PINKSTON, DANA M., Associate Professor of Theatre, School of Music, Theatre, and Dance (1994). BS 1989, MA 1991, Kansas State University; MFA 1994, Pennsylvania State University.

PINNER, CHRISTOPHER, Professor of Mathematics (2000). BSc 1985, University of York, England; MSc 1989, Oxford University; PhD 1992, University of Texas-Austin.

PISHNEY, HOLLY C., Culinary Operations Manager l, Housing and Dining Services (2001). BS 2001, MS 2017, Kansas State University.

PITTMAN, REGINALD, Professor of Music, School of Music, Theatre, and Dance (1997). BM 1978, MM 1980, University of North Texas; DM 1998, Indiana University.

PITTS, ANNE J., Extension Agent, Family and Consumer Sciences, Harvey County, Newton (2016). BS 2016, Kansas State University.

PITTS, BERNARD J., Assistant Vice President for Student Life, and Executive Director of the K-State Student Union (1995). BS 1971, Southern Illinois University; MS 1975, Oregon State University.

PITTS, JOELLE E., Associate Professor, Instructional Design Librarian, K-State Libraries (2011). BS 2005, Colorado State University; MLS 2010, Emporia State University.

PLAKKE ANDERSON, BETHANY, Assistant Professor of Psychological Sciences (2017). BS 2003, MS 2005, Ph.D. 2010, University of Iowa.

PLATT, THOMAS G., Assistant Professor of Biology; Microbiology (2015). BA 2002, MA 2003, Rice University; PhD 2010, Indiana University.

PLATTNER, BRIAN S., Adjunct Faculty of Grain Science and Industry (2010). BS 1997, Kansas State University. Licensed Professional Engineer, 2003.

PLAZIBAT, KELLY, Education Abroad Advisor (2020). BA 2015, MSE 2019, University of Dayton.

PLETT, EDUARD, Associate Professor of School of Integrated Studies (2004). BS 2002, Wichita State University, MS 2003, Kansas State University.

PLIAKONI, ELENI D., Assistant Professor of Horticulture and Natural Resources - Urban Food Production and Postharvest Handling (2013). BS/MS 2001, Aristotle University of Thessaloniki, Greece; MS 2003, University of Crete, Greece; PhD 2010, University of Thessaly, Greece.

PLOGER, MARK O., Extension Agent, Agriculture, Pratt County, Pratt (1992). BS 1973, Kansas State University.

PLUMMER, CHELSEA, Farm Management Economist (2017). BS 2015, Ottawa University, MS 2016, Purdue University.

POGGI-CORRADINI, PIETRO, Professor of Mathematics (1998). BA 1992, Universitá Statale di Milano, Italy; PhD 1996, University of Washington.

POHLMAN, LISA M., Associate Professor of Diagnostic Medicine/Pathobiology (2007). BSc 1999, DVM 2001, University of Guelph; MS 2007, Auburn University; Diplomate 2007, American College of Veterinary Clinical Pathologists.

POINDEXTER, DENISE, (2007). BS 2002, Arkansas State University; MS 2007, Troy University.

POLAND, JESSE, Assistant Professor of Plant Pathology (2014). BS 2003, MS 2004, Kansas State University; PhD 2010 Cornell University.

POLAND, JESSE, Assistant Professor of Plant Pathology (2014). BS 2003, Kansas State University; MS 2004, Kansas State University; PhD 2010, Cornell University.

POLICH, GERALD, Associate Professor Emeritus of Music, School of Music, Theatre, and Dance (1966). BME 1961, MME 1966, University of Colorado.

PONTE, JOSEPH, Professor Emeritus of Grain Science and Industry (1975). AB 1956, BS 1958, Northwestern University; MS 1958, University of Minnesota.

POOLE, DAVID C., Professor of Kinesiology and Anatomy and Physiology (1995). BS 1980, Liverpool Polytechnic, England; MS 1984, PhD 1986, University of California-Los Angeles; DSc 2000, Liverpool John Moores University.

POPE, AMANDA, Academic Program Coordinator, TRiO/SSS, K-State Polytechnic Campus (2016), BS 2014 Kansas State University.

POPE, RONALD V., Instructor of Animal Sciences and Industry (1977). BS 1974, Oklahoma State University; MS 1976, Texas A&M University; PhD 2000, Kansas State University.

PORATH, SUZANNE L., Assistant Professor of Curriculum and Instruction (2016). BS 1993, MS 1998, PhD 2013, University of Wisconsin.

PORTER, BRIANNE, Accountant I, College of Business Administration. BS 2012, Kansas State University.

PORTER, JAMES A., Major (Retired), U.S. Army, Assistant Professor of Military Science (2000). BS 1980, University of Alaska-Anchorage.

POSLER, GERRY L., Professor Emeritus of Agronomy; Forage Crops (1974). BS 1964, MS 1966, University of Missouri; PhD 1969, Iowa State University.

POSTON, ASHLEY, Farm Management Economist (2012). BS 2010, MS 2012, Oklahoma State University.

POTTROFF, VIKTORIYA, Instructor of Russian (2008). BA 1994, Izmail State Humanitarian University; MS 2009, Kansas State University; MA 2011, University of Kansas.

POWELL, ABBIE, Extension Agent, Agriculture and Natural Resources, Marais des Cygnes District, Mound City (2006). BS 2006, University of Nebraska.

POWELL, G. MORGAN, Professor Emeritus of Biological and Agricultural Engineering; Extension Engineer, Water Quality (1977). BS 1965, Kansas State University; MS 1967, University of Missouri; PhD 1973, Utah State University; Professional Engineer, 1976.

POWELL, WILLIAM B., Professor Emeritus of Civil Engineering Technology (1971). BS 1950, Kansas State University; MS 1971, Oklahoma State University. Professional Engineer.

PRABHAKAR, PAVITHRA, Associate Professor of Computer Science (2015). BTech 2004, National institute of Technology, Warangal; MS 2006, Indian Institute of Science; MS 2010, PhD 2011, University of Illinois at Urbana-Champaign.

PRAKASH, OM, Professor of Biochemistry and Molecular Biophysics (1993). BS 1970, MS 1972, University of Meerut India; PhD 1978, Central Drug Research Institute, India.

PRAKASH, PUNIT, Professor of Electrical and Computer Engineering (2012). BS 2004, Worcester Polytechnic Institute; MS 2006, PhD 2008, University of Wisconsin-Madison.

PRASAD, VARA, University Distinguished Professor of Agronomy (2005). BS 1991, MS 1993, Andhra Pradesh Agricultural University, India; PhD 1999, University of Reading, United Kingdom.

PRATT, GARY, Chief Information Officer (2017). BS 1985, Colorado School of Mines; M.A. Ed. 1992, University of Denver; Ph.D. 2007, University of Phoenix.

PRAWL, WARREN L., Professor Emeritus, Extension Specialist, Staff Development and Education (1952). BS 1954, Kansas State University; MS 1958, EdD 1962, Cornell University.

PREISNER, DONNA H., Extension Agent, Family and Consumer Sciences, Pawnee County, Larned (2004). BS 1974, Kansas State University.

PRESLEY, DEANN R., Professor of Agronomy (2007). BS 1999, Iowa State University; MS 2002, PhD 2007, Kansas State University.

PRETZER, CAROLYN A., Director Emeritus of Krider Visual Resource and Learning Center, College of Architecture, Planning and Design (1983). BS 1954, Kansas State University.

PRICE, MARY GAYLE, Professor; Extension Specialist, Family and Consumer Sciences, Southeast (1989). BS 1981, Oklahoma State University; MS 1989, Pittsburg State University.

PRINCE, J. BRUCE, Professor of Management (1995). BS 1973 Utah State University; MA 1977 Brigham Young University; PhD 1984, University of Southern California.

PRINCE, PAUL, Associate Professor Emeritus of Journalism and Mass Communications (1978). BS 1961, Stanford University; PhD 1971, University of Utah.

PROCTER, DAVID E., Professor of Communication Studies (1987). BS 1977, MA 1980, Kansas State University; PhD, 1989, University of Nebraska-Lincoln.

PROCTER, SANDRA B., Assistant Professor of Food, Nutrition, Dietetics and Health; Coordinator, Expanded Food and Nutrition Education Program; Extension State Leader (1987). BS 1977, MS 1991, PhD 2006, Kansas State University.

PROUGH, ADAM, Senior Director of Sales and Analytics at K-State Athletics (2011). BS 2008, Iowa State University.

PUJOL, ELLIOTT, Professor Emeritus of Art (1973). BA 1968, MFA 1971, Southern Illinois University.

PUMPHREY, MICHAEL, Adjunct Assistant Professor of Agronomy (2008). BS 2000, Oklahoma State University; MS 1991, University of California-Davis; PhD 1995, Kansas State University.

PUNNETT, IAN, Assistant Professor of Journalism and Mass Communications (2018). BA 1998, University of Illinois at Urbana-Champaign; MDiv 2003, Columbia Theological Seminary; PhD 2017, Arizona State University.

PUNTNEY, LINDA S., Assistant Professor Emeritus of Journalism and Mass Communications (1989). BS 1966, University of Missouri; MA 1981, Central Missouri State University.

PURKEYPILE, JOY, Extension Agent, Family and Consumer Sciences, Southwind District 10, Fort Scott (2014). BS 1996, University of Nebraska.

PYLE, MARY K., Assistant Director for International Support and Special Assistant to the Associate Provost of International Programs (2011). BA 1980, Drake University.

QUIRING, VIRGINIA M., Associate Dean Emeritus, K-State Libraries (1971). BA 1943, Ottawa University; MLS 1971, MS 1978, Emporia State University.

RACHEL, JANE M., Adjunct Faculty of the College of Arts and Sciences; Director of Clinical Laboratory Science, St. Luke's Hospital, Kansas City (2004). BS 1975, University of Missouri-Kansas City; MA 1984, University of Kansas.

RADER, LESLIE G., Instructor Emeritus of Education (2004). BS 1971, Emporia State University; MS 1979, Kansas State University.

RAEF, ABELMONEAM, Associate Professor of Geophysics, Department of Geology (2008). BSC 1987, MSc 1994, PhD 2001, AGH-University of Science and Technology.

RAFFERTY, RYAN J., Assistant Professor of Chemistry (2014). BA 2000, BS, MS 2003, University of Northern Colorado; PhD 2011, Colorado State University.

RAGAN, GAIL C., Programmer I, K-State Libraries (2013). BA 1971, University of Missouri.

RAGANATH, VENKATESH-PRASAD, Visiting Assistant Professor of Computer Science (2014). BE 1997, Bangalore University, India; MS 2002, PhD 2006, Kansas State University.

RAGAR, CHERYL, Assistant Professor of American Ethnic Studies (2008). BS 1991, MA 1999, PhD 2008, University of Kansas.

RAGHAVAN, RAM, Research Assistant Professor of Veterinary Diagnostic Laboratory (2012). BSc 1988, College of Agriculture, India; MS 2005, PhD 2011, Kansas State University.

RAGLAND, GREGORY J., Assistant Professor of Entomology; Arthropod Genomics, Life History Evolution, Insect Seasonality (2014). BA 1997, University of San Diego; MS 2001, Washington State University; PhD 2007, University of North Carolina.

RAHMAN, TALAT SHAHNAZ, University Distinguished Professor Emerita of Physics (1983). BS 1968, MS 1969, Karachi University, Pakistan; MPhil 1970, Islamabad University, Pakistan; PhD 1977, University of Rochester.

RAHMANI, VAHID, Assistant Professor of Biological and Agricultural Engineering (2016). BS 2007 Amirkabir University of Technology, Iran, MS 2009 Shiraz University, Iran, PhD 2014, Kansas State University.

RAINE, MICHAEL, Director of Information Technology Projects and Services, College of Business Administration. AA 1997, Manhattan Area Technical College; BS 2002, Kansas State University.

RAJASHEKAR, C. B., Professor of Horticulture and Natural Resources (1983). BS 1971, MS 1974, University of Agricultural Sciences; PhD 1980, Colorado State University.

RAKESTRAW, MORGAN, Instructor of Food, Nutrition, Dietetics and Health (2011). BS 2005, MS 2007, Kansas State University.

RAMM, ALEXANDER G., Professor of Mathematics (1981). MS 1961, Leningrad State University; PhD 1964, Moscow State University; DSci 1972, Academy of Science, Minsk.

RANDOLPH, LEVY G., Assistant Professor, Department of Communications and Agricultural Education (2019). BS 2014, California State University – Fresno; MS 2016, PhD 2019, University of Florida.

RANKIN, AMY J., Professor of Clinical Sciences, Ophthalmology (2007). DVM 1993, University of Wisconsin; MS 2002, Purdue University; Diplomate 2002, American College of Veterinary Ophthalmologists.

RANKIN, DAVID, Clinical Associate Professor, Anesthesiology (2007). DVM 1993, Kansas State University; MS 1997, Washington State University; Diplomate 1999, American College of Veterinary Anesthesiology.

RANKIN, MARY M., Assistant Director, Dean of Engineering; Instructor of Engineering Extension (1988). BA 1973, Kansas State University.

RANSOM, MICHEL D., Professor of Agronomy and Assistant Head for Teaching; Soil Scientist (1984). BS 1974, MS 1976, University of Arkansas; PhD 1984, Ohio State University.

RANSOM, NORA E., Instructor Emeritus of English (1984). BA 1973, MA 1976, University of Arkansas.

RAPP, DILLON, Farm Management Economist (2017). BS 2015, MS 2017, Oklahoma State University.

RAPP, EVAN, Assistant Strength & Conditioning Coach at K-State Athletics (2017). BS 2011, MS 2013 Kansas State University.

RASHEED, HAYDER A., Professor of Civil Engineering (2001). BSc 1987, MSc 1990, University of Baghdad; PhD 1996, University of Texas-Austin; Professional Engineer.

RATHBONE, DONALD E., Dean Emeritus of Engineering; Professor Emeritus of Electrical and Computer Engineering (1973). BS 1951, Purdue University; MS 1956, Northwestern University; PhD 1962, University of Pittsburgh; Professional Engineer.

RATHBUN, ARTHUR J., Counselor Emeritus, Counseling Services (1991). MDIV 1962, MS 1988, Kansas State University.

RATHBUN, JAMIE, Extension Agent, Family and Consumer Sciences, Midway District 15, Ellsworth (2008). BS 2005, Kansas State University.

RATRA, BHARAT, University Distinguished Professor of Physics (1996). MS 1982, Indian Institute of Technology, New Delhi; PhD 1986, Stanford University.

RAWSON, THOMAS M., Senior Advisor, Vice President for Administrative and Finance (1990). BS 1965, MS 1967, MS 1970, Kansas State University; PhD 1975, University of New Mexico.

REAGAN, CHARLES E., Professor Emeritus of Philosophy (1967). AB 1964, Holy Cross College; MA 1966, PhD 1967, University of Kansas.

REAY, NEVILLE W. (BILL), University Distinguished Professor Emeritus of Physics (1993). BA 1957, Occidental College-Los Angeles; PhD 1962, University of Minnesota.

REDDY, POLAMREDDY V., Director Feed the Future Innovation Lab and Adjunct Professor of Grain Science and Industry (2014). BS 1970, Sri Venkateswara University, India; MS 1983, PhD 1976, Kansas State University.

REDIKER, JANET B., Extension Agent Emeritus, Family and Consumer Sciences, Lyon County, Emporia (1966). BS 1958, Emporia State University; MS 1981, Kansas State University.

REDINGER, RODNEY, Assistant Forester (2003).

REDMAN, ALICE LOIS, Professor Emeritus; Extension Specialist, 4-H Youth Development Programs (1978). BS 1953, University of Missouri; MS 1959, University of Maryland.

REECK, GERALD R., Professor of Biochemistry and Molecular Biophysics (1974). BA 1967, Seattle Pacific College; PhD 1971, University of Washington.

REED, CARL, Professor Emeritus of Grain Science and Industry (1978). BS 1971, MS 1975, Michigan State University; PhD 1987, Kansas State University.

REED, HEATHER M., Assistant Vice President of Student Life, and Associate Dean and Director of the Office of Student Life (2003). BS 1978, Saint Mary's of the Plains College; MA 1990, Fort Hays State University.

REEKIE, MARCELLA P., Instructor of English (1985). BA 1982, Union College; MA 1985, Kansas State University.

REEL, CHRISTY, Extension Agent, Family and Consumer Sciences, Harper County (2015). BS 2014, Kansas State University.

REES, JOHN O., Professor Emeritus of English (1965). BA 1947, Amherst College; MFA 1957, PhD 1965, University of Iowa.

REEVES, ROBERT D., Professor Emeritus of Food, Nutrition, Dietetics and Health; Agricultural Experiment Station (1977). BA 1964, MS 1965, Texas Tech University; PhD 1971, Iowa State University.

REGEHR, DAVID, Professor Emeritus of Agronomy; Extension Specialist, Weed Science (1981). BS 1964, MS 1968, PhD 1975, University of Illinois.

REID, REBECCA L., Extension Agent, Family and Consumer Science, Cowley County, Winfield (2010). BS 1995, Kansas State University.

REID, WILLIAM R., Associate Professor of Horticulture and Natural Resources, Research Horticulturist in Charge, Pecan Experimental Field-Chetopa, Agricultural Experiment Station (1981). BS 1978, Rutgers University; MS 1980, North Carolina State University; PhD 1993, Oklahoma State University.

REIF, KATHRYN, Assistant Professor of Diagnostic Medicine/Pathobiology (2016). BA 2004, Ohio Wesleyan University; MSPH 2005, Tulane University; PhD 2009, Louisiana State University; Post-Doctoral Fellow 2009-2014, Washington State University; Post-Doctoral Fellow 2014-15, USDA-ARS, Pullman, Washington.

REMPE, DAVID H., Farm Management-Economist Emeritus (1982). BS 1980, University of Nebraska.

RENBERG, WALTER, Professor of Clinical Sciences, Small Animal Surgery (1998). DVM 1992, Oklahoma State University; MS 1997, Virginia Tech; Diplomate 1999, American College of Veterinary Surgeons.

RENNER, CHRISTOPHER E., Instructor of Italian (2011). BA 1978, College of Stuebenville; Diploma TEFL 1987, Royal Society of Arts; MEd 1998, Framingham State College.

RENNER, JAKE W., Extension Agent, Agriculture and Natural Resources, Pratt County, Pratt (2014). BS 2013, Fort Hays State University.

RENTER, DAVID G., Professor of Diagnostic Medicine/Pathobiology, Epidemiology (2005). BS 1994, University of Nebraska-Kearney; DVM 1998, PhD 2002, Kansas State University.

RENZ, AMY BUTTON, President, K-State Alumni Association (1976). BS 1976, MPA 1986, Kansas State University.

REPLOGLE, RENATA J., Assistant Professor Emeritus of Art (1966). BA 1963, MA 1964, Northern Colorado University.

REPLOGLE, REX, Associate Professor Emeritus of Art (1966). BFA 1964, MFA 1967, University of Kansas.

REPPERT, EARL J., Associate Emeritus Staff Physician (1995). BS 1964, University of Nebraska; MS 1984, Tulane University School of Medicine; MD 1968, University of Nebraska.

REPPERT, EMILY J., Associate Professor of Clinical Sciences, Agricultural Practices (2014). MS 2014, Oklahoma State University; DVM 2010, Colorado State University; Diplomate 2015, American College of Veterinary Internal Medicine.

REPPERT, KETTY, Associate Director, English Language Program (2007). BA 2002, Sterling College; MA 2004, Iowa State University.

RETZLAFF, DEANNA, Assistant Professor of Animal Sciences and Industry (2002). BS 1995, University of Tennessee-Martin; PhD 2002, Kansas State University.

REYES CUELLAR, PERLA E., Associate Professor of Statistics (2012). BS 2001, National Autonomous University of Mexico; MS 2008, PhD 2011, University of Wisconsin-Madison.

REZAC, DARREL J., Adjunct Faculty of Diagnostic Medicine/Pathobiology (2015). BS 2008, MS 2010, PhD 2013, Kansas State University.

REZAC, MARY E., Professor of Chemical Engineering (2002). BS 1987, Kansas State University; MS 1992, PhD 1993, University of Texas Austin.

REZNIKOFF, SARAH, Associate Professor of Mathematics (2007). BA 1992, PhD 2002, University of California-Berkeley; MA 1993, University of California-Los Angeles.

RHODES, ASHLEY E., Teaching Associate Professor of Biology; Physiology (2008). BS 2001, MS 2004, PhD 2013, Kansas State University.

RHOADES, NORA, Extension Agent, Family and Consumer Sciences, Post Rock District 1, Mankato (2013). BS 2010, University of Nebraska-Lincoln; MS 2014, University of Nebraska-Kearney.

RHODES, THAD K., Associate Forester (2001). BS 2000, Kansas State University.

RIAT, LARRY D., Extension Agent Emeritus, Agriculture and Natural Resources, Dickinson County, Abilene (1961). BS 1961, MS 1969, Kansas State University.

RIBLETT, LOREN, Assistant Dean Emeritus and Professor Emeritus of School of Integrated Studies (1981). BS 1957, Kansas State University; MS 1961, Emporia State University; PhD 1980, Kansas State University.

RICCI, NICOLE M., Assistant Forester (2010). BS 2004, Northern Michigan University; MS 2007, Michigan Technological University; MS 2010, University of Florida.

RICE, CHARLES W., University Distinguished Professor of Agronomy, Soil Microbiology; Adjunct Professor of Geography (1988). BS 1977, Northern Illinois University; MS 1980, PhD 1983, University of Kentucky.

RICE, FRED, Instructor Emeritus of Management; Director of Small Business Development Center (1986), BA 1958, Ohio Wesleyan University; MBA 1965, University of Cincinnati.

RICE, TRUDY M., Extension Associate, Community Development Programs (1993). BS 1973, Kansas State University; MS 1999, Baker University.

RICHARD, PATRICK, University Distinguished Professor Emeritus of Physics (1972). BS 1961, University of Southwestern Louisiana; PhD 1964, Florida State University.

RICHARDS, VERLYN D., Professor Emeritus of Finance (1965). BS 1956, MS 1960, Kansas State University; PhD 1967, University of Illinois; CPA 1961, Kansas.

RICHARSON, CARA M., Meeting Planner, K-State Global Campus (2016). BS, Kansas State University.

RICHARDSON, DANIEL C., CEO Emeritus, K-State Olathe (1991). BS 1975, DVM 1977, Kansas State University; Diplomate 1983, American College of Veterinary Surgeons.

RICHARDSON, RALPH C., CEO and Interim Dean, K-State Olathe (1998). BS 1969, DVM 1970, Kansas State University.

RICHMOND, CHELSEA L., Extension Agent, Family and Consumer Sciences, Flint Hills District 13, Council Grove (2010). BS 2006, MS 2011, Kansas State University.

RICHMOND, MARY FRANCES, Extension Agent, Family and Consumer Sciences, Frontier District 11, Lyndon (1975). BS 1973, Pittsburg State University; MS 1981, PhD 2014, Kansas State University.

RICHT, JUERGEN, Regents Distinguished Professor of Diagnostic Medicine/Pathobiology (2007). AA 1980, University of Hohenheim, Germany; DVM 1985, Ludwig Maximilians University, Germany; PhD 1988, Justus Liebig University, Germany; 1995, Board Certification for Veterinary Microbiology; 1996, Board Certification for Veterinary Immunology and Serology.

RICHTER, LINDA K., Professor Emeritus of Political Science (1982). BA 1964, Willamette University; MA 1966, University of Hawaii; PhD 1980, University of Kansas.

RICHTER, WILLIAM LOUIS, Professor Emeritus of Political Science (1966). BA 1961, Willamette University; MA 1963, PhD 1968, University of Chicago.

RICKETTS, DREW, Assistant Professor (2016). BS 2003, Ph.D. 2016 Kansas State University.

RIDLEY, ROBERT K., Professor Emeritus of Parasitology, Department of Pathology and Microbiology; Research Parasitologist (1981). MS 1960, University of Kentucky; PhD 1967, Florida State University; DVM 1978, Kansas State University.

RIEDY, RENAE D., Extension Agent, Family and Consumer Sciences, Marion County, Marion (2014). BS 1995, Kansas State University.

RIFORGIATE, SARAH E., Assistant Professor of Communication Studies (2011). BA 1992, University of Illinois Champaign-Urbana; MA 2007, PhD 2011, Arizona State University.

RILEY, MERRILL J., Assistant Professor Emeritus of Management (1966). BS 1951, John Brown University; MBA 1955, University of Arkansas.

RIPPE, ALYSSA, Extension Agent, Livestock Production and Horticulture, Twin Creeks District, Oberlin (2016). BS 2013, Kansas State University; MS 2015, Colorado State University.

RISHI, SUSMITA, Assistant Professor Landscape Architecture and Regional and Community Planning (2018). PhD 2018, University of Washington, Seattle.

RITTER, MARCINA S., Executive Assistant to the Dean, K-State Global Campus (2001). BS 1996, Kansas State University.

RITTERBUSH, LAUREN W., Professor of Anthropology (1998). BA 1981, University of North Dakota; MA 1984, MPhil 1986, PhD 1990, University of Kansas.

RITTMANN, COLLEEN, Executive Assistant to the Vice President for Student Life and Dean of Students (2018). BS 1989, Kansas State University.

RIVARD, CARY L., Associate Professor of Horticulture and Natural Resources - Fruit and Vegetable Extension Specialist (2010). BS 2004, Truman State University; MS 2007, PhD 2010, North Carolina State University.

RIVERA, MADAÍ, Assistant Director for Student Engagement, Diversity and Multicultural Student Affairs (2008). BS 2005, MS 2007, Kansas State University.

RIVIERE, JIM, Emeritus MacDonald Endowed Chair in Veterinary Medicine, University Distinguished Professor of Anatomy and Physiology, Kansas Bioscience Eminent Scholar, and Director of Institute of Computational Comparative Medicine (2013). DVM, PhD 1981; DSc 2007, Purdue University.

ROACH, FAITH RUSSELL, Associate Professor Emeritus of Hospitality Management (1965). BS 1947, MS 1966, PhD 1973, Kansas State University.

ROBB, CLIFFORD A., Associate Professor of Family Studies and Human Services (2012). BS 2001, University of the South; MS 2004, University of Alabama; PhD 2007, University of Missouri.

ROBBINS, BENNY S., Professor Emeritus; Area Extension Director, Southeast (1967). BS 1966, MS 1971, Oklahoma State University.

ROBBINS, GRANT, Head Men's Golf Coach at K-State Athletics (2014). BBA 1994, MS 1997 University of Memphis.

ROBBINS, JOY, Professor of Interior Design and Fashion Studies (2006). BS 1998, MS 2000, Kansas State University; PhD 2004, Iowa State University.

ROBBY, Professor of Computer Science (2004). BSc 1998, Oklahoma State University; MSc 2000, PhD 2004, Kansas State University.

ROBERTS, CAMILLA J., Director of Honor and Integrity System (2004). BS 2001, MEd 2004, Clemson University; PhD 2008, Kansas State University.

ROBERTS, CAROLYN V., Assistant Dean Emeritus of Veterinary Medicine (1977). BS 1955, University of Colorado; MS 1976, Kansas State University.

ROBERTS, JEREMY A., Associate Professor of Mechanical and Nuclear Engineering (2014). BS 2009, MS 2009, University of Wisconsin; PhD 2014, Massachusetts Institute of Technology.

ROBERTS, KEVIN R., Associate Professor of Hospitality Management (2003). BS 1999, MS 2002, Iowa State University; PhD 2007, Kansas State University.

ROBERTS, KURT, Executive Director & Lead Career Coach, Career Development, College of Business Administration. BS 1990, Kanas State University.

ROBERTS, RICKEY D., Extension Agent, Agriculture and Natural Resources and 4-H, Marion County, Marion (2001). BS 1987, Oklahoma State University; MS 1992, Kansas State University.

ROBERTSON, DONALD C., Professor Emeritus of Diagnostic Medicine/Pathobiology (2000). BS 1962, University of Dubuque; PhD, 1967, Iowa State University.

ROBERTSON, DWANNA, Assistant Professor of American Ethnic Studies (2013). BA 2001, University of Central Oklahoma; MBA 2003, East Tennessee State University; MS 2010, Oklahoma State University; PhD 2013, Massachusetts University-Amherst.

ROBERTSON, JOHN M., Psychologist, Assistant Director Emeritus, Counseling Services (1989). MA 1986, PhD 1989, University of California-Santa Barbara.

ROBINSON, LEAH M., Extension Agent, Family and Consumer Sciences, Central Kansas District 3, Minneapolis (2005). BS 2002; MS 2005, Kansas State University.

ROBINSON, MICHAEL R., Major, United States Air Force, Assistant Professor, Aerospace Studies (2019).

ROCHE, THOMAS E., University Distinguished Professor Emeritus of Biochemistry and Molecular Biophysics (1974). BS 1966, Regis College, Denver; PhD 1970, Washington State University.

RODDY, PRISCILLA, Chief Financial Officer, Veterinary Medicine (1991). BS 1986, Oklahoma State University.

RODECAP, WILL, Head Equipment Manager at K-State Athletics (2011). BS 1993, Kansas State University; MS 2010, Colorado State University.

ROGERS-RANDOLPH, TIFFANY M., Assistant Professor, Department of Communications and Agricultural Education (2019). BS 2014, Michigan State University, MS 2016, PhD 2019, University of Florida.

RODRIGUEZ, ADRIAN, Associate Vice President for Student Life, Diversity and Multicultural Student Affairs (2017). BED 1997, MS 2004, Texas A & M University.

RODRIGUEZ, LUIS, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2011). DVM 1979, National University, Costa Rica; MSC 1982, PhD 1985, University of Wisconsin-Madison.

ROELOFS, JEROEN, Associate Professor of Biology; Cell Biology (2009). BS, MS 1996, University of Wageningen, The Netherlands; PhD 2003, University of Groningen, The Netherlands.

ROGERS, ALISON R., Copywriter/Editor, Housing and Dining Services and K-State Career Center (2011). BS 2002, Kansas State University.

ROGERS, DANNY H., Professor of Biological and Agricultural Engineering; Extension Engineer Irrigation (1977). BS 1976, MS 1977, Kansas State University; PhD 1988, Oklahoma State University; Professional Engineer, 1981.

ROGGE, SHANNON N., Extension Agent, Agriculture and Natural Resources, Pawnee County, Larned (2015). BS 2014, Kansas State University.

ROHLES, FREDERICK H., Professor Emeritus of Psychological Sciences (1963). BS 1942, Roosevelt University; MA 1950, PhD 1956, University of Texas.

ROHLING, KATIE L., Extension Agent, 4-H Youth Development, Wildcat District, Girard (2016). BS 2014, MS 2016, Kansas State University.

ROJKOVSKAIA, NATASHA (NATALIA), Associate Professor of Mathematics (2002). MS with Honors 1997, Moscow State University; PhD 2002, University of Pennsylvania.

ROLF, MEGAN, Associate Professor of Animal Sciences and Industry (2016). BS 1995, Kansas State University; MS 2009, PhD 2012, University of Missouri-Columbia.

ROLLES, DANIEL, Assistant Professor of Physics (2014). MSc 2001, PhD 2005 Technical University Berlin, Germany.

ROLLEY, STEPHANIE A., Professor and Head of Landscape Architecture and Regional & Community Planning (1988). BLA 1982, Kansas State University; MCP 1987, Massachusetts Institute of Technology. Professional Landscape Architect. Certified Planner.

ROMO JR., GABRIEL, Assistant Women's Soccer Coach at K-State Athletics (2015). BA 2009, Kansas Wesleyan University.

RONE, CLIFFORD, Psychologist, Counseling Services (2014). BS 2007, Texas Christian University; MS 2010, PhD 2013, Idaho State University.

ROOZEBOOM, KRAIG L., Assistant Professor of Agronomy; Agronomist, Crop Performance Testing (1990). BA 1985, Dordt College; MS 1990, Iowa State University.

ROSENKRANZ, RICHARD, Professor of Food, Nutrition, Dietetics and Health (2008). BS 1993, University of Kansas; MA 1996, University of North Dakota; MS 2001, PhD 2008, Kansas State University.

ROSENKRANZ, SARA, Associate Professor of Food, Nutrition, Dietetics and Health (2012). BS 1993, University of Kansas; MS 2001, PhD 2010, Kansas State University.

ROSHANRAVAN, SHIREEN, Assistant Professor of American Ethnic Studies (2005). BA 2000, Southwestern University; MA 2002, PhD 2007, Binghamton University.

ROSINE, AMY, Associate Professor of Music, School of Music, Theatre, and Dance (2007). BME 1988, Truman State University; MM 193, University of Missouri-Kansas City; DMA 1999, University of Kansas.

ROSS, KARA L., Research Assistant Professor of Agricultural Economics (2011). BS 2003, University of Guelph; MS 2005, PhD 2010, Kansas State University.

ROSS, KYLE, Instructor of Economics (2014). BA 2002, PhD 2009 Kansas State University.

ROSS, LYNNE S., Assistant Professor Emeritus of Communication Studies, Theatre and Dance (1978). BS 1968, Nebraska Wesleyan University; MA 1973, Kansas State University.

ROSS, TWEED, Associate Professor Emeritus of Education (1993). BS 1966, MA 1968, EdD 1993, Kansas State University.

ROTHS, BARBARA J., Extension Agent, Family and Consumer Sciences, Butler County, El Dorado (1999). BS 1977, Kansas State University.

ROUSH, JAMES K., Doughman Chair and Professor of Clinical Sciences, Small Animal Surgery (1989). DVM 1983, Purdue University; MS 1988, University of Wisconsin; Diplomate 1990, American College of Veterinary Surgeons.

ROUTSON, ROGER, Assistant Professor Emeritus of Art (1978). BFA 1974, Cleveland Institute of Art; MFA 1978, University of Illinois.

ROVELTO, CLIFFORD L., Head Coach/Director of Track and Field at K-State Athletics (1988). BS 1978, University of Kansas.

ROVELTO, KAROL, Director of Track and Field Operations at K-State Athletics (2003). ME 1998, University of Tennessee.

ROWLAND, JACK J., Forester Emeritus; District Forester, Southeast (1969). BS 1968, MS 1970, University of Missouri.

ROWLAND, RAYMOND R. R., Professor of Diagnostic Medicine/Pathobiology (2001). BA 1977, California State University-Fresno; MA 1983, San Francisco State University; PhD 1989, University of New Mexico School of Medicine.

ROWLETT, JANE, Special Assistant to the Provost, Office of Academic Personnel (1977). BS 1970, MS 1977, PhD 1981, Kansas State University.

ROZELL, TIMOTHY G., Professor of Animal Sciences and Industry (1997). BS 1986 MS 1989, University of Missouri; PhD 1993, Washington State University.

RUBERSON, JOHN, Professor and Head of Entomology (2012). BS 1982, MS 1984, Brigham Young University; PhD 1989, Cornell University.

RUBIN, LISA M., Assistant Professor of Special Education, Counseling, and Student Affairs (2014). BS 2003, MEd 2004, University of Texas-Austin; PhD 2012, University of Nevada-Las Vegas.

RUDENKO, ARTEM A., Assistant Professor of Physics (2012). MS 1998, PhD 2002, Moscow Institute of Physics and Technology, Russia.

RUDER, JASON A., Client Manger, Division of Communications and Marketing (2016). BFA 2016, Kansas State University

RUDER, MIKE, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2012). BS 2003, University of Kansas; DVM 2007, Kansas State University; PhD 2012, University of Georgia.

RUIZ, ANTHONY N., Kansas Farm Management Association, KFMA Coordinator of Professional Development (2017). BS 2007, Oklahoma State University.

RUIZ DIAZ, DORIVAR A., Assistant Professor of Agronomy; Soil Fertility and Nutrient Management (2008). BS 2000, Pan-American School of Agriculture; MS 2004, University of Illinois at Urbana-Champaign; PhD 2007, Iowa State University.

RUOFF, DANIELLE, Head Cheerleading Coach at K-State Athletics (2008). BS 2003, Montana State University.

RUSH, BONNIE, Professor and Executive Associate Dean of College of Veterinary Medicine, Equine Internal Medicine (1993). DVM 1989, MS 1993, Ohio State University; Diplomate 1993, American College of Veterinary Internal Medicine (1993).

RUSS, OLIVER G., Professor Emeritus of Agronomy (1949). BS 1950, MS 1953, Kansas State University.

RUSSELL, CANDYCE S., Professor Emeritus of Family Studies and Human Services (1974). BS 1968, Cornell University; MA 1972, PhD 1975, University of Minnesota.

RUSSELL, LEROY W., Extension Agent, Agriculture and Natural Resources, Shawnee County, Topeka (1990). BS 1977, MS 1978, Kansas State University.

RYAN, CHRISTA, Assistant Strength & Conditioning Coach at K-State Athletics (2016). BS 2014, Ball State University; MS 2014 Kansas State University.

RYS, ANDREW, Professor of Electrical and Computer Engineering (1983). BS 1976, MS 1978, Technical University of Wroclaw, Poland; PhD 1983, Texas Tech University.

RYS, MALGORZATA J., Associate Professor of Industrial and Manufacturing Systems Engineering (1989). BS 1979, MS 1979, Technical University of Wroclaw; MS 1985, PhD 1989, Kansas State University.

SACHS, DAVID H., Emeritus Professor of Architecture (1988). BS 1974, Stetson University; MArch 1977, Rice University; DArch 1986, University of Michigan. Licensed Architect.

SADYKOV, RUSTAM, Assistant Professor of Mathematics (2016). BS/MS 2001, Moscow State University; PhD 2005, University of Florida.

SAEKI, SADAHIRO, University Distinguished Professor Emeritus of Mathematics (1982). BS 1965, Waseda University; MS 1967, PhD 1970, Tokyo Metropolitan University, Japan.

SAMARAKOON, DHANUSHKA, Programmer, K-State Libraries (2008). Bachelor of Information Technology 2004, University of Colombo School of Comp.; BS 2005, Sri Lanka Institute of IT.

SAMPSON, GABRIEL S., Assistant Professor of Agricultural Economics (2016). BS 2007, California State University-Chico; MS 2010, California State University-Santa Barbara; PhD 2016, University of California-Davis.

SAMPSON-CHOMA, TOSHA, Associate Professor of English (2014). BA 1997, Messiah College; MSE 1999, Wayne State College; PhD 2011, University of Nebraska-Lincoln.

SAMUSHIA, LADO, Assistant Professor of Physics (2014). BSc 2002, MS 2004, Tbilsi State University, Tbilsi, Georgia; PhD 2009, Kansas State University.

SANDERS, CHARLES W., JR., Associate Professor of History (2001). BA 1970, Louisiana State University; ME 1981, North Georgia College; MA 1991, U.S. Naval War College; PhD 2001, Kansas State University.

SANDERS, JOSEPH SUTLIFF, Professor of English (2010). BA 1995, John Brown University; MA 1997, University of Arkansas; PhD 2005, University of Kentucky.

SANDERS, KATHY, Assistant Registrar for K-State Polytechnic Campus (2009). BS 2013 Kansas State University.

SANDERSON, MATTHEW, Professor of Sociology (2011). BS 2002, MA 2004, Kansas State University; PhD 2008, University of Utah.

SANDERSON, MIKE, Professor of Diagnostic Medicine/Pathobiology (2011). BS 1985, DVM 1988, Colorado State University; Diplomate 1995, American College of Veterinary Preventive Medicine, Epidemiology Specialty; Diplomate 1995, American College of Theriogenologists.

SANDERSON, MOLLY A., Instructor of Social Work (2015). BS 2002, Kansas State University; MSW 2007, University of Utah.

SANGHA, SANGEETA, Visiting Assistant Professor of Philosophy (2012). BA 2000, University of Waterloo; MA 2003, PhD 2011, Bowling Green State University.

SANTSCHI, ELIZABETH M., Professor of Clinical Sciences, Equine Surgery (2014). BS 1980, DVM 1984, University of Illinois; Diplomate 1992, American College of Veterinary Surgeons.

SARDARLI, SABUHI H., Associate Professor of Finance (2013). BBA Economics, BBA Management, 2005, Pittsburg State University; MBA 2006, University of Missouri; PhD 2013, University of Florida.

SARGEANT, JAN, Adjunct Faculty of Diagnostic/Pathobiology (2003). DVM 1986, MSc 1990, PhD 1996, University of Guelph.

SARMIENTO, TOM, Assistant Professor of English and Gender, Women, and Sexuality Studies (2015). BA, BS 2005, University of California-San Diego; PhD 2014, University of Minnesota.

SAUBER, LUKE, Assistant Athletic Trainer & IBC Sports Medicine Coordinator at K-State Athletics (2012). BS 2005, MS 2007 Kansas State University.

SAUCIER, DONALD A., Professor of Psychological Sciences (2004). BA 1996, Colby College; MA 1999, PhD 2001, University of Vermont.

SAUER, KEVIN L., Associate Professor of Food, Nutrition, Dietetics and Health (2004). BS 1993, MS 1998, PhD 2009, Kansas State University.

SAUTER, SILVIA I., Professor Emeritus of Spanish (1988). BA 1979, MA 1981, University of Oregon; PhD 1988, University of Texas-Austin.

SAVAGE, REBEKAH, Learning Specialist at K-State Athletics (2018). BS 200, Kansas State University; MA 2002, Kansas State University.

SAWANT, PALLAVI, Instructor of Statistics (2014). BS 1993, Bombay University; MS 2009, PhD 2013, Auburn University.

SAWER, SARA, Instructor, Extension Agent, EFNEP, Sedgwick County, Wichita (2016). BS 2006, Kansas State University; MS 2010 University of Kansas.

SAWYERS, AARON W., Extension Agent, Agriculture and Natural Resources, Comanche County, Coldwater (2014). BS 2008, Kansas State University.

SAYRE, ELEANOR, Associate Professor of Physics (2011). BS 2002, Grinnell College; PhD 2007, University of Maine.

SAYRE, MATTHEW, Program Assistant, College of Business Administration (2014). BA 1999 Grinnell College; MPA 2004, University of Maine

SCALES, STERLING D., Lieutenant United States Air Force, Assistant Professor of Aerospace Studies (2015). BS 2009, Campbell University; BBA 2011, Kennesaw State University.

SCHAAKE, SCOTT L., Associate Professor of Animal Sciences and Industry (1992). BS 1984, Kansas State University; MS 1986, Clemson University; PhD 1991, University of Kentucky.

SCHAFER, JOSEPHINE, Assistant Professor of Political Science (2012). BA 2005, MPA 2007, Appalachian State University; PhD, 2012 University of Nevada-Las Vegas.

SCHALLES, DIANNA L., Dietitian, Lafene Health Center (1998). BS 1983, Baker University; MS 1985, Kansas State University.

SCHAPAUGH, WILLIAM T., Professor of Agronomy; Soybean Geneticist (1978). BS 1975, Iowa State University; MS 1977, PhD 1979, Purdue University.

SCHAUB, RODNEY L., Extension Agent, Agriculture and Natural Resources, Frontier District 11, Lyndon (1990). BS 1980, Kansas State University.

SCHUAB, RYAN E., Extension Agent, Agriculture and Natural Resources, Greenwood County, Eureka (2014). BS 2013, Kansas State University.

SCHEER, RICHARD K., Associate Professor Emeritus of Philosophy (1968). AB 1950, University of Nebraska; MA 1951, University of Florida; PhD 1958, University of Nebraska.

SCHEIDT, RICK J., Professor of Family Studies and Human Services (1976). BA 1967, MA 1969, California State University; PhD 1973, University of Nebraska.

SCHELL, LEO M., Professor Emeritus of Education (1966). AB 1955, Bethany College; MS 1962, University of Kansas; PhD 1964, University of Iowa.

SCHENCK-HAMLIN, WILLIAM, Professor Emeritus of Communication Studies (1976). BS 1969, MA 1971, Kansas State University; PhD 1976, University of Oregon.

SCHENCK-HAMLIN, DONNA C., Undergraduate Specialist, K-State Libraries (1983). BA 1975, MLS 1976, University of Oregon; MM 1984, Kansas State University.

SCHENEMAN, C. STEPHEN, Coordinator Emeritus; Leader, Professional Development (1989). BS 1970, MS 1971, University of Missouri; PhD 1980, Ohio State University.

SCHERMERHORN, THOMAS, Professor of Clinical Sciences, Small Animal Internal Medicine (2001). BS 1984, University of Scranton; VMD 1990, University of Pennsylvania; Diplomate 1997, American College of Veterinary Internal Medicine.

SCHIFF, SUSAN B., Public Information Officer, Department of Communications and Agricultural Education (2019). BS 1981 University of Cincinnati; MS 1984, University of Illinois.

SCHILLIE, JANE E., Associate Professor, Curator, K-State Libraries (2007). BA 1980, University of Kansas; MA 1989, University of Missouri-Kansas City; MA 1995, University of Missouri-Columbia.

SCHILLING, AUSTIN, Senior Director of Development at K-State Athletics (2015). BS 2011, MS 2013, University of Arkansas.

SCHINSTOCK, DALE E., Associate Professor of Mechanical and Nuclear Engineering (2001). BS 1989, MS 1992, PhD 1994, University of Kansas.

SCHLAGECK, KATHRINE WALKER, Education and Public Services Supervisor, Beach Museum of Art (1995). BS 1984, Stanford University, MS 1986, College of William and Mary.

SCHLEGEL, ALAN J., Professor, Agronomist in Charge, Research Soils Scientist Tribune Field, SW Research-Extension Center (1986). BS 1980, Kansas State University; MS 1983, PhD 1985, Purdue University.

SCHLENDER, JOHN R., Professor Emeritus of Agricultural Economics; Extension Agricultural Economist, Farm Management (1951). BS 1951, Kansas State University; MS 1960, Oregon State University; PhD 1969, Purdue University.

SCHLESENER, NORMAN E., Extension Agent Emeritus, Agriculture and Natural Resources, Kingman County, Kingman (1956). BS 1956, MS 1963, Kansas State University.

SCHLICHTING, SUSAN C., Extension Agent, 4-H, Ellis County, Hays (2003). BS 1984, University of Nebraska; MS 2007, Fort Hays State University.

SCHLUP, JOHN R., Professor of Chemical Engineering (1983). BS 1975, Kansas State University; PhD 1981, California Institute of Technology.

SCHMIDT, ANDREA L., Extension Agent, 4-H-Youth Development Programs, Riley County, Manhattan (1998). BS 1998, Fort Hays State University; MS 2003, Kansas State University.

SCHMIDT, DAVID A., Emeritus University Distinguished Professor of Computer Science (1986). BA 1975, Fort Hays State University; MS 1977, PhD 1981, Kansas State University.

SCHMIDT, KAREN A., Professor of Animal Sciences and Industry (1994). BS 1979, Pennsylvania State University; MS 1986, PhD 1989, University of Minnesota.

SCHMIDT, TERESA TEMPERO, Professor Emeritus of Art (1972). BA 1969, MA 1970, Central Washington State College; MFA 1972, Washington State University.

SCHMIDT, TODD, Extension Agent, Agriculture and Natural Resources, Greeley County, Tribune (1995). BS 1994, Kansas State University.

SCHMIT, JEREMY, Associate Professor of Physics (2011). BA 1999, Northwestern University; PhD 2005, University of California-Santa Barbara.

SCHNEIDER, MARY WILLIS, Professor Emeritus of English (1964). BA 1949, MA 1952, Iowa State University; PhD 1964, University of Minnesota.

SCHNEWEIS, ETHEL M., Extension Agent, Family and Consumer Sciences, Ford County, Dodge City (1999). BS 1979, Kansas State University.

SCHOEFF, ROBERT W., Professor Emeritus of Grain Science; State Leader, Grain Science and Industry Program (1960). BS 1942, MS 1947, PhD 1952, Purdue University.

SCHOFIELD, EILEEN, Editor Emeritus, Department of Communications and Agricultural Education (1982). MA 1966, Columbia University.

SCHONEWEIS, DAVID A., Professor Emeritus of Clinical Sciences, Food Animal Medicine (1966). BS 1956, DVM 1956, MS 1971, Kansas State University.

SCHONING, POLLY, Professor Emeritus of Pathology, Department of Diagnostic Medicine/Pathobiology; Research Pathologist (1979). DVM 1964, MS 1970, PhD 1979, Kansas State University; Diplomate 1982, American College of Veterinary Pathologists.

SCHRADER, MELISSA A., Assistant Director, Housing and Dining Services and Instructor, Food, Nutrition, Dietetics and Health (2001). BS 1996, MS 2004, Kansas State University.

SCHREMMER, ANNA C., Extension Agent, Family and Consumer Sciences, Phillips-Rooks District 5, Phillipsburg (2010). BS 1974, Kansas State University.

SCHRICK, KATHRIN, Associate Professor of Biology; Plant Biology, Agricultural Experiment Station (2008). BS 1986, Purdue University; PhD 1994, University of Washington-Seattle.

SCHROEDER, MARY M., Associate Professor Emeritus; Area Extension Home Economist (1961). BS 1938, MS 1968, Kansas State University.

SCHROEDER, TED C., Professor of Agricultural Economics, Director of Center for Risk Management Education and Research (1986). BS 1982, University of Nebraska; PhD 1986, Iowa State University.

SCHULTZ, BRUCE D., Professor of Anatomy and Physiology (1997). BS 1983, MS 1985, University of Nebraska; PhD 1991, Cornell University.

SCHULZ, KIRK H., Emeritus President (2009). BS 1986, PhD 1991, Virginia Tech.

SCHUMM, WALTER R., Professor of Family Studies and Human Services (1979). BS 1972, The College of William and Mary; MS 1976, Kansas State University; PhD 1979, Purdue University.

SCHURLE, KIM A., Program Coordinator, K-State Global Campus (2000). BS 1998, Kansas State University.

SCHWAB, BENJAMIN B., Assistant Professor of Agricultural Economics (2015). BA 2004, Rutgers University-Rutgers College; MS 2009, PhD 2011, University of Wisconsin.

SCHWARTZ, CHAD J, Assistant Professor of Architecture. B.Arch 2000, University of Illinois - Chicago; MArch 2003, Arizona State University. Registered Architect.

SCHWARTZ, D. ERICH, Coordinator of Religious Activities (2007). BA 1971, Midland Lutheran College; MDiv 1986, Pacific Lutheran Theological Seminary; ThM 1998, Duke University.

SCHWARZENTRAUB, MARK A., Farm Management Economist Emeritus (1980). BS 1976, MS 1980, University of Missouri.

SCHWENK, FRED W., Professor Emeritus of Plant Pathology (1969). BS 1960, MS 1964, North Dakota State University; PhD 1969, University of California.

SCOGLIO, CATERINA M., Professor of Electrical and Computer Engineering (2005). Dr. Eng. 1987, Post- Graduate 1988, University of Rome.

SCOTT, CASEY, Executive Associate Athletics Director for Internal Operations and Event Management at K-State Athletics (2002). BS 1977, Kansas State University.

SCOTT, CHRISTY, Compliance Officer, KSU Foundation (2002). BS 1977, Kansas State University.

SCOTT, MERTA, Instructor of Social Work (2016). BS 1996, Kansas State University; MSW 2001, The University of Kansas.

SCOTT, H. MORGAN, Adjunct Faculty of Diagnostic Medicine/Pathobiology, Epidemiology (2008). DVM 1988, University of Saskatchewan; PhD 1998, University of Guelph.

SCUILLA, JASON, Professor of Art (2006). BFA 2003, University of Central Florida; MFA 2005, Tyler School of Art.

SEABOURN, BRADFORD W., Adjunct Professor of Grain Science and Industry (2005). BS 1980, BS 1981, MS 1993, PhD 2002, Kansas State University.

SEAMON, DAVID R., Professor of Architecture and Regional and Community Planning; Adjunct Professor of Geography (1983). BA 1970, SUNY; MA 1974, PhD 1977, Clark University.

SEARS, ROLLIN G., Adjunct Professor of Agronomy (1980). BS 1972, MS 1974, Montana State University; PhD 1979, Oregon State University.

SEATON, RICHARD H., University Attorney Emeritus (1971). AB 1959, Harvard College; LLB 1963, Harvard Law School.

SEAY, MARTIN, Assistant Professor of Family Studies and Human Services (2012). BS 2007, PhD 2012 University of Georgia.

SEIB, PAUL A., Professor Emeritus of Grain Science and Industry; Research Biochemist, Agricultural Experiment Station (1970). BS 1958, PhD 1965, Purdue University.

SEILER, BLAKE, Defensive Coordinator/Linebackers at K-State Athletics (2013). BS 2007, Kansas State University; MBA 2010, Wichita State University.

SEILER, SIMEON, Assistant Athletic Trainer at K-State Athletics (2013). BS 2011, Fort Hays State University; MS 2011, Kansas State University.

SEIRER, LIVY, Adjunct Instructor of Journalsim and Mass Communcations (2019). BA 2014, MBA 2016, Fort Hays State University.

SELFRIDGE, O. JOHN, Associate Professor Emeritus of Architecture (1969). BA 1959, University of Kansas; MCP 1964, PhD 1996, Yale University.

SELL, PHILIP L., Extension Agent Emeritus, Horticulture, Shawnee County, Topeka (1978). BS 1970, MS 1971, Kansas State University.

SCHUAB, RYAN E., Extension Agent, Agriculture and Natural Resources, Greenwood County, Eureka (2014). BS 2013, Kansas State University.

SENTS, CLARISSA A., Extension Agent, Family and Consumer Sciences, Coffey County, Burlington (2015). BS 2013, Kansas State University.

SETSER, DONALD W., University Distinguished Professor Emeritus of Chemistry (1963). BS 1956, MS 1958, Kansas State University; PhD 1961, University of Washington.

SEYFERT, RONALD J., Extension Agent Emeritus, Central Kansas District 3 (1969). BS 1968, Kansas State University.

SEYLER, H. L., Associate Professor Emeritus of Geography and Geospatial Sciences (1970). BA 1963, MA 1967, Kansas State University; PhD 1971, Indiana University.

SHAMES, STEPHANIE R., Assistant Professor of Biology; Host-Pathogen Interactions, Bacterial Pathogenesis, Cellular Microbiology.

SHAMIR, LIOR, Associate Professor of Computer Science (2019). BA 1998, Tel Aviv University; MSc 2003, Open University, Tel Aviv; PhD, 2006, Michigan Technological University.

SHANHOLTZER, BETH, Advisor of Family Studies and Human Services (2008). BS 2004, Kansas State University; MS 2006, Oklahoma State University.

SHANKLIN, CAROL, Dean of Graduate School and Professor of Food, Nutrition, Dietetics and Health; Agricultural Experiment Station (1990). BS 1973, MS 1974, PhD 1976, University of Tennessee.

SHANOYAN, ALEKSAN, Assistant Professor of Agricultural Economics (2012). BS 2003, Texas A&M University; MS 2007, University of Illinois-Urbana-Champaign; PhD 2011, Michigan State University.

SHANTEAU, JAMES C., Professor Emeritus of Psychological Sciences (1971). BA 1966, San Jose State College; PhD 1970, University of California-San Diego.

SHAPKINA, NADEZDA, Assistant Professor of Sociology (2008). MA 1995, Saratov State Technical University; MA 2000, Central European University; PhD 2008, Georgia State University.

SHAPPEE, ERIC J., Professor of School of Integrated Studies (2000). AS 1991, Antelope Valley College; BS 1994, MS 2000, Embry- Riddle Aeronautical University.

SHAPPEE, LISA M., Library Director for K-State Polytechnic Campus and Associate Professor of School of Integrated Studies (2011). BSJ 1999, University of Kansas; MLS 2005, MS 2008, Emporia State University.

SHARDA, AJAY, Associate Professor of Biological and Agricultural Engineering (2013). B. Tech 1998, M. Tech, 2001, Punjab Agricultural University, India, PhD 2011, Auburn University.

SHARP, RYAN, Associate Professor of Horticulture and Natural Resources (2015). BS 1998 University of New York at Cortland; MEd 2005 Georgia College & State University, Ph.D. 2010 University of Georgia.

SHAW, BRADLEY A., Professor Emeritus of Modern Languages (1974). BA 1968, Lewis & Clark College; MA 1969, Northwestern University; PhD 1974, University of New Mexico.

SHEA, WILLIAM E., Instructor Emeritus of Computer Science (1998). BS 1972, University of Tampa; MS 1976, Kansas State University.

SHEFFIELD, DONNA E., Editor, Department of Communications and Agricultural Education (2000). BA 1984, Valdosta State University.

SHELTON, LEWIS E., Associate Professor Emeritus of Communication Studies, Theatre and Dance (1973). BA 1963, Taylor University; MA 1965, Indiana University; MA 1968, PhD 1971, University of Wisconsin.

SHEN, LEILEI, Associate Professor of Economics (2011). BA 2004, York University; MA 2005, University of British Columbia; PhD 2012, University of Toronto.

SHEPARD, KAREN K., Extension Agent, Family and Consumer Sciences, Graham County, Hill City (2002). BS 1981, Fort Hays State University.

SHERBERT, VICKI S., Assistant Professor of Curriculum and Instruction (2013). BS 1985, MS 1994, PhD 2011, Kansas State University.

SHERMAN, ASHLEY, Farm Management Economist (2017). BS 2007, Northwestern Oklahoma State University.

SHEROW, JAMES E., Professor of History (1992). BA 1976; MA 1978, Wichita State University; PhD 1987, University of Colorado.

SHERWOOD, PETER M. A., University Distinguished Professor Emeritus of Chemistry (1985). BSc 1967, St. Andrews University; MA 1970, PhD 1970, ScD 1995, Cambridge University; FRSC, CChem 1982; F. Institute P., CPhys 1996.

SHESHUKOV, ALEKSEY, Assistant Professor of Biological and Agricultural Engineering (2011). MSc, 1991, PhD 1996 Kazan State University, Russia.

SHEU, CHWEN, Professor of Management and Associate Dean of Academic Programs, College of Business (1990). BS 1978, National Chung-Hsing University-Taiwan; MS 1985, Iowa State University; PhD 1990, Ohio State University.

SHI, JISHU, Professor of Anatomy and Physiology (2008). MS 1998, Chinese Academy of Agricultural Sciences; DVM 1985, Beijing Agricultural University; PhD 1995, Kansas State University.

SHI, YONG-CHENG, Professor of Grain Science and Industry (2005). BS 1984 Zhejiang University, China; MS 1989, PhD 1993, Kansas State University.

SHIELDS, JILL, Deputy Athletics Director & Senior Woman Administrator at K-State Athletics (1999). BA 1990, University of Central Florida; MEd 1992, North Georgia College.

SHIMON, ANDREW, Director of Information Technology Systems at K-State Athletics (2012). BS 2002, Southwestern College; MS 2005, Friends University.

SHIPMAN, SUSAN, Senior Director of Hospitality and Special Events at K-State Athletics (2013). BA 1988, Kansas State University.

SHOEMAKER, CANDICE, Professor and Head of Horticulture and Natural Resources (2001). BS 1978, Michigan State University; MS 1982, Kansas State University; PhD 1990, Michigan State University.

SHOGREN, MERLE, Adjunct Faculty of Grain Science and Industry (1954). MS 1954, Kansas State University.

SHOUP, DOUGLAS E., Assistant Professor and Extension Specialist Agronomy, Southeast (2007). BS 2000, MS 2003, PhD 2006, Kansas State University.

SHOUP, JULIANNE N., Extension Agent, Family and Consumer Sciences, Twin Creeks District 9, Hoxie (2012). BS 2012 University of Florida.

SHROYER, JAMES P., Professor Emeritus of Agronomy, Extension State Leader, Extension Specialist, Crop Production (1980). BS 1974, MS 1977, Oklahoma State University; PhD 1980, Iowa State University.

SHROYER, M. GAIL, Professor Emeritus of Education (1987). BA 1975, University of California; MS 1984, PhD 1987, Kansas State University.

SHUBERT, BRUCE A., Executive Associate Athletics Director for Business Operations at K-State Athletics (2003). BS 1980, MBA 1996, Fort Hays State University.

SHULTIS, J. KENNETH, Professor of Mechanical and Nuclear Engineering (1969). BASc 1964, University of Toronto; MS 1965, PhD 1968, University of Michigan.

SHUMAN, SUSAN, Administrative Specialist, College of Business Administration.

SIDDALL, WILLIAM R., Professor Emeritus of Geography and Geospatial Sciences (1962). AB 1950, Harvard University; MA 1955, PhD 1959, University of Washington.

SIDENER, BRADLEY W., Senior Vice President and CFO, K-State Alumni Association (1996). BS 1980, Kansas State University.

SIDHU, PRITAM, Research Assistant Professor of Anatomy and Physiology (2016). BVSc 1985, MVSc 1990, Punjab Agricultural University, India; PhD 2001, University of London, Royal Veterinary College.

SIDORFSKY, FRANK M., Associate Professor Emeritus of Music, School of Music, Theatre, and Dance (1965). BME 1952, Emporia State University; MM 1957, DMA 1974, Eastman School of Music, University of Rochester.

SIEBERT, JAY D., Assistant Professor; International Agricultural Programs (1982). BA 1969, Tabor College; MS 1976, Kansas State University; PhD 1982, University of Georgia.

SIEFERS, MARY KAY, Senior Associate Director for Academic Affairs and Assistant Professor of the Staley School of Leadership Studies (2001). BS 1983, MS 1997, PhD 2000, Kansas State University.

SIELAFF, RACHEL, Communications and Marketing Specialist, K-State Global Campus (2019). BS 2014, Northwest Missouri State University.

SIEMENS, MICHAEL G., Adjunct Faculty of Diagnostic Medicine/Pathobiology (2015). BS 1983, Purdue University; MS 1987, PhD 1990, University of Missouri.

SIEPL-COATES, SUSANNE, Professor of Architecture (1984). Dipl. Ing. 1979, University of Hannover, West Germany; MArch 1982, University of California-Berkeley.

SIGLE, NADINE J., Extension Associate, Agriculture and Natural Resources, Post Rock District 1, Osborne (1992). BS 1978, MS 1980, Kansas State University.

SILLS, JACK L., Senior Associate Director Emeritus, K-State Student Union (1962). AB 1958, Kansas Wesleyan University.

SILVER, KRISTOPHER, Research Assistant Professor of Entomology (2016). BS 1999, Moravian College; PhD 2005, Cornell University.

SIMIC, DRAGOSLAV, Associate Professor of Architecture (1998). BArch 1975, University of Sarajevo, Yugoslavia; MArch 1980, University of Belgrade, Yugoslavia.

SIMMONDS, GAIL, Assistant Professor Emeritus of School of Integrated Studies (1982). BS 1966, Fort Hays State University.

SIMON, ZACHARY G., Extension Agent, Crop Production, Sedgwick County, Wichita (2013). BS 2011, Kansas State University.

SIMONS, CLAY J., Farm Management Executive Economist (1992). BS 1985, Texas A&M University.

SIMONS, GALE G., Professor Emeritus of Electrical and Computer Engineering (1977). BS 1962, MS 1965, PhD 1969, Kansas State University.

SIMPSON, JESS W., Assistant Director, Student Support Services/K-State Polytechnic Campus (2007). BA 1997, Kansas Wesleyan University; MS 2008, Fort Hays State University.

SIMSER, CHARLENE, Professor, Library Data Coordinator, K-State Libraries (1996). BA 1980, University of Maryland; MLS 1996, University of South Florida.

SINGH, GURDIP, Professor of Computer Science (1991). BET 1986, Indian Institute of Technology; MS 1989, PhD 1991, SUNY-Stony Brook.

SINGH, GURPREET, Associate Professor of Mechanical and Nuclear Engineering (2009). BS 2003, Government College of Engineering, Pune, India; MS 2006, PhD 2007, University of Colorado-Boulder.

SINGH, HARLEEN, Program Assistant, K-State Libraries (2001). BS 1994, Kansas State University.

SINGLETON, AMANDA, Education Abroad Advisor (2018). BS 2015, Kansas State University. MS 2018, Colorado State University.

SINN, MELINDA L., Alumni and External Relations Coordinator, K-State Global Campus (1981). AA 1978, Coffeyville Community College; BS 1980, MS 1985, Kansas State University.

SISK, ENSLEY J., Associate Professor Emeritus; Extension Specialist, Organization and Leadership Development (1960). BS 1954, MS 1968, Kansas State University.

SKABELUND, LEE R., Associate Professor of Landscape Architecture and Regional & Community Planning (2005). BLA 1988, Utah State University; MLA 1990, University of Michigan.

SKELTON, SHANNON, Assistant Professor of Theatre, School of Music, Theatre, and Dance (2015). BA 1995, University of Kansas; MA 2001, University of Oklahoma; PhD 2013, University of Wisconsin-Madison.

SKIBINS, JEFF, Assistant Professor of Horticulture and Natural Resources (2014). BA 1991, Illinois Wesleyan University, MS 1993 Illinois State University, Ph.D. 2012 Clemson University.

SKIDMORE, DEBRA, Instructor of Journalism and Mass Communications (2012). BA 1975, MA 1982, Kansas State University.

SKIDMORE, EDWARD L., Adjunct Professor Emeritus of Agronomy; Research Soil Scientist, Wind Erosion Research Unit, USDA ARS (1963). BS 1958, Utah State University; PhD 1963, Oklahoma State University.

SKOV, CAROLINE, Academic Advisor for the College of Business Administration. BS 2008, Kansas State University; MA 2011, University of Nebraska.

SLACK, EARL REX, Associate Professor Emeritus of Architecture (1965). BArch 1952, University of Oklahoma. Registered Architect.

SLACK, JESSICA, Assistant Professor of Clinical Sciences, Ophthalmology (2012). DVM, Ohio State University; MS 2012, Purdue University; Diplomate 2012, American College of Veterinary Ophthalmologists.

SLANK, SHANNA, Assistant Professor of Philosophy. PhD in Philosophy University of Wisconsin-Madison 2019. MA in Philosophy University of Wisconsin-Madison 2016. MA in Philosophy Georgia State University 2012.

SLINKMAN, ZOE E., Professor Emeritus of Apparel, Textiles, and Interior Design; Extension Specialist, Cultural Arts (1967). BS 1947, Colorado State College; MS 1970, Kansas State University.

SLOCOMBE, JOHN W., Professor of Biological and Agricultural Engineering (1985). BS 1977, MS 1979, Kansas State University; PhD 1983, Iowa State University.

SLOVER, RANDY, Director, Fire Safety Inspections (1992). BS 2003, Manhattan Christian College; MS 2005, Kansas State University.

SMAIL, VIRGIL, Former Head of Grain Science and Industry (1997). BS 1974, Earlham College; MS 1980, PhD 1981, Montana State University.

SMALL, KATIE, Instructor in Entrepreneurship. BS 2008, Fort Hays University; MBA 2010, Kansas State University.

SMETHERS, J. STEVEN, Associate Professor of Journalism and Mass Communications (2002). BS 1976, MA 1985, Kansas State University; PhD 1991, University of Missouri.

SMIT, ANN B., Professor Emeritus of Family Studies and Human Services. BA 1966, Calvin College; MA 1969, University of Iowa; Phd 1980, University of Maryland.

SMIT, DAVID W., Professor Emeritus of English (1988). BA 1966, Calvin College; MA 1969, PhD 1984, University of Iowa.

SMITH, ANDREW, Professor of Pracite of Jounalism and Mass Communications (2016). BA 1993, Brigham Young University; MA 2014, Gonzaga University.

SMITH, ANDREW T., Professor of School of Integrated Studies (2004). BS 1990, College of the Ozarks; MS 1998, Central Missouri State University.

SMITH, BARRETT, Extension Agent, Agriculture and Natural Resources, Kiowa County, Greensburg (2012). BS 2011, Kansas State University.

SMITH, GORDON, Professor and Head of Grain Science and Industry (2015). BS 1984, University of Tennessee-Martin; MS 1988, PhD 1991, Texas A&M University.

SMITH, C. MICHAEL, Professor Emeritus of Entomology; Research Entomologist, Plant Resistance to Insects (1990). BS 1971, MS 1973, PhD 1976, Mississippi State University.

SMITH, CHARLES A., Professor Emeritus of Family Studies and Human Services; Extension Specialist, Human Development (1978). BS 1968, University of Dayton; MS 1970, PhD 1972, Purdue University.

SMITH, CHARLES W., Extension Agent Emeritus, Agriculture and Natural Resources, Cowley County, Winfield (1955). BS 1950, Kansas State University; MS 1966, Colorado State University.

SMITH, CHRISTOPHER, Executive Director of Enrollment Management and Marketing for K-State Polytechnic Campus (2017), BA 1998, Valdosta State University, MA 2005, University of Phoenix, PhD 2017, Capella University.

SMITH, DAVID M., Staff Physician, Lafene Health Center (2000). BS 1980, Kansas State University; MD 1985, University of Kansas

SMITH, DAVID R., Farm Management Economist Emeritus (1976). BS 1970, Kansas State University.

SMITH, D. KIMBALL, Associate Professor of English (2004). BA 1976, Yale; MFA 1991, MA 1997, PhD 2001, University of Iowa.

SMITH, FRED W., Senior Instructor of Accounting (1994). BS 1985, MAcc 1988, Kansas State University; CPA 1993, Kansas.

SMITH, JEFFREY S., Professor of Geography and Geospatial Sciences (1998). BA 1988, University of Northern Colorado; MA 1990, Bowling Green State University; PhD 1997, Arizona State University.

SMITH, JENELL M., Extension Agent Emeritus, Family and Consumer Sciences, Sedgwick County, Wichita (1971). BS 1971, MS 1982, Kansas State University.

SMITH, JESSICA, Associate Head Women's Soccer Coach at K-State Athletics (2016). BS 2006, University of Kansas.

SMITH, JORDAN, Assistant Women's Tennis Coach at K-State Athletics (2015). BA 2011, University of Memphis.

SMITH, JOSEPH M., Extension Agent Emeritus, Agriculture and Natural Resources, Montgomery County, Independence (1967). BS 1967, Oklahoma State University.

SMITH, PAUL E., Professor of Chemistry (1996). BS 1985, PhD 1988, University of Liverpool.

SMITH, RONALD C., Instructor Emeritus of School of Integrated Studies (1981).

SMITH, J. SCOTT., Professor of Animal Sciences and Industry ((1989). BS 1972, Brescia College; MS 1975, Kansas State University; PhD 1981, Pennsylvania State University.

SMITH, TRAVIS W., Instructor of Communication Studies (2007). BS 2003, MA 2005, Kansas State University.

SMITH-CALDAS, MARTHA, Teaching Associate Professor of Biology; General Biology (2008). BS 1991, Federal University of Vicosa, Brazil; MS 1995, Federal University of Bahia, Brazil; PhD 2001, University of Sao Paulo, Brazil.

SMITH-ZABOLIO, MEREDITH, Associate Professor Emeritus of Food, Nutrition, Dietetics and Health, Agricultural Experiment Station (1981). BS 1970, Trinity University; PhD 1978, Virginia Tech.

SMOLLER, BRIAN, Associate Athletics Director for Fan Experience and Sales at K-State Athletics (2007). BS 1999, Kansas State University.

SMOLLER, JONI, Assistant Athletic Director for Fan Experience and Sales at K-State Athletics (2006). MA 2007, Kansas State University.

SMRIGA, WILLIAM G., Director of the K-State Student Union (2011). BS 1974, MS 1976, Indiana University.

SNEAD, BRUCE C., Head of Engineering Extension and Instructor, Kansas Industrial Extension Service (1982). BA 1974, California State University.

SNEATH, ELLY, Extension Agent, Agriculture and Natural Resources, Meade County, Meade (2006). BS 2006, Kansas State University.

SNYDER, BILL D., Head Football Coach at K-State Athletics (1988). BA 1963, William Jewell College; MA 1965, Eastern New Mexico University.

SNYDER, SEAN, Director of Football Operations/Associate Head Football Coach/Special Teams Coordinator at K-State Athletics (1994). BS 1994, Kansas State University.

SOIBELMAN, IAKOV, Professor of Mathematics (1993). MS 1978, PhD 1983, Rostov University.

SOLDAN, DOROTHY B., Instructor Emeritus of Education (1990). BS 1969, MS 1976, PhD 1980, Kansas State University.

SOLDAN, DAVID L., Professor of Electrical and Computer Engineering (1976). BS 1969, MS 1976, PhD 1980, Kansas State University.

SOLLOCK, AMY M., Area 4-H Specialist, Southwest (2009). BS 2004, University of Illinois; MS 2008, Oklahoma State University.

SONDAG, NANCY M., Instructor of Theatre, School of Music, Theatre, and Dance (2008). BS 1971, Southern Illinois University-Carbondale; MA 1999, Hunter College.

SONG, WEIXING G., Professor of Statistics (2006). BS 1993, MS 1996, Shanxi Normal University; PhD 1999, Academica Sinica; PhD 2006, Michigan State University.

SORENSEN, CHRISTOPHER M., Cortelyou-Rust University Distinguished Professor of Physics (1977). BS 1969, University of Nebraska; MS 1973, PhD 1977, University of Colorado-Boulder.

SORENSEN, TRENT, Assistant Women's Volleyball Coach at K-State Athletics (2015). BS 2008, Brigham Young University.

SOUZA, CAMILA, Assistant Professor of Clinical Sciences, Large Animal Emergency (2020). DVM 2008, University of Sao Paulo. MS 2013, Washington State University.

SPANGLER, JOHN D., Adjunct Professor Emeritus of Physics (1998). BS 1958, Kansas State University; PhD 1961, Duke University.

SPARE, JESSICA, Instructor of School of Integrated Studies (2015). BS 2009, Kansas State University, MSM 2015, Iowa State University.

SPARKS, CATHRYN, Clinical Assistant Professor of Anatomy and Physiology (2017). BS 1993, MS 1999, Louisiana State University; PhD 2012, Louisiana State University, School of Veterinary Medicine.

SPAULDING, PAM M., Pharmacist, Lafene Health Center (1993). BS 1988, University of Texas; BS 1980, Kansas State University.

SPAULDING, GREGORY L., Assistant Professor of Mechanical and Nuclear Engineering (1996). BS 1980, MS 1984, Kansas State University; Professional Engineer.

SPEARS, JACQUELINE D., Professor of Curriculum and Instruction; Director of Center for Science Education (1984). BS 1969, MS 1972, PhD 1988, Kansas State University.

SPEIRS, JAKE, International Student Advisor (2018). BA 2016, Macalester College.

SPENCER, ALBERT E., Extension Agent Emeritus, Agriculture, Pottawatomie County, Westmoreland (1960). BS 1959, Kansas State University.

SPENCER, CRAIG, Associate Professor of Mathematics (2009). BA 2003, Carleton College; MS 2005, PhD 2008, University of Michigan.

SPENCER, GAYLE L., Associate Dean of Student Life and Director of Student Activities and Services; and Associate Dean of Office of Fraternity and Sorority Life (1997). BS 1983, University of Nebraska-Omaha; MS 1987, Western Illinois University; PhD 2004, Kansas State University.

SPENCER, JOEL Q.G., Assistant Professor of Geology (2007). PhD 1996, University of Glasgow.

SPERAW, DREW, Director of Men's Basketball Team Operations at K-State Athletics (2012). BS 2009, MA 2011, University of Central Florida; MBA 2012, University of Iowa.

SPLICHAL, JIMMY, Professor Emeritus of School of Integrated Studies (2000). BS 1989, MS 1992, Embry-Riddle Aeronautical University.

SPIRE, MARK F., Professor Emeritus of Diagnostic Medicine/Pathobiology (2005). BS 1971, West Texas State University; DVM 1974, Texas A&M University; MS 1978, Kansas State University; Diplomate, American College of Theriogenologists.

SPOONER, BRIAN S., Director and University Distinguished Professor of Biology (1971). BS 1963, Quincy College; PhD 1969, Temple University.

ST. CLAIR, JANICE O., Extension Agent Emeritus, Family and Consumer Sciences, Comanche County, Coldwater (1992). BS 1969, Kansas State University.

STACK, JAMES P., Professor of Plant Pathology (2003). BS 1976, MS 1978, University of Massachusetts; PhD 1984, Cornell University.

STADTLANDER, MARK D., Publishing Director, Department of Communications and Agricultural Education (1994). BA 1992, Iowa State University; MS 2011, Kansas State University.

STAGGENBORG, SCOTT, Professor of Agronomy (1995). BS 1988, MS 1990, Kansas State University; PhD 1993, Texas Tech University.

STAMEY, WILLIAM L., Dean Emeritus and Professor of Mathematics (1953). AB 1947, University of North Colorado; MA 1949, PhD 1952, University of Missouri.

STAMM, MICHAEL J., Assistant Agronomist (2005). BS 2001, MS 2003, Kansas State University.

STANNARD, JOHN C., Extension Agent Emeritus, Agriculture and Natural Resources, Russell County, Russell (1989). BA 1989, Chadron State College.

STANTON, COLINA, Academic Advisor, College of Arts and Sciences (2004). BS 1970, University of Idaho; MED 1978, University of North Carolina-Greensboro.

STANTON, NOEL R., Professor Emeritus of Physics (1993). BA 1960, Rutgers University; PhD 1965, Cornell University.

STAPLES, KIMBERLY A., Associate Professor of Curriculum and Instruction (2002). BS 1987, Howard University; MAEd 1994, PhD 2002, University of Alabama.

STARK, ASHLEY L., Instructor, Undergraduate Specialist, K-State Libraries (2010). BA 2006, University of Iowa; MS 2009, Simmons College.

STARK, BEN, Associate Professor of Theatre, and Technical and Managing Director of K-State Theatre, School of Music, Theatre, and Dance (2009). BA 2004, University of Iowa; MFA 2008, Yale School of Drama.

STARK, CHARLES, Professor of Grain Science and Industry (2013). BS 1988, MS 1990, PhD 1994, Kansas State University.

STARK, G. REBECCA, Academic Advisor Emeritus, Department of Architecture (1996). BFA 1975, Mississippi University for Women; MAEd 1978, University of Southern Mississippi; MLS 2004, Emporia State University.

STARKEY, ALYSIA, CEO and Dean of K-State Polytechnic Campus, Professor of School of Integrated Studies (2019). BS 2000, Fort Hays State University; MLS 2002, University of North Texas; PhD 2010, Kansas State University.

STATLANDER, MARK D., Interim Coordinator of Department of Communications and Agricultural Education (1994). BA 1992, Iowa State University; MA 2013, Kansas State University.

STEEN, JAN M., Extension Agent, Community Development/Technology, Reno County, South Hutchison (2012). BS 2004, Southwestern College.

STEELE, JORDAN, Farm Management Economist (2015). BS 2010, MS 2012, University of Wyoming.

STEFFEN, JOHN D., Associate Professor Emeritus of Education (1976). BA 1956, Hamline University; PhD 1968, University of Minnesota.

STEFFENSMEIER, TIMOTHY R., Associate Professor and Head of Communication Studies (2005). BA 1997, Hastings College; MA 1999, Wake Forest University; PhD 2005, University of Texas.

STEICHEN, JAMES M., Professor Emeritus of Biological and Agricultural Engineering; Agricultural Experiment Station (1978). BS 1970, PhD 1974, Oklahoma State University; Professional Engineer.

STEINBAUER, ROBERT ANDRUS, Professor Emeritus of Music, School of Music, Theatre, and Dance (1970). BM 1950, MM 1951, University of Michigan; DM 1959, Indiana University.

STEINMETZ, KEVIN F., Associate Professor of Sociology (2014). BS 2008, MS 2010, Eastern Kentucky University; PhD 2014, Sam Houston University.

STEPHENS, GREGORY F., Associate Professor of School of Integrated Studies (1982). AA 1971, Colby Community College; BS 1973, BA 1980, MS 1981, Fort Hays State University.

STEPHENS, JAY, Vice President for Human Capital (2017). BA, Brigham Young University; MPA, Brigham Young University.

STEPHENS, SUTTON F., Associate Professor Emeritus of Architectural Engineering and Construction Science (2001). BS 1974, Gonzaga University; MS 1999, PhD 2001, University of Missouri-Rolla; Professional Engineer.

STERN, REUBEN, Assistant Professor of Philosophy. PhD in Philosophy University of Wisconsin-Madison 2016. MA in Philosophy University of Wisconsin-Madison 2014. MA in Philosophy Georgia State University 2012.

STEVENS, ALAN B., Associate Professor Emeritus of Horticulture and Natural Resources; Extension State Leader; Extension Specialist, Floriculture and Ornamental Horticulture, Eastern Kansas Research Center, Olathe (1990). BS 1970, MS 1975, New Mexico State University; PhD 1990, Texas A&M University.

STEVENSON, JEFFREY S., Professor of Animal Sciences and Industry (1980). BS 1975, Utah State University; MS 1977, Michigan State University; PhD 1980, North Carolina State University.

STEVENSON, SID, Associate Professor of Forestry, Recreation and Park Management (1987). BS 1975, Emporia State University; MA 1977, University of Northern Colorado; PhD 1987, Colorado State University.

STEWARD, DAVID R., Professor of Civil Engineering (1998). BS 1983, MS 1991, PhD 1996, University of Minnesota; Professional Geologist.

STEWART, G. KENT, Professor Emeritus of Education (1973). BS 1955, Indiana State University; MEd 1958, University of Illinois; EdD 1964, Indiana University.

STITES, DEAN E., Extension Agent Emeritus, Agriculture and Natural Resources, Wildcat District, Girard (1982). BS 1976, Kansas State University.

STITH, GARY, Assistant Professor of Landscape Architecture and Regional & Community Planning (2011). BA 1971, Oklahoma State University; MAPublic Administration 1973, MCP 1973, Ohio State University. Certified Planner.

STITH, MARJORIE MAY, Professor Emeritus of Family Studies and Human Services (1961). BS 1943, Alabama State College for Women; MS 1958, PhD 1961, Florida State University.

STITH, SANDRA M., University Distinguished Professor of Family Studies and Human Services (2007). BA 1970, Oklahoma State University; MS 1982, PhD 1986, Kansas State University.

STOCKARD, JOHN R., Associate Professor Emeritus; Extension Motion Picture Producer (1966). BS 1955, University of North Carolina; MS 1969, Kansas State University.

STOCKEBRAND, BARBARA, Extension Agent, Family and Consumer Sciences, Woodson County, Yates Center (1996). BS 1979, Kansas State University.

STOCKHAM, STEVEN L., Professor of Veterinary Clinical Pathology (2001). BS 1970, DVM 1972, Kansas State University; MS 1980, Michigan State University; Diplomate 1980, American College of Veterinary Pathologists.

STOKES, ROBERT W., Professor Emeritus of Civil Engineering (1991). BA 1976, Antioch College; MS 1978, MCRP 1978, Ohio State University; PhD 1984, Texas A&M University.

STONE, DARLA J., Instructor Emeritus of Education (1987). BS 1969, Oklahoma State University; MS 1987, Kansas State University.

STONE, DAVID R., Professor of History (1999). AB 1991, Wabash College; PhD 1997, Yale University.

STONE, JAYCI, Assistant Women's Basketball Coach at K-State Athletics (2017). BS 2008, Kansas State University; MA 2013, Texas Christian University.

STONE, LOYD R., Professor Emeritus of Agronomy; Soil Physicist (1973). BS 1967, MS 1969, Oklahoma State University; PhD 1973, South Dakota State University.

STONEY, BE ETTA L., Associate Professor of Curriculum and Instruction (1999). BS 1985, MEd 1987, University of Texas-El Paso; PhD 1999, University of Texas-Austin.

STOTESBURY, SIDNEY D., Professor Emeritus of Architecture (1972). BS 1957, Florida State University; MArch 1970, PhD 1975, University of California-Berkeley.

STOUSE, LAWRENCE D., Extension Director Emeritus, Johnson County, Olathe (1966). BS 1963, MS 1982, Kansas State University.

STOWE, BARBARA S., Dean Emeritus of Human Ecology; Professor Emeritus of Apparel, Textiles, and Interior Design (1983). BS 1954, University of Nebraska; MA 1957, Michigan State University; PhD 1973, University of North Carolina-Greensboro and North Carolina State University.

STOYAN, ALISSANDRA T., Assistant Professor of Political Science (2015). BA 2006, Union College; MA 2010, PhD 2014, University of North Carolina-Chapel Hill.

STRAFUSS, ALBERT C., Professor Emeritus of Diagnostic Lab; Research Pathologist (1968). BS 1952, DVM 1954, Kansas State University; MS 1958, Iowa State University; PhD 1963, University of Minnesota.

STRAHM, CAROL A., Extension Agent Emeritus, Brown County, Hiawatha (1979). BS 1979, Kansas State University.

STRAUSS, WARREN, Director Emeritus of Internal Auditing (1989). BS 1979, Kansas State University.

STRECKER, CHERYL G., Retired General Counsel (2020). BA 1984, Kansas State University; JD 1987, Cornell Law School.

STRECKER, GEORGE E., Professor Emeritus of Mathematics (1972). BS 1961, University of Colorado; PhD 1966, Tulane University.

STREETER, RAYMOND A., Associate Professor of Architecture (1984). BArch 1979, Kansas State University; MArch 1984, Harvard University. Licensed Architect.

STRICKLER, JOHN K., Professor Emeritus of Forestry; Extension Forester (1961). BS 1957, University of Missouri; MS 1967, Kansas State University.

STRINE, JAMES H., Associate Professor Emeritus, District Forester, Northwest Agricultural Research Center, Hays (1978). BS 1975, University of Missouri; MS 1977, Oklahoma State University.

STROUTS, DARYL L., Adjunct Associate Agronomist, Director of Kansas Crop Imp. (2000). BS 1982, Kansas State University.

STUCKY, DOUGLAS D., Farm Management Economist Emeritus (1986). BS 1980, Kansas State University.

STUCKY, TIM, Farm Management Economist Emeritus (1980). BS 1978, MS 1979, Kansas State University.

STUEWE, BETH, DirectLink Coordinator, K-State Global Campus (2017). BS 2004; MS 2006, Kansas State University.

STUGELMEYER, DENNIS, Director of Fiscal Services for K-State Polytechnic Campus (2015). BS 1976, South Dakota State University, BA 1989, Concordia College.

STURR, EDWARD, Professor Emeritus of Education and Art (1974). BA 1959, St. Ambrose College; MS 1964, Illinois Institute of Technology; EdD 1973, Illinois State University.

STUTEVILLE, DONALD L., Professor Emeritus of Plant Pathology (1964). BS 1959, MS 1961, Kansas State University; PhD 1964, University of Wisconsin.

SUBRAMANYAM, BHADRIRAJU, University Distinguished Professor of Grain Science and Industry (1999). BS 1981, Andhra Pradesh Agricultural University-India; MS 1984, PhD 1988, University of Minnesota.

SUBRAMONY, DEEPAK, Associate Professor of Curriculum and Instruction (2015). BS 1995, University of Delhi; MA 2001, University of Minnesota; PhD 2005, Indiana University.

SUH, JAEBEOM, Associate Professor of Marketing (2001). BBA 1987, MBA 1989, Yonsei University, Korea; MS 1994, University of Wisconsin-Madison; PhD 2001, University of Alabama.

SULLIVAN, MARY J., Extension Agent, Family and Consumer Sciences, Grant County, Ulysses (2001). BS 1976, University of Northern Iowa; MS 2005, Kansas State University.

SUMMERELL, BRETT, Adjunct Professor of Plant Pathology (2007). BSc Agr. 1985, PhD 1988, University of Sydney.

SUN, XIUZHI (SUSAN), University Distinguished Professor of Grain Science and Industry and Ancillary Faculty in Biological and Agricultural Engineering (1996). BS, MS 1982, Northeastern Agricultural University, China; PhD 1993, University of Illinois.

SURESH, ARAVIND, Assistant Professor of Chemical Engineering (2015). BS 2004, National Institute of Technology, India; PhD 2011, University of Connecticut.

SUTTON, MARY ELLEN, Professor Emeritus of Music, School of Music, Theatre, and Dance (1974). AA 1960, Graceland College; BM 1963, MM 1968, University of Missouri-Kansas City. DMA 1975, University of Kansas.

SWALLOW, CLARENCE W., Professor Emeritus of Agronomy (1954). BS 1951, MS 1955, Kansas State University.

SWANEY-STUEVE, MARIANNE, Research Assistant Professor of Food, Nutrition, Dietetics and Health (2012). BS 1993, University of Missouri; MS 1999, University of California; PhD 2001, University of Missouri.

SWANSON, DIANE L., Professor of Management (1997). BS 1980, Avila College; MA 1982, University of Missouri- Kansas City; PhD 1997, University of Pittsburg.

SWEAT, DEANNA L., Extension Agent Emeritus, Post Rock District 1 (1989). BS 1986, Kansas State University.

SWEENEY, DANIEL W., Professor; Southeast Agricultural Research Center (1983). BS 1974, Kentucky Wesleyan College; MS 1978, Purdue University; PhD 1982, University of Florida.

SWEENEY, PATRICK, Head Women's Rowing Coach at K-State Athletics (2004). BA 1972, Kingston University, England.

SWILER, JAMES P., Assistant Professor Emeritus of Art (1970). BSE 1966, MFA 1970, Wichita State University.

SWILLEY, ESTHER, Associate Professor and Department Head of Marketing (2007). BA 1979, Wayne State University; MBA 2002 Kennesaw State University; PhD 2007, Florida State University.

SZLADOVITS, ZSOLT, Instructor of Anatomy and Physiology (2005). DVM 1996, Szent István University-Budapest; MS 2005, University of Missouri.

SZOSZKIEWICA, ROBERT, Assistant Professor (2009). MSc 1999, Jagiellonian University; PhD 2003, Swiss Federal Institute of Technology.

TACK, JESSE B., Associate Professor of Agricultural Economics (2016). BA 2003, University of California-Davis; MS 2004, PhD 2009, University of California-Berkeley.

TAKEMOTO, DOLORES, Professor Emeritus of Biochemistry and Molecular Biophysics (1982). BS 1971, Ball State University; MS 1973, Colorado State University; PhD 1979, University of Southern California.

TALAB, ROSEMARY STURDEVANT, Professor Emeritus of Education (1984). BA 1971, Wichita State University; MA 1975, Arizona State University; PhD 1979, University of Southern California.

TALBOT, KATHRYN A., Preservation Coordinator, K-State Libraries (2011). BA 1996, Kansas State University; MLS 2000, Emporia State University.

TAMURA, MASAAKI, Associate Professor of Anatomy and Physiology (2004). DVM 1973, Kitasato University, Japan; MS 1977, PhD 1980, Azabu College, Japan.

TANDE, BRIAN, Associate Professor of Chemical Engineering (2017). BS 1998, University of Minnesota; PhD 2002, University of Delaware.

TANONA, SCOTT, Associate Professor of Philosophy (2005). BS 1992, Rensselaer Polytechnic Institute; MA 1966, Tufts University; PhD 2002, Indiana University.

TARNER, DANIELLE, Instructor of English (2013). BA 2003, Shippensburg University; MA 2008, Kansas State University.

TARPOFF, ANTHONY, Assistant Professor of Animal Sciences and Industry, Extension Specialist (2016). BS 2008, MS 2012, DVM 2012, Kansas State University.

TATARKO, JOHN, Adjunct Assistant Professor of Agronomy (2001) BS 1976, Stephen F. Austin; MS 1980, Texas Tech University; PhD 1991, Kansas State University.

TATMAN, JENNIFER, Academic Advisor (2013). BA 2008, Kansas State University; MS 2012, Emporia State University.

TATONETTI, LISA, Professor of English (2005). BA 1995, Florida State University; MA 1997, PhD 2001, Ohio State University.

TAVAKKOL, AMIR, Associate Professor Emeritus of Finance (1990). BS 1974, Shiraz (Pahlavi) University; MA 1975, PhD 1979, Kansas State University.

TAXERAS, BRENDA L., Extension Agent, 4-H Youth Development, Leavenworth County, Lansing (2010). BA 1974, University of Kansas

TAYLOR, AMY, Extension Agent, 4-H, Ford County, Dodge City (2009). BS 2004, University of Illinois; MS 2008, Oklahoma State University.

TAYLOR, CORD, Pitching Game Coordinator at K-State Athletics (2018), BS 1995 San Francisco State; ME 2002, Azusa Pacific University.

TAYLOR, GENE, Director of Athletics at K-State Athletics (2017). BS 1980 Arizona State University; MS 1985 St Thomas University.

TAYLOR, KAY ANN, Associate Professor of Curriculum and Instruction (2005). BS 1972, MS 1998, PhD 2001, Iowa State University.

TAYLOR, MYKEL R., Associate Professor of Agricultural Economics (2011). BS 2000, MS 2001, Montana State University; PhD 2008, North Carolina State University.

TAYLOR, WILLIAM JAMES, Assistant Director of Debate and Instructor of Communication Studies (2014). BA 2011, Emporia State University; MA 2013, Kansas State University.

TEAGARDEN, JAMES M., Associate Professor of Special Education, Counseling, and Student Affairs (2005). BS 1984, MS 1986, EdD 2002, Kansas State University.

TEFERTILLER, ALEC C., Assistant Professor of Journalism and Mass Communications (2017). BFA 2000, Florida State University; MA 2014, University of Houston; PhD 2017, University of Oregon.

TEMME, ARNAUD J.A.M., Associate Professor of Geography and Geospatial Sciences (2016). MSc 2003, PhD 2008, Wageningen University, Netherlands.

TEENER, LINDA I., Executive Director, UFM Community Learning Center, K-State Global Campus (1979). BS 1974, MS 1977, Kansas State University.

TERLAZZO, ROSA, Associate Professor of Philosophy (2013). BA 2006, Bucknell University; MA 2009, Rhodes University; PhD 2013, Australian National University.

TERRY, ROGER V., Professor Emeritus, Department of Communications and Agricultural Education (1981). BS 1976, Brigham Young University; MS 1979, PhD 1981, Kansas State University.

TESSO, TESFAYE, Assistant Professor of Agronomy; Sorghum Breeding (2008). BS 1991, MS 1997, Alemaya University, Ethiopia; PhD 2002, Kansas State University.

THALMANN, ACACIA, Graphic Designer, K-State Global Campus (2019). AA 2016, Cloud County Community College; BS 2019, Kansas State University.

THARMAN, KATHRYN A., Extension Agent, Family and Consumer Sciences, Doniphan County, Troy (2005). BS 1985, Kansas State University.

THAYER, MONICA C., Extension Agent, 4-H Youth Development, River Valley District 4, Washington (2015). BS 2011, Kansas State University.

THIELE, JULIE M., Assistant Professor of Curriculum and Instruction (2017). BS 2014, Kansas State University; MS 2009, University of Northern Iowa; PhD 2016, Kansas State University.

THIELE, RYAN, Assistant Professor of Food, Nutrition, Dietetics and Health (2016). BS 2010, Iowa State University; MS 2012, University of Tulsa; PhD 2016, Oklahoma State University.

THIELEN, SHARON L., Assistant Dean of Agriculture (2002). BS 2002, MS 2005, PhD 2012, Kansas State University.

THIEN, STEPHEN J., Professor Emeritus of Agronomy; Research Soil Scientist (1970). BS 1966, Iowa State University; MS 1968, PhD 1971, Purdue University.

THOLE, H. THOMAS, Extension Agent Emeritus, Horticulture, Barton County, Great Bend (1965). BS 1965, Oklahoma State University.

THOMAS JR, CHARLES, Senior Associate Athletics Director-Capital Project Development (1987). BA 1981, University of Southern Florida.

THOMAS, ASHLEY, Academic Advisor for the College of Business Administration. BS 2003, Kansas State University; MS 2012, Fort Hays State University.

THOMAS, ELLEN, Research Assistant Professor of Hospitality Management (2015). BS 2010, Davidson College; MS 2012, PhD 2015, North Carolina State University.

THOMAS, JANA, Instructor of Journalism and Mass Communications (2019). BS 2004, MS 2019, Kansas State University.

THOMAS, LLOYD (TOM) B., JR., Professor Emeritus of Economics (1968). BA 1963, MA 1964, University of Missouri; PhD 1970, Northwestern University.

THOMASON, JUSTIN D., Clinical Associate Professor, Cardiology (2013). DVM 2002, Oklahoma State University; Diplomate 2006, American College of Veterinary Internal Medicine-Small Animal; Diplomate 2014, American College of Veterinary Internal Medicine-Cardiology.

THOMASON, MATTHEW, Director of Sports Medicine at K-State Athletics (2004). BS 2001, Texas Tech University; MS 2004 Kansas State University.

THOMPSON, ANDY, Senior Assistant Dean and Assistant Director of the Office of Student Life (2009). BS 2006, Eastern Illinois University; M.A. Ed. 2009, Clemson University.

THOMPSON, CARLYLE A., Assistant Professor Emeritus; Research Soil Scientist, Agricultural Research Center-Hays (1964). BS 1958, MS 1959, Kansas State University.

THOMPSON, CAROLYN, Associate Professor Emeritus of Interior Architecture and Product Design (1989). BA 1964, Mt. Holyoke; MA 1971, Cornell University; MArch 1976, Columbia University.

THOMPSON, CHARLES P., Professor Emeritus of Psychological Sciences (1965). BS 1958, Wisconsin State College; MS 1960, PhD 1962, University of Wisconsin.

THOMPSON, CURTIS R., Professor of Agronomy; Extension Specialist, Weed Management, Agronomy (1993). BS 1978, MS 1983, North Dakota State University; PhD 1993, University of Idaho.

THOMPSON, DAVID C., Professor and Skeen Endowed Chair of Educational Leadership (1987). BA 1974, Friends University; EdD 1985, Oklahoma State University; Post-graduate 1995, Harvard University.

THOMPSON, DAVID E., Assistant Professor of Family Studies and Human Services (2004). BS 1978, Oklahoma Wesleyan University; MS 1999, PhD 2009, Kansas State University.

THOMPSON, DAVID E., Assistant Professor of Electrical and Computer Engineering (2014). BS 2006, Kansas State University; MS 2011, PhD 2012, University of Michigan.

THOMPSON, JANA, Academic Advisor, Social Work (2017). BSW 2015, Kansas State University; WSW 2020 Washburn University.

THOMPSON, PATRICIA, Associate Professor of Music, School of Music, Theatre, and Dance (2008). BM 1991, St. Olaf College; MM 2003, DMA 2008, Indiana University.

THOMPSON, WYATT, Director/Sports Casting and Public Relations at K-State Athletics (2002). BA 1976 Colby Community College.

THORNTON, JULIE, Instructor/Advisor of Computer Science (2005). BS 2003, MS 2005, Kansas State University.

THORPE, CHARLES A., High School Spanish Program Consultant, K-State Global Campus (1989). BA 1982, Wichita State University; MA 2000, Kansas State University.

THUMM, UWE, Professor of Physics (1992). BS 1980, MS 1985, PhD 1989, University of Freiburg, Germany.

THURSTON, SARA J., Director, International Student and Scholar Services (2007). BA 1995, MEd 1998, University of Louisville; PhD 2009, Loyola University-Chicago.

TIETJEN, LAURA, Instructor of Curriculum and Instruction (2011). BS 1981, University of Nebraska-Lincoln; MS 1988, University of Nebraska-Kearney.

TILGHMAN, BENJAMIN R., Professor Emeritus of Philosophy (1967). AB 1950, MA 1954, Washington University; PhD 1959, University of Washington.

TILLMAN, FRANK AUBREY, Professor Emeritus of Industrial and Manufacturing Systems Engineering (1965). BS 1960, MS 1961, University of Missouri; PhD 1965, Iowa State University; Professional Engineer, 1970, California.

TILLEY, MICHAEL, Adjunct Professor of Agronomy (2006). BS 1986, Richard Stockton College; PhD 1991, Kansas State University.

TITGEMEYER, EVAN C., Professor and Interim Department Head of Animal Sciences and Industry, Department Research Coordinator (1992). BS 1984, Ohio State University; MS 1986, PhD 1989, University of Illinois.

TOBLER, MICHI, Associate Professor of Biology; Evolutionary Ecology (2014). BS 2004, Swiss Federal Institute of Technology Zurich; PhD 2008, University of Zurich.

TODD, TIMOTHY C., Instructor of Plant Pathology (1982). BS 1980, Northeastern Oklahoma State University; MS 1982, Oklahoma State University.

TODD, RICHARD, Associate Professor of Plant Pathology (2008). BSc 1990, BSc (Hons) 1991, University of Adelaide; PhD 1998, University of Melbourne.

TOELLNER, MARILYN J., Extension Agent Emeritus, Family and Consumer Sciences; Sedgwick County, Wichita (1990). BS 1965, Northwestern Oklahoma State University; MS 1985, University of Wyoming.

TOEWS, MICHELLE, Associate Dean for Research in College of Health and Human Sciences (2015). BS 1996, Ohio Dominican College; MS 1998, PhD 2001, Ohio State University.

TOKACH, LISA, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2007). BS 1986, North Dakota State University; DVM 1990, University of Minnesota; Diplomate, 2001, American Board of Veterinary Practitioners.

TOKACH, MICHAEL D., University Distinguished Professor of Animal Sciences and Industry (1991). BS 1986, North Dakota State University; MS 1988, Kansas State University; PhD 1991, University of Minnesota.

TOLAR, MARY HALE, Director and Associate Professor of the Staley School of Leadership Studies (2003). BA 1990, Kansas State University; MLitt (read) 1992, Oxford University; EdD 2009, Kansas State University.

TOMB, A. SPENCER, Associate Professor Emeritus of Biology (1974). BS 1966, University of the South; PhD 1970, University of Texas-Austin.

TOMICH, JOHN M., Professor of Biochemistry and Molecular Biophysics, Director, Biotechnology/Proteomics Core Facility (1992). BA 1974, University of Connecticut; MS 1976, Purdue University; PhD 1980, Guelph-Waterloo, Canada Center for Graduate Work.

TOMLINSON, AMANDA R., Communication and Marketing Specialist, Department of Communications and Agricultural Education (2012). BS 2004, Kansas State University; MS 2008, Oklahoma State University.

TONSOR, GLYNN T., Professor of Agricultural Economics (2010). BS 2001, Southwest Missouri State University; PhD 2006, Kansas State University.

TOOMAJIAN, CHRIS, Associate Professor of Plant Pathology (2008). BA 1995, Northwestern University; PhD 2002, University of Chicago.

TOOT, JANICE C., Extension Agent Emeritus, Family and Consumer Sciences, Seward County, Liberal (1966). BS 1966, Kansas State University.

TORRES, ALFONSO, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2014). DVM 1968, National University of Colombia; MS 1971, University of Nebraska-Lincoln; PhD 1973, University of Nebraska Medical Center.

TORRES-VELEZ, FERNANDO, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2014). BS 1996, Colorado State University; DVM 2000, Tuskegee University School of Veterinary Medicine; PhD 2009, University of Georgia.

TORRICO-SANCHEZ, BENJAMIN, Associate Professor of Spanish (2002). MA 1992, Salamanca, Spain; MA 1996, PhD 2003, University of Kansas.

TOTTEN, MATTHEW, Associate Professor of Geology (2005). BS 1977, University of Kansas; MS 1979, PhD 1992, University of Oklahoma.

TOUT, ROBERT C., Director Emeritus, Student Health (1977). BS 1949, West Texas State University; MD 1953, Southwestern Medical School of University of Texas.

TRACZ, FRANK, Professor of Music, School of Music, Theatre, and Dance (1993). BME 1978, PhD 1987, Ohio State University; MM 1980, University of Wisconsin-Madison.

TRAN, LINH THI PHUONG, Instructor, English Language Program (2014). BA 2004, Vietnam National University; MA 2013, Southern Illinois University Carbondale.

TRAUSCH, EMILY, Assistant Athletic Trainer at K-State Athletics (2014). BS 2010 Nebraska Wesleyan University; MeD 2012 University of Nebraska.

TRAUSCH, SCOTT, Sports Dietitian – Nutritionist at K-State Athletics (2013). BS 2011, University of Nebraska.

TRAXSON, JULIE B., Extension Agent, 4-H Youth Development, Wildcat District 14, Altamont (2013). BS 1987, Kansas State University.

TREVINO-GARRISON, INGRID, Adjunct Faculty of Diagnostic Medicine/Pathobiology (2009). BS 1999, DVM 2003, Kansas State University; MPH 2005, University of Iowa.

TREWYN, R.W., Vice President for Research (1994). BS 1970, Wisconsin State University; PhD 1974, Oregon State University.

TRICK, HAROLD N., Professor of Plant Pathology (1998). BS 1985, MA 1989, SUNY-Binghamton; PhD 1995, Florida State University.

TRIEB, BERNADETTE E., Extension Agent, Family and Consumer Sciences, Wabaunsee County, Alma (2010). BS 2009, Kansas State University.

TRINETTA, VALENTINA, Assistant Professor of Animal Sciences and Industry (2016). BS 2005, University of Pisa; MS 2006, University of Naples; PhD 2009, University of Milan.

TROTTER, MARILYN B., Director Emeritus of New Student Programs (1967). BS 1965, MS 1967, Kansas State University.

TROUT, ALEXANDER M., Area Coordinator, Housing and Dining Services (2017). BS and BA 2010, Loyola University Chicago; MS 2013, South Dakota State University.

TROXEL, WENDY, Associate Professor of Special Education, Counseling, and Student Affairs (2016). BA 1979, Muskingum College; MS 1985, Illinois State University; EdD 2000, University of Alabama-Birmingham.

TROYER, DERYL, Professor of Anatomy and Physiology (1986). DVM 1972, PhD 1985, Kansas State University.

TROYER, RODNEY, Associate Professor Emeritus of Interior Architecture and Product Design (1985). BArch 1971, Kansas State University; MIntArch 1985, Oregon.

TRUSSELL, ALICE, Professor and Director, Fiedler Engineering Library, K-State Libraries (1997). BS 1975, MLS 1997, Emporia State University.

TSOODLE, LEAH J., Land Use Value Director, Department of Agricultural Economics (1999). BS 1991, Texas Tech University; PhD 2005, Kansas State University.

TUINSTRA, MITCHELL, Professor of Agronomy; Sorghum Breeding (1997). BS 1991, Calvin College; MS 1993, PhD 1996, Purdue University.

TUMMALA, KRISHNA, Professor Emeritus of Political Science (1988). MA 1958, Andhra University Waltair, MPA 1969, SUNY-Albany; PhD 1974, University of Missouri-Columbia.

TUMMONS, CARISSA A., Culinary Operations Manager l/Registered Dietitian, Housing and Dining Services (2019). BS 2019, Kansas State University.

TUNG, SHIRLEY, Assistant Professor of English (2015). BA 2004, University of California-Berkeley; MS 2005, University of Oxford; MA 2012, Phd 2015, University of California-Los Angeles.

TURCHIN, VICTOR, Associate Professor of Mathematics (2007). MS 1996, Moscow State University; PhD 2002, University of Paris VII.

TURNER, DEANNA K., Extension Agent, Family and Consumer Sciences, River Valley District 4, Clay Center (1974). BS 1974, Kansas State University; MS 2003, University of Nebraska.

TURNER, MARGARET, Assistant Director, Upward Bound Program (1990). BA 1971, Southwestern State University.

TURNLEY, WILLIAM H., Professor and Department Head of Management (1997). BS 1989, MBA 1991, PhD 1996, University of South Carolina.

TURNLEY, SABINE, Instructor in Management. BA 1991, Universite Catholique de Louvain, Belgium; MBA 1992, Cornell University - Johnson Graduate School of Management.

TURVEY-WELCH, MICHELLE, Associate Professor, Head, Metadata and Preservation, K-State Libraries (2004). BA 1996, William Jewell College; MLS 1997, Indiana University.

TVEITE, JON, Writing Skills Specialist, Educational Supportive Services, McNair Scholars Program (1995). BA 1989, St. Olaf College; MA 2005, Kansas State University.

TWISS, NANCY, Special Assistant to the Provost; Advisor Emeritus, Arts and Sciences (1968). BA 1954, Colorado College; MS 1974, Kansas State University.

TYBURSKI, MICHAEL D., Assistant Professor of Political Science (2016). BA 2007, Illinois College; MA 2009, PhD 2014, University of Wisconsin.

TYNON, ERIN, Extension Agent, Family and Consumer Sciences, Pottawatomie County, Westmoreland (2012). BS 2006, MS 2009, Kansas State University.

UGRIN, JOSEPH C., Associate Professor of Accounting (2008). BS 1997, Dickinson State University; MBA 2004, University of North Dakota; PhD 2008, Southern Illinois University; CPA North Dakota.

ULMER, JONATHAN D., Professor, Department of Communications and Agricultural Education (2016). BS 1997, MS 2003, Oklahoma State University; PhD 2005, University of Missouri-Columbia.

UMMERELL, BRETT, Adjunct Professor of Plant Pathology (2007). BSc 1985, PhD 1988, University of Sydney.

UNDERWOOD, KEBERA, Academic Advisor for K-State Polytechnic Campus (2017). BS 1986, MS 2017, Kansas State University,

UNEKIS, JOSEPH K., Associate Professor Emeritus of Political Science (1977). BS 1963, Eastern Illinois University; MA 1972, PhD 1977, Indiana University.

UNGER, ELIZABETH A., Professor Emeritus of Computer Science (1966). BS 1961, MS 1963, Michigan State University; PhD 1978, University of Kansas.

UNGERER, MARK, Professor of Biology; Agricultural Experiment Station (2003). BA 1992, Hamilton College; PhD 2000, Indiana University.

UNRUH, CHESTER R., Professor Emeritus, Department of Communications and Agricultural Education (1961). AB 1940, Bethel College; MS 1956, Kansas State University.

UPCHURCH, DAVID A., Assistant Professor of Clinical Sciences, Small Animal Soft Tissue Surgery (2018). DVM 2006, Auburn University; MS 2015, Kansas State University; Diplomate 2016, American College of Veterinary Surgeons (Small Animal).

UPCHURCH, MELISSA A., Clinical Assistant Professor, Small Animal General Medicine (2018). DVM 2010, Auburn University.

UNRUH, BERNADETTE J., Extension Agent, 4-H Youth Development, Barton County, Great Bend (1998). BS 1980, Kansas State University.

UPADHYAYA, HARI, Adjunct Professor of Agronomy (2009). BS 1974, Aligarh Muslim University; MS 1976, PhD 1980, GB Pant University of Agriculture and Technology, India.

UPHAM, WARD, Instructor of Horticulture and Natural Resources (2002). BS 1976, MS 1982, Kansas State University.

URTON, ELLEN R., Associate Professor, Visual Literacy Librarian, K-State Libraries (2004). BA 1999, Augustana College; MLS 2003, University of Missouri.

VADLANI, PRAVEEN, Associate Professor of Grain Science and Industry (2007). BS 1988, National Institute of Technology-India; MS 1990, PhD 1995, Indian Institute of Technology-India.

VAHL, CHRISTOPHER I., Associate Professor and Department Head of Statistics; Statistical Consultant, Research and Extension (2012). BA 1991, MA 1995, University of Montana; PhD 2005, Kansas State University.

VALENT, BARBARA, University Distinguished Professor Plant Pathology; Director Interdepartmental Genetics Program (2001). BA 1972, PhD 1978, University of Colorado; NIH Postdoctoral Fellow 1980-1982 Cornell University.

VALENTÍN-RIVERA, LAURA, Assistant Professor of Spanish (2015). BA 2009, Universidad Autónoma del Estado de Morelos; MA 2011, PhD 2015, Texas Tech University.

VALENZUELA, JORGE, Teaching Assistant Professor of Computer Science (2016). BS 1990, Monterrey Tech; MS 2000, PhD 2014, Kansas State University.

Van der HOEVEN, GUSTAAF A., Professor Emeritus of Horticulture and Natural Resources; Extension Specialist, Landscape and Environmental Horticulture (1974). HDA, Hawkesbury Agricultural College, N.S.W. Australia; BS 1968, MS 1971, PhD 1976, Virginia Tech.

VAN der MERWE, DEON, Associate Professor of Toxicology, Diagnostic Medicine/Pathobiology (2006). BVSc 1994, BSc 1998, MSc 2000, University of Pretoria; PhD 2005, North Carolina University.

VANDEVEER, MONTE L., Assistant Professor, Southwest Area, (2016). BS 1984, MS 1986, Kansas State University; PhD 1990, Purdue University.

VAN HORN, PAMELA I., Extension Specialist, 4-H Youth Development Programs (1983). BS 1982, MS 1996, Kansas State University.

VANLANDINGHAM, DANA, Assistant Professor of Diagnostic Medicine/Pathobiology (2013). BS 1993, MS 1996, Colorado State University; PhD 2006, Liverpool School of Tropical Medicine.

VANMETER, EARL L., Professor Emeritus, Area Extension Director (1985). BS 1958, Colorado State University; MS 1968, Kansas State University.

VAN SKIKE, KEITH P., Extension Agent, Agriculture and Natural Resources, Twin Creeks District 9, Norton (1982). BS 1980, MS 1982, Kansas State University.

VanSKIKE, WILLIAM V., Extension Agent Emeritus, 4-H, Barton County, Great Bend (1950). BS 1950, Kansas State University; MEd 1965, Colorado State University.

van SWAAY, MAARTEN, Professor Emeritus of Computer Science (1963). BBS 1953, Drs 1956, Leiden University, Netherlands; PhD 1956, Princeton University.

VANDERLIP, RICHARD L., Professor Emeritus of Agronomy; Crop Production (1964). BS 1960, Kansas State University; MS 1962, PhD 1965, Iowa State University.

VARDIMAN, JOHN PHIL, Associate Professor of Food, Nutrition, Dietetics and Health (2015). BS 1996, Park University; MS 1998, Oklahoma State University; PhD 2006, University of Arkansas-Fayetteville.

VASSERMAN, EUGENE Y., Associate Professor of Computer Science (2010). BS 2003, MS 2008, PhD 2010, University of Minnesota.

VASSOL, ELVERTA L., Assistant Director, Educational Supportive Services (1998). BS 1994, MS 1997, MS 1999, PhD 2005, Kansas State University.

VEDIYAPPAN, GOVINDSAMY, Assistant Professor of Biology; Microbiology (2015). BS 1984, MS 1986, PhD 1994, University of Madra, India.

VEEMAN, MICHAEL T., Associate Professor of Biology; Molecular and Cellular Biology (2011). BS 1997, University of Alberta, Canada; PhD 2003, University of Washington-Seattle.

VELLENGA, JENNIFER G., Professor and Associate Director of Theatre, School of Music, Theatre, and Dance (2011). BFA 1991, University of Miami; MFA 2002, Ohio University.

VENNUM, AMBER V., Assistant Professor of Family Studies and Human Services (2011). BA 2003, Rice University; MA 2007, University of Houston-Clear Lake; PhD 2011, Florida State University.

VESTWEBER, JEROME G. E., Professor Emeritus of Clinical Sciences, Food Animal Medicine (1977). DVM 1964, University of Minnesota; MS 1970, PhD 1973, Kansas State University.

VILLASI, LUDWIG, Assistant Professor Emeritus of Apparel, Textiles, and Interior Design (1975). BS 1968, MS 1975, Wayne State University.

VILLORIA, NELSON B., Associate Professor of Agricultural Economics (2015). BS 1995, Universidad Central de Venezuela; MS 2000, Cornell University; PhD 2009, Purdue University.

VIOLA, STEPHANIE J., Acquisitions Specialist, K-State Libraries (2012). BS 2008, University of Nebraska; MALS 2010, University of Missouri.

VIPHAM, JESSIE, Assistant Professor of Animal Sciences and Industry (2015). BS 2009, Kansas State University; MS 2011, Texas Tech University; PhD 2015, Texas Tech University.

VISSER, SONDRA, Director of Budget & Special Programs, College of Business Administration. BS 2001, Friends University; MPA 2005, Kansas State University.

VOECKS, KATHLEEN K., Associate Professor of Theatre, School of Music, Theatre, and Dance (2005). BS 2000, Wayne State College; MFA 2004, University of Missouri-Kansas City.

VOGT, RODNEY L., Instructor of Accounting (2001). BS 1989, Macc 1991, Kansas State University; CPA, 2002.

VOLKOVA, VICTORIYA, Assistant Professor of Diagnostic Medicine/Pathobiology (2014). DVM 1996, Kharkov Zooveterinary Institute; PhD 2007, Mississippi State University.

VOLOK, DAN, Associate Professor of Mathematics (2007). BSc 1994, Ben Gurion University of the Negev; MSc 1996, PhD 2002, The Wiezmann Institute of Science.

VON BERGEN, DONALD, Teaching Assistant Professor of School of Integrated Studies (2001). BS 1977, Wheaton College, MS 1985, PhD 1988, University of Illinois.

VONFELDT, DOUG, Interim Director and Chief Fiscal Officer, Educational Communications Center (1988). BS 1981, Kansas State University.

VONTZ, THOMAS S., Professor of Curriculum and Instruction (2005). BS 1992, MST 1993, University of Nebraska-Lincoln; PhD 2000, Indiana University.

WAGGONER, JUSTIN, Professor of Animal Sciences and Industry; Extension Specialist, Southwest, Garden City (2007). BS 2000, MS 2001, Kansas State University; PhD 2007, New Mexico State University.

WAGNER, ELLIOTT, Assistant Professor of Philosophy (2013). BS 2006, Columbia University; MA 2009, PhD 2012, University of California-Irvine.

WAGNER, LARRY, Adjunct Assistant Professor of Biological and Agricultural Engineering, Wind Erosion Research Unit, USDA, ARS (1988). BS 1982, MS 1983, PhD 1988, Kansas State University.

WAGNER, LESLIE, Assistant Professor of Clinical Sciences, Livestock Services - Ambulatory (2019). BS 2011, DVM 2015, Texas A&M University; MS 2019, Oklahoma State University.

WAHL, RICHARD H., Farm Management Economist Emeritus (1985). BS 1972, Kansas State University.

WAKABAYASHI, ISAAC, Instructor Emeritus in Electrical and Computer Engineering (1955). BS 1954, University of California.

WALDREN, DERYL, Extension Specialist, Northwest, Colby (2006). BS 1980, Kansas State University; MS 1991, California State University-Chico.

WALKER, DORIS K., Professor Emeritus of Family Studies and Human Services; Extension Specialist, Family Resources and Public Policy (1984). BS 1953, MS 1973, PhD 1975, University of California.

WALKER, DOUGLAS M., Assistant Professor of Marketing (2015). BBA 1985, Kansas State University; MBA 2005, PhD 2008, University of Houston.

WALKER, JEREMY, Instructor, Undergraduate Specialist, K-State Libraries (2010). BS 2010, Kansas State University.

WALKER, LLOYD E., Associate Director, Mediated Education (1991). BS 1987, BS 1989, Kansas State University.

WALKER, MARGARET Y., Assistant Professor Emeritus of Music, School of Music, Theatre, and Dance (1971). BM 1970, Kansas State University, MM 1974, Texas Christian University.

WALKER, RODNEY G., Professor Emeritus of Music, School of Music, Theatre, and Dance (1966). BME 1959, University of Nebraska; MME 1961, Wichita State University.

WALLACE, CHLOE, Academic Advisor, Division of Biology (2017). M.Ed. 2014, University of Washington.

WALLACE, NICHOLAS A., Assistant Professor of Biology; Basic Cancer Biology (2015). BS 2003, Tulane University; PhD 2008, Tulane University-Health Science Center.

WALLACE, REBECCA A., Extension Agent Emeritus, Family and Consumer Sciences, Hamilton County, Syracuse (1979). BS 1976, Kansas State University.

WALLENTINE, VIRGIL E., Professor Emeritus of Computer Science (1972). BS 1965, MS 1970, PhD 1972, Iowa State University.

WALLER, KRISTIN, Associate Athletics Director for Student Athlete Services at K-State Athletics (2002). BS 2002, Kansas State University.

WALTERS, DEREK A., Assistant Director/Facility Director, Recreational Services (1994). BS 1988, Oklahoma State University; MS 1986, Kansas State University.

WANG, DONGHAI, Professor of Biological and Agricultural Engineering (2000). BS 1982, Northeast Agricultural University, China; MS 1994, Northeast Normal University, China; MS 1994, University of Illinois; PhD 1997, Texas A&M University.

WANG, HAIYAN, Professor of Statistics (2004). BS 1996, MS 1999, Beijing University; PhD 2004, Pennsylvania State University.

WANG, JIDA, Associate Professor of Geography and Geospatial Sciences (2014). BS 2006, Beijing Institute of Petrochemical Technology; MS 2008, State University of New York; PhD 2013, University of California-Los Angeles.

WANG, JIN, Assistant Professor of Economics (2015). BA 2006, University of International Business and Economics, China; MA 2009, Peking University, China; PhD 2015, University of Southern California.

WANG, WEIQUN (GEORGE), Professor of Food, Nutrition, Dietetics and Health (2002). BS 1983, Nanjing University; PhD 1990, Nanjing Agricultural University.

WANG, YOUQI, Professor of Mechanical and Nuclear Engineering (1994). BS 1979, Wuhan University of Technology; MS 1982, PhD 1985, Shanghai Jiao Tong University.

WANGEMANN, A. PHILINE, University Distinguished Professor of Anatomy and Physiology (1998). Diploma Biology, Justus-Liebig; MS 1985, PhD 1987, Albert Ludwigs University, Freiburg, Germany.

WANKLYN, CRAIG, Assistant Professor of Architectural Engineering and Construction Science and Assistant Dean for Recruitment and Leadership Development (2014). BS/MS 2006, Kansas State University.

WANKLYN, KEVIN M., Instructor of Mechanical and Nuclear Engineering (2011). BS 2000, MS 2002, PhD 2008, Kansas State University.

WARD, BEN, Instructional Technologist, College of Business Administration. BS, Kansas State University; MS, Emporia State University.

WARD, ERIC, Assistant Forester (2005). BS 2002, Manhattan Christian College.

WARD, IRENE, Associate Professor Emeritus of English (1992). BA 1981, University of Wisconsin-Whitewater; MA 1983, University of Wisconsin-Milwaukee; PhD 1992, University of South Florida.

WARD, JOSEPH EVANS, JR., Professor Emeritus of Electrical and Computer Engineering (1940). BS 1937, University of Texas; MS 1940, University of Illinois; Professional Engineer, 1948.

WARD, KATHLEEN A., Associate Professor Emeritus, Department of Communications and Agricultural Education (1985). BS 1970, California State University; MS 1984, University of Georgia.

WARDERS, DIXIE, Accountant III, College of Business Administration.

WARFIELD, REID, Assistant Director of Ticketing Services at K-State Athletics (2018), BA 2015, MA 2018, Wichita State University.

WARMINSKI, NORMAN C., Extension Agent Emeritus, Horticulture, Sedgwick County, Wichita (1968). BS 1964, Oklahoma State University; MS 1968, Texas A&M University.

WARNER, DANIEL, Associate Professor of Art (2011). BA 2002, Edinboro University of Pennsylvania; MFA 2008, University of Notre Dame.

WARNER, JOHN, Assistant Professor of Political Science (2015). BS 2000, Belmont University; MA 2004, University of Georgia; PhD 2011, University of California-Davis.

WARNER, STACEY M., Leader, Extension Operations Extension Administration (1976). BS 1976, MS 1982, Kansas State University.

WARNER, THOMAS D., Professor Emeritus of Horticulture and Natural Resources (1988). BS 1971, Indiana State University; MS 1974, PhD 1976, Michigan State University.

WARNICK, ANTHONY., Assistant Professor of Art (2018). BFA 2011, Minneapolis College of Art and Design; MFA 2015, Cranbrook Academy of Art.

WARREN, ANN A., Instructor Emeritus of English (1977). BA 1964, Florida Southern College; MA 1968, University of Georgia.

WARREN, DAVID, Computer Information Specialist, Planning and Analysis (1997). BS 1988, BTH 1991, Manhattan Christian College.

WARREN, LELAND E., Professor Emeritus of English (1976). BA 1966, Emory University; MA 1968, University of Georgia; PhD 1976, University of Illinois.

WARREN, STEVE, Associate Professor of Electrical and Computer Engineering (1999). BS 1989, MS 1991, Kansas State University; PhD 1994, University of Texas.

WARREN, STUART L., Professor Emeritus of Horticulture and Natural Resources (2007). BS 1974, MS 1977, University of Illinois; PhD 1986, North Carolina State University.

WARY, RAYMOND E., JR., Extension Agent Emeritus, Agriculture and Natural Resources, Cherokee County, Columbus (1958). BS 1958, Kansas State University.

WASHBURN, BRIAN, Professor of Physics (2005). BS 1994, University of Wisconsin-Parkside; PhD 2002, Georgia Institute of Technology.

WATTS, CAROL MARTIN, Professor Emeritus of Architecture (1983). BA 1971, Mount Holyoke; MArch 1975, University of Washington; PhD 1987, University of Texas-Austin.

WATTS, DONALD, Professor Emeritus of Architecture (1983). BArch 1970, University of Nebraska; MArch 1971, University of California-Berkeley. Licensed Architect.

WATTS, TIM J., Associate Professor, Content Development Librarian, K-State Libraries (1995). BS 1975, Kansas State University; MA 1979, Pittsburg State University; MA 1981, University of Notre Dame; MLS 1982, Indiana University.

WAUGH, LYNN, Graduate Program Coordinator, College of Business Administration. BS 2003, Kanas State University; MS 2015, Kansas State University.

WEABER, ROBERT L., Professor of Animal Sciences and Industry (2011). BS 1993, MS 1995, Colorado State University; PhD 2004, Cornell University.

WEAVER, ELDON R., Assistant Professor Emeritus; Extension Specialist, 4-H Youth Development Programs (1968). BS 1951, Kansas State University; MS 1975, Colorado State University.

WEAVER, HARLAN, Associate Professor of Gender, Women, and Sexuality Students (2016). PhD 2012 University of California, Santa Cruz.

WEAVER, MARSHA K., Extension Agent Emeritus, Family and Consumer Sciences, Dickinson County, Abilene (1976). BS 1972, MS 1975, Kansas State University.

WEAVER, OLIVER LAURENCE, Professor of Physics (1970). BS 1965, California Institute of Technology; PhD 1970, Duke University.

WEBB, CRAIG, Adjunct Assistant Professor of Plant Pathology (2004). BS 1995, Washburn University; PhD 2002, Kansas State University.

WEBB, FARRELL J., Associate Professor of Family Studies and Human Services (1994). BA 1977, Loyola University; MA 1979, California State University; PhD 1993, University of Minnesota.

WEBER, BRUCE, Head Men's Basketball Coach at K-State Athletics (2012). BA 1978, University of Wisconsin-Milwaukee; MEd 1981, Western Kentucky University.

WEBER, JACOB A., Extension Agent, Horticulture, Wildcat District 14, Girard (1988). BS 1974, Kansas State University.

WEESE, ANNE, Director of Mental Wellness/Sport Psychologist at K-State Athletics (2018). BA 2005, University Notre Dame; MS 2009, Oklahoma State University; PhD 2012, Oklahoma State University.

WEESE, JOSH, Teaching Assistant Professor of Computer Science (2017). BS 2011, Kansas State Polytechnic; MS 2013, PhD 2017, Kansas State University.

WEFALD, ANDREW, Associate Professor of the Staley School of Leadership Studies (2007). BA 1994, Iowa State University; MBA 1996, PhD 2008, Kansas State University.

WEFALD, JON, President Emeritus (1986). BA 1959, Pacific Lutheran University; MA 1961, Washington State University; PhD 1965, University of Michigan.

WEISENBURGER, PATRICIA, Professor Emeritus, K-State Libraries (1985). BA 1956, MA 1959, University of Illinois; MLS 1981, Emporia State University.

WEISMAN, DENNIS L., Professor Emeritus of Economics (1993). BA 1979, MA 1981, University of Colorado; PhD 1993, University of Florida.

WEISS, MARK, Professor of Anatomy and Physiology, Neuroscience (1991). BS 1981, Rensselaer Polytechnic Institute; PhD 1986, University of Pennsylvania.

WELCH, KELLY, Assistant Professor of Family Studies and Human Services (1999). BS 1981, MS 1997, PhD 1999, Kansas State University.

WELCH, STEPHEN M., Professor of Agronomy, Systems Modeling (1977). BS 1971, PhD 1977, Michigan State University.

WELLS, CAITLYN, Program/Project Manager, Diversity and Multicultural Student Affairs (2015). BS 2014, Kansas State University.

WELLS, DANIAL C., Adjunct Faculty of Grain Science and Industry (2009). BS 1972, Kansas State University.

WELLS, RUTH I., Associate Professor Emeritus; Extension Specialist, Limited Resources Program (1953). BS 1943, Central Missouri State College; MS 1948, Kansas State University.

WELLS, TODD, Associate Director of Upward Bound (2003). BS 1999, MS 2001, Kansas State University.

WELTI, RUTH, University Distinguished Professor of Biology and Lillian J. Brychta Chair (1985). BSc 1976, University of Connecticut; PhD 1982, Washington University.

WELTON, RICHARD F., Professor Emeritus of Education (1977). BS 1959, MS 1966, Colorado State University; PhD 1971, Ohio State University.

WELTSCH, BARBARA R., Clinical Assistant Professor of Family Studies and Human Services (2001) BGS 1993, Auburn University-Montgomery; MS 1996, Adelphi University.

WENDEL, ALYSSA, Academic Advisor for K-State Polytechnic Campus (2016). BS 2013, MS 2015, Fort Hays State University.

WENDT, EUGENE G., Professor Emeritus of Architecture (1962). BArch 1959, MArch 1970, Kansas State University. Registered Architect.

WERNER, SARAH, Student Services Manager for K-State Polytechnic Campus (2017). BA 2011, Dakota Wesleyan University, MEd 2017, South Dakota State University.

WERTH, KURT A., Extension Agent, Agriculture and Natural Resources, Gray County, Cimarron (1993). BS 1991, Kansas State University.

WESCH, MICHAEL, Professor of Anthropology (2004). BS 1997, Kansas State University; MA 2001, PhD 2005, University of Virginia.

WESELY, LAURIE, Psychologist, Assistant Director, Counseling Services (2008). BS 1989, MS 1993, Indiana State University; PhD 1998, University of Nebraska-Lincoln.

WEST, LARRY, Adjunct Professor of Agronomy (2009). BSA 1973, MS 1978, University of Arkansas; PhD 1986, Texas A&M University.

WEST, LOUELLEN, Instructor Emeritus of Family Studies and Human Services (1977). BS 1966, Harding College; MS 1968, University of Illinois.

WESTFAHL, STEVEN A., Extension Agent Emeritus, Agriculture and Natural Resources, Sedgwick County, Wichita (1970). BS 1970, Kansas State University.

WESTFALL, JANE, Professor Emeritus of Anatomy and Physiology (1957). BA 1950, College of Pacific; MA 1952, Mills College; PhD 1965, University of California.

WESTMAN, KARIN E., Associate Professor and Head of English (2001). BA 1991, Wellesley College; MA 1992, PhD 1996, Vanderbilt University.

WESTMEYER, HERMAN W., Professor Emeritus; Area Extension Director (1936). BS 1936, University of Missouri; MS 1965, Kansas State University.

WESTON, CRAIG, Associate Professor of Music, School of Music, Theatre, and Dance (2002). BM 1986, Central Michigan University; MM 1988, DMA 1992, University of Washington.

WEYHER, FRANK, Associate Professor of Sociology (2004). BA 1989, BS 1989, Regis University; MA, 1994, PhD 2003, University of California-Los Angeles.

WHEATLEY, ALISON E., Associate Professor of English, Assistant Dean of Arts and Sciences (2002). AB 1974, Barnard College; MA 1980, PhD 1994, University of Virginia.

WHEELER, MARYCLARE, Academic Counselor at K-State Athletics (2015). BS 2012, MeD 2015, Kansas State University.

WHITE, BRAD J., Professor of Clinical Sciences, Production Medicine (2005). DVM 1997, University of Missouri-Columbia; MS 2005, Mississippi State University.

WHITE, FRANK F., Professor Emeritus of Plant Pathology (1985). BS 1974, University Wisconsin-Madison, MS 1978, PhD 1981, University of Washington.

WHITE, JOHN, Director of Membership and Marketing, KSU Alumni Association (1994). BS 1987, Kansas State University.

WHITE, REBA B., Area Extension Director Emeritus, Northwest (1988). BS 1967, MS 1984, Kansas State University.

WHITE, WARREN J., Professor of Special Education, Counseling, and Student Affairs (1981). BS 1973, Fort Hays State University; MS 1977, PhD 1980, University of Kansas.

WHITE, WARREN N., JR., Associate Professor of Mechanical and Nuclear Engineering (1985). BS 1974, Tulane University; MS 1977, Rensselaer Polytechnic Institute; PhD 1985, Tulane University.

WHITEHAIR, KELLY J., Menu Systems Administrator, Housing and Dining Services and Assistant Professor, Food, Nutrition, Dietetics, Health and Hospitality Management (2003). BS 2001, MS 2004, PhD 2011, Kansas State University.

WHITEHILL, DEAN A., Extension Agent Emeritus, Agriculture and Natural Resources, Finney County, Garden City (1982). BS 1973, MS 1979, Kansas State University.

WHITEHOUSE, WILLIAM, Assistant Professor of Clinical Sciences, Small Animal Internal Medicine (2019); BS 2007, DVM 2010, University of Georgia; Diplomate 2014, American College of Veterinary Internal Medicine (Small Animal Internal Medicine).

WHITE-HULING, MARTHA L., Instructor Emeritus; Extension Specialist, 4-H Youth Development Programs, Metropolitan (1993). BS 1967, Northeastern Oklahoma State University; ME 1988, Wichita State University.

WHITFELD, ANNA E., Professor of Plant Pathology (2007). BS 1996, University of Georgia-Athens; MS 1999, University of California-Davis; PhD 2004, University of Wisconsin-Madison.

WHITNEY, DAVID A., Professor Emeritus of Agronomy; Soil Fertility (1966). BS 1961, MS 1963, University of Nebraska; PhD 1966, Iowa State University.

WHITNEY-BAMMERLIN, DONITA, Instructor of Management (1997). BS 1975, MS 1990, PhD 1995, Kansas State University.

WHITWORTH, R. JEFFREY, Associate Professor of Entomology, Extension Specialist, IPM Row Crops and Household/Structural Pests (1997). BS 1971, Kansas Wesleyan University; MS 1977, PhD 1980, Kansas State University.

WHOOLERY, GARRETT, Culinary Operations Manager l, Housing and Dining Services (2019). BS 2012, Knasas State Univeristy.

WICHMAN, JEFFREY L., Media Production Specialist, Department of Communications and Agricultural Education (2004). BS 2003, Kansas State University.

WICK, SANDRA L., Extension Agent, Agriculture and Natural Resources, Post Rock District, Smith Center (1989). BS 1981, MS 1997, Kansas State University.

WIDENOR, GEORGE C., Director, Marketing, K-State Global Campus (2013). BA 1994, University of California-Davis; MS 1996, Indiana State University.

WIDENOR, LAURA B., Instructional Designer, K-State Global Campus (2013). BA 1995, University of California-Davis; MA 2010, University of Phoenix.

WIEGERT, DUSTIN, Technology Coordinator, K-State Polytechnic Campus (2012), AS 2003, Cloud County Community College.

WIERSMA, ERIN, Associate Professor of Art (2010). BA 2004, Messiah College; MFA 2009, University of Connecticut.

WIGFALL, LABARBARA, Associate Professor of Landscape Architecture and Regional & Community Planning (1987). BArch 1975, Howard University; MCRP 1977, Harvard University.

WILCOX, DAN W., Assistant Professor of Special Education, Counseling, and Student Affairs (1995). BA, 1975, MS 1976, Portland State University, MA 1985, Azusa Pacific University, PhD 1995, Michigan State University.

WILEMAN, BEN W., Adjunct Faculty Member of Diagnostic Medicine/Pathobiology (2015). BS 2001, South Dakota State University; DVM 2005, Iowa State University; PhD 2010, Kansas State University.

WILES, DON K., Extension Agent Emeritus, Agriculture and Natural Resources, Ford County, Dodge City (1956). BS 1950, University of Nebraska; MA 1955, University of Maryland.

WILES, BRADFORD B., Associate Professor of Family Studies and Human Services (2013). BS 1997, Indiana University; MS 2008, PhD 2012, Virginia Tech.

WILES, LORI, Adjunct Associate Professor of Agronomy (2006). BS 1981, Cornell University; MS 1986, Oregon State University; PhD 1991, North Carolina State University.

WILEY, ZELIA, Interim Associate Provost for the Office of Diversity (2003). BS 1989, MS 1990, Prairie View A&M University; PhD 1995, Pennsylvania State University.

WILKEN, LISA R., Assistant Professor of Biological and Agricultural Engineering (2012). BS 2003, Kansas State University; PhD 2009, Texas A&M University.

WILKEN, CHARLES, Farm Management Economist Emeritus (1983). BS 1976, MS 1977, University of Missouri.

WILKINSON, BRETT R., Professor and Head of Accounting (2014). BS 1990, Macquarie University, Australia; BBS 1997, Massey University; PhD 2002, Texas Tech University.

WILKINSON, KATE, Instructor in Finance.

WILLARD, GAYLE K., Professor and Director, Veterinary Medicine Library, K-State Libraries (1985). BS 1970, MS 1984, Kansas State University; MLS 1987, Emporia State University.

WILLBRANT, FRANCES, Assistant Vice President for Financial Services (1993). AA 1985, Edison Community College; BS 1987, University of Southern Florida.

WILLIAMS, BRYON K., Assistant Director of New Student Services (2016). BS Economics 2009, Kansas State University; MS Counseling & Student Development 2015, Kansas State University.

WILLIAMS, CYNTHIA L., Human Resource Manager at K-State Athletics (1981).

WILLIAMS, CYNTHIA, Extension Agent, Family and Consumer Sciences, Meadowlark District 7, Oskaloosa (1985). BS 1981, University of Nebraska.

WILLIAMS, ELIZABETH, Administrative Assistant (2015).

WILLIAMS, H. RODMAN, Extension Agent Emeritus, Agriculture and Natural Resources, Morton County, Elkhart (1970). BS 1959, MS 1977, Kansas State University.

WILLIAMS, JEFFERY R., Professor of Agricultural Economics, Research Agricultural Economics Farm Management, Resource Economics, Agricultural Experiment Station (1980). BS 1975, Pennsylvania State University; MS 1977, PhD 1980, Michigan State University.

WILLIAMS, JENELL K., Instructor, English Language Program (1991). BA 1974, MA 1991, University of Kansas.

WILLIAMS, KIMBERLY, Professor of Horticulture and Natural Resources (1997). BS 1988, Kansas State University; MS 1991, PhD 1995, North Carolina State University.

WILLIAMS, L. SUSAN, Professor of Sociology (1997). BA 1988, MA 1990, Texas Tech University; PhD 1997, University of Connecticut.

WILLIAMS, LOU FALKNER, Associate Professor of History (1991). BA 1980, MA 1983, University of Alabama-Huntsville; PhD 1991, University of Florida.

WILLIAMS, TRYSTA, Instructor in Management.

WILLIAMSON, HARRY E., Director, Financial and Administrative Operations, K-State Global Campus (2006). BS 1989, William Penn College; MBA 2011, Upper Iowa University.

WILLIS, QUANTRELL, Academic Services Coordinator, Educational Supportive Services (2008). BA 2005, MEd 2007, University of Arkansas.

WILSON, ALFRED P., Professor Emeritus of Education (1972). BS 1961, MEd 1965, EdD 1969, Utah State University.

WILSON, C. CARL, Associate Professor Emeritus of Industrial and Manufacturing Systems Engineering (1977). BS 1959, University of Toronto; MS 1962, 1965, University of Michigan; Professional Engineer, 1960, Toronto.

WILSON, CHRISTINE A., Professor of Agricultural Economics, Director of Undergraduate Program (2008). BS 1994, MS 1996, PhD 2001, Kansas State University.

WILSON, COURTNEY, Academic Counselor (2008). MS 2007, Kansas State University.

WILSON, DONALD, Associate Professor of Philosophy (2003). MA 1990, University of Aberdeen, United Kingdom; PhD 1999, University of Southern California.

WILSON, JEFFERY D., Adjunct Associate Professor of Grain Science and Industry (2003). BS 1978, Edinboro College of Pennsylvania; MS 1986, Slippery Rock University; PhD 2003, Kansas State University.

WILSON, JEFFREY, Extension Agent, Stanton County, Johnson (1994). BS 1993, Kansas State University.

WILSON, JENNIFER R., County Extension Director, Riley County, Manhattan (1995). BS 1993, MS 2002, Kansas State University.

WILSON, LOREN E., Director of Information Systems (2000). BA 1980, Kansas Wesleyan; MS 1986, Kansas State University.

WILSON, MICHAEL, Associate Professor Emeritus of School of Integrated Studies (1984). BSEE 1965, California State University-San Diego; MSEE 1969, University of California-Los Angeles.

WILSON, RON J., Director, Huck Boyd National Institute for Rural Development (1990). BS 1978, Kansas State University.

WILSON, WILLIAM C., Adjunct Faculty of Diagnostic Medicine/Pathobiology (2010). BS 1970, PhD 1985, University of Illinois at Urbana-Champaign.

WILTFONG, HANNA, Assistant Rowing Coach at K-State Athletics (2015). BS 2012, MS 2015, Kansas State University.

WIMER, MATTHEW J., Adjunct Faculty of Clinical Sciences (2018). DVM 2014, Kansas State University; Certified Journeyman Farrier 2013, American Farrier's Association.

WINEGARDNER, CARROLL, Assistant Professor Emeritus of Art (1966). BFA 1960, Kansas City Art Institute; MFA 1963, University of Oklahoma.

WINGFIELD, WILLIAM, Instructor Emeritus of Music, School of Music, Theatre, and Dance (1988). BM 1974, Eastman School of Music, MM 1983, Kansas State University.

WINN, CASY, Instructor of Animal Sciences and Industry (2015). BS 1993, Utah State University; MS 2009, Southern Utah University.

WINSLOW, WILLIAM P. III, Professor Emeritus of Landscape Architecture and Regional & Community Planning (1982). BLA 1980, Kansas State University; MLA 1982, University of Michigan. Professional Landscape Architect.

WIRKA, VERN, Instructor of Journalism and Mass Communications (2011). BS 1994, Bellevue University; MA 1997, University of Nebraska-Omaha; AJD 2011, Taft Law School.

WISNIEWSKI, MATTHEW, Assistant Professor of Psychological Sciences (2013). BA 2007, State University of New York at Buffalo; PhD, State University of New York at Buffalo.

WISSMAN, JANICE R., Professor Emeritus of Curriculum and Instruction (1968). BS 1963, MS 1968, Kansas State University; EdD 1981, University of Kansas.

WITH, KIMBERLY A., Professor of Biology; Ecology (2000). BS 1985, San Francisco State University; MS 1998, North Arizona University; PhD 1993; Colorado State University.

WITT, MERLE D., Associate Professor; Research Agronomist, SW Research-Extension Center (1969). BS 1967, MS 1969, Kansas State University; PhD 1981, University of Nebraska.

WOJCINSKI, LOUIS M., Assistant Teaching Scholar of Chemistry (2004). BS 1989, University of Akron; PhD 1999, Pennsylvania State University.

WOLFE, CURTIS J., Staff Physician (2001). BS 1992, Kansas State University; MD 1996, University of Missouri-Kansas City.

WOLGAST, STEPHEN L., Assistant Professor of Journalism and Mass Communications; Advisor, Kansas State Collegian (2009). BA 1990, Kansas State University; MS 1992, Columbia University.

WOLLENBERG, NEAL, Web Coordinator, K-State Global Campus (2003). BFA 1995, MFA 1999, Kansas State University.

WOOD, ANDREA J., Extension Agent, Family and Consumer Sciences, Kingman County, Kingman (2001). BS 2001, Oklahoma State University.

WOOD, BILLY D., County Extension Director Emeritus, Douglas County, Lawrence (1980). BS 1979, Kansas State University.

WOOD, DEBRA, Extension Agent, Family and Consumer Sciences, Central Kansas District 3, Salina (2009). BS 1980, MS 2003, Kansas State University.

WOOD, JILL, Instructor of Curriculum and Instruction (2015). BS 1996, MS 2007, Emporia State University.

WOOD, MARK A., Farm Management Executive Economist (1986). BS 1982, Kansas State University; MS 1987, North Dakota State University.

WOOD, MARY, Director, English Language Program (1987). BA 1978, MA 1984, University of Kansas.

WOOD, NAOMI J., Professor of English (1991). BA 1983, North Park College; PhD 1991, Duke University.

WOOD, SPENCER, Retired Emeritus Assistant Professor of Sociology (2019). BSW 1989, Southwest Missouri State University; MS 1991, PhD 2006, University of Wisconsin-Madison.

WOODS, ALIESA M., Extension Agent, 4-H, Post Rock District (2000). BS 1996, MS 2005, Kansas State University.

WOODS, MONICA A., Senior Instructor of Accounting (1998). BS 1999, MAcc 2000, Kansas State University; CIA 2002.

WOODWARD, GARY L., Associate Professor Emeritus of Art (1971). AB 1961, Northern Colorado University; MA 1964, University of Iowa; MFA 1969, University of Washington.

WOODWORTH, JASON, Research Associate Professor of Animal Sciences and Industry (2013). BS 1997, MS 1999, PhD 2002, Kansas State University.

WOOFTER, JOHN, Planned Giving Officer, KSU Foundation (1993). BA 1971, Fort Hays State University.

WOOLVERTON, MIKE, Professor Emeritus of Agricultural Economics (2005). BS 1996, MBA 1973, Kansas State University; PhD 1978, University of Missouri.

WOOTTON, RICHARD D., Professor Emeritus of Horticulture and Natural Resources; Associate Dean and Associate Director of Extension (1991). BS 1966, MS 1970, PhD 1977, University of Maryland.

WOUDA, RAELENE M., Assistant Professor of Clinical Sciences (2014). BVSc 2003, The University of Queensland; MANZCVS 2007; Diplomate 2014, American College of Veterinary Internal Medicine-Oncology.

WRIGHT, DEANNE D., Associate Professor Emeritus, Department of Communications and Agricultural Education (1970). BA 1959, University of Kansas; MS 1970, MS 1989 Kansas State University.

WRIGHT, EMMETT L., Professor Emeritus of Education (1984). BS 1963, University of Kansas; MA 1968, Wichita State University; PhD 1974, Pennsylvania State University.

WRIGHT, JULIA K., Assistant Professor, Undergraduate Experience Librarian, K-State Libraries (2013). BS 2010, Central Michigan University; MLS 2012, University of North Texas.

WU, CEN, Assistant Professor of Statistics (2015). BEng 2003, MS 2005, Wuhan University of Technology; MS 2008, University of North Florida; PhD 2013, Michigan State University.

WU, CHIH-HANG (JOHN), Associate Professor of Industrial and Manufacturing Systems Engineering (1993). BS 1984, National Cheng Kung University; MS 1990, PhD 1993, Pennsylvania State University.

WU, YINGYING, Assistant Professor of Interior Design and Fashion Studies (2016). BSE 2009, Zhejiang Sci-Tech University; MS 2011, Hong Kong Polytechnic University; PhD 2016, Cornell University.

WUELLNER, LORI L., Extension Agent, Family and Consumer Sciences, Wyandotte County, Kansas City (1986). BS 1985, Kansas State University.

WYATT, CAROL R., Associate Professor Emeritus of Diagnostic Medicine/Pathobiology (2000). BA 1968, University of California; MS 1973, University of Kentucky; PhD 1986, Washington State University.

WYKCOFF, ROBERTA D., Extension Agent, Agriculture and Natural Resources, Douglas County, Lawrence (2015). BS 2011, Kansas State University.

WYSIN, GARY M., Professor of Physics (1989). BS 1978, MS 1980, University of Toledo; PhD 1985, Cornell University.

WYTKO, ANNA MARIE, Associate Professor of Music, School of Music, Theatre, and Dance (2006). BM 2004, MM 2006, University of Minnesota.

XIA, TIAN, Professor of Agricultural Economics (2005). BS 1992, Wuhan University; MS 1999, University of Delaware; PhD 2004, University of California-Davis.

XIN, XIAO JIANG (JACK), Associate Professor of Mechanical and Nuclear Engineering (1998). BS 1985, University of Science and Technology of China; PhD 1992, University of Sheffield, United Kingdom.

XIN, ZHANGUO, Adjunct Faculty (2009). BS 1982, Beijing Agricultural University; MS 1985, Kansas State University; PhD 1993, University of Minnesota.

XIONG, YULAN, Assistant Professor of Anatomy and Physiology (2015). BS 1999, MS 2002, Capital Normal University (CNU), Beijing, China; PhD 2007, Lancaster University, UK.

YAGERLINE, JOYCE A., Associate Professor of Communication Studies, Theatre and Dance (1995). BA 1978, Butler University; MFA 1995, Texas Woman's University.

YAHNKE, SALLY J., Associate Professor of Curriculum and Instruction (1994). BS 1976, South Dakota State University; MEd 1989, PhD 1994, Colorado State University.

YANG, LI, Assistant Professor of Chinese (2013). BA 2006, MA 2009, Beijing Language and Culture University; PhD 2013, University of Iowa.

YANG, (LYDIA) YANG, Assistant Professor of Special Education, Counseling, and Student Affairs (2014). BA 2005, Nanjing University-China; MEd 2006, Salem International University Salem, West Virginia; PhD 2011, Florida International University.

YANG, ZHILONG, Assistant Professor of Biology; Host-Pathogen Interactions (2013). BS 1999, MS 2002, Nankai University, China; PhD 2007, University of Nebraska-Lincoln.

YARROW, LINDA, Assistant Professor of Food, Nutrition, Dietetics and Health (2007). BS 1983, MS 1985, PhD 2006, Kansas State University.

YAUK, DON O., Extension Agent Emeritus, Agriculture and Natural Resources, Clark County, Ashland (1991). BS 1961, Oklahoma Panhandle State University; MS 1970, Kansas State University.

YEAGER, ELIZABETH A., Assistant Professor of Agricultural Economics (2015). BS 2007, PhD 2011, Kansas State University.

YELICH-BINIECKI, SUSAN M., Associate Professor of Educational Leadership (2012). BA 1991, Ripon College; MS 2003, PhD 2010, University of Wisconsin-Milwaukee.

YETTER, DAVID, Professor of Mathematics (1991). BS 1979, Dickinson College; PhD 1984, University of Pennsylvania.

YODER, DAVID D., Coordinator of Conference Services, Housing and Dining Services (1976). BS 1973, Kansas State University.

YOON, DUKNO, Associate Professor of Art (2010). BFA 2000, Kookmin University, Seoul, Korea; MFA 2003, Miami University of Ohio.

YOUNG, DANIELLE, (2011). BA 2011, Kansas State University.

YOUNG, MELINDA A., Extension Agent, Agriculture and Natural Resources, Doniphan County, Troy (2010). BS 2007, Kansas State University; MS 2009 Oklahoma State University.

YOUNG, MICHAEL E., Professor and Head of Psychological Sciences (2012). BS 1984; University of Illinois; MS 1990, Ph.D. 2005, University of Minnesota.

YOUNG, MATTHEW, Extension Agent, Agriculture and Natural Resources, Brown County, Hiawatha (2007). BS 2006, MS 2007, Kansas State University.

YU, HAN, Professor of English (2007). BA 2001, University of International Business & Economics, Beijing; MA 2004, PhD 2007, Illinois State University.

YU, JIANMING, Associate Professor of Agronomy; Geneticist (2006). BS 1994, Northwestern Agricultural University; MS 2000, Kansas State University; PhD 2003, University of Minnesota.

YU, JIANZHONG, Assistant Professor of Anatomy and Physiology (2015). BS 1999, MS 2002, Capital Normal University (CNU), Beijing, China; PhD 2006, Martin-Luther-University Halle-Wittenberg, Halle, Germany.

YU, JISANG, Assistant Professor of Agricultural Economics (2016). BA 2011, Seoul National University; MA 2012, PhD 2016, University of California-Davis.

YUCEL, UMUT, Assistant Professor of Animal Sciences and Industry (2016). BS 2004, MS 2006, Middle East Technical University; MS 2010, PhD 2011, Pennsylvania State University.

YU-OPPENHEIM, JULIE A., Professor of Music, School of Music, Theatre, and Dance (2007). BME 1998, University of Central Oklahoma; MM 2000, Oklahoma State University; DMA 2007, University of North Texas.

YUNK, RAPHAEL (RAY) A., Professor and Head of Architectural Engineering and Construction Science (2002). BS 1988, MS 2004, Kansas State University; Professional Engineer.

ZACHARAKIS, JEFFREY T., Professor of Educational Leadership (2004). AB 1977, Bowdoin College; MA 1986, University of Wyoming; EdD 1991, Northern Illinois University.

ZAJAC, RICHARD A., Professor of School of Integrated Studies (1996). BS 1992, McGill University; PhD 1996, Kansas State University.

ZAKJEVSKI, VIATCHESLAV, Computational Chemist (1996). MS 1976, PhD 1980, Moscow Institute of Physics and Technology.

ZAKRZEWSKI, ALEXANDRIA, Research Assistant Professor of Psychological Sciences (2016). BA 2008, Saint Mary's College; MA 2013, State University of New York at Buffalo; PhD, State University of New York at Buffalo.

ZAMFIR-BLEYBERG, MARIA, Associate Professor Emeritus of Computer Science (1986). MS 1960, University of Bucharest; PhD 1982, University of California-Los Angeles.

ZEGLIN, LYDIA H., Assistant Professor of Biology; Microbial Ecology (2014). BS 2003, University of Wisconsin; PhD 2008, University of New Mexico.

ZEMLYANOVA, ANNA, Assistant Professor of Mathematics (2013). BS 2003, Candidate of Sciences in Mathematics and Physics 2005, Chuvash State University, Cheboksary, Russia; MS 2007, PhD 2010, Louisiana State University.

ZEREYESUS, YACOB, Research Assistant Professor of Agricultural Economics (2011). BSc 1997, University of Asmara; MSc 2003, University of the Free State: MSc 2009, PhD 2010, Kansas State University.

ZHANG, BILL, Assistant Professor of Architectural Engineering and Construction Science (2012). BE 1991, ME 1994, Southeast University, Nanjing, China; PhD 2004, Lehigh University. Professional Engineer, Structural Engineer.

ZHANG, MENG (PETER), Assistant Professor of Industrial and Manufacturing Systems Engineering (2015). BS 2009, Dalian University of Technology; PhD 2014, Kansas State University.

ZHANG, NAIQIAN, Professor of Biological and Agricultural Engineering (1991). BS 1970, Beijing Institute of Agricultural Mechanics; MS 1983, Purdue University; PhD 1987, Virginia Tech.

ZHANG, WEIPING, Associate Professor of Diagnostic Medicine/Pathobiology (2013). BSc 1984, Zhejiang Agricultural & Forestry University, Zhejiang, China; MSc 1987, Southwestern Forestry University, Kunming, China; PhD 1996, Iowa State University.

ZHANG, YUNTAO, Research Assistant Professor of Diagnostic Medicine Pathobiology (2014). PhD 2000, Jiangnan University.

ZHANG, ZHIWEI, Associate Professor of Political Science (2013). BA 2006, Beijing Institute of Machinery; MPA 2009, Kansas State University; PhD 2013, University of Kentucky.

ZHARKOV, ILIA, Associate Professor of Mathematics (2007). Diploma 1994, Moscow Institute of Physics and Technology; PhD 2000, University of Pennsylvania.

ZHU, KUN YAN, Professor of Entomology, Research Entomologist, Insect Toxicology (1995). BS 1982 Zhejiang Agric. University; MS 1989, PhD 1992, Utah State University.

ZHU, SHUANG, Assistant Professor of Finance (2012). BE, Tsinghua University; MA 1998, Peking University; MS 2003, University of Southern California; PhD 2011, Louisiana State University.

ZICKER, STEVEN C., Adjunct Faculty of Clinical Sciences (1996). BS 1980, University of California; MS 1982, University of Wisconsin; DVM 1986, PhD 1993, University of California-Davis; Diplomate, American College of Veterinary Internal Medicine; Diplomate, American College of Comparative Nutrition.

ZIMMERMAN, JILL A., Extension Agent, Agriculture and Natural Resources, Cowley County, Winfield (2009). BS 1995, Kansas State University.

ZIMMERLI-CATES, NANCY, Publishing Coordinator Emeritus, Department of Communications and Agricultural Education (1998). BS 1995, Friends University.

ZINOVYEVA, ANNA Y., Assistant Professor of Biology; Basic Cancer Biology (2015). BA 2000, University of Maine-Farmington; PhD 2007, Indiana University.

ZIVANOVIC, JUDITH K., Professor Emeritus of Communication Studies, Theatre and Dance (1989). BA 1963, University of Evansville; MA 1967, PhD 1968, University of Wisconsin.

ZOLLER, KIRSTEN, Director of Professional Education and Outreach, K-State Polytechnic Campus (2009). BS 2008, MS 2019.

ZOLKIEWSKA, ANNA, Professor of Biochemistry and Molecular Biophysics (1997). MS 1984, University of Warsaw; PhD 1988 Nencki Institute of Experimental Biology.

ZOLKIEWSKI, MICHAEL, Professor and Head of Biochemistry and Molecular Biophysics (1997). MS 1984, University of Warsaw; PhD 1989, Institute of Physical Chemistry, Polish Academy of Sciences.

ZOLLMAN, DEAN ALVIN, University Distinguished Professor Emeritus of Physics (1970). BS 1964, MS 1965, Indiana University; PhD 1970, University of Maryland.

ZOLNEROWICH, GREGORY, Professor of Entomology, Research Entomologist, Insect Systematics (1999). BS 1980, MS 1983, Midwestern State University; PhD 1995, Texas A&M University.

ZOUROS, T. J. M., Adjunct Professor of Physics (2001). BS 1974, Massachusetts Institute of Technology; MS 1976, MPhil 1979, PhD 1983, Yale University.

ZUKOFF, SARAH N., Associate Professor, Field Crops Entomologist, Southwest Area Extension Office (2013). BS 2004, MS 2008, Georgia Southern University; PhD 2013, University of Missouri-Columbia.

ZUREK, LUDEK, Professor of Entomology and Diagnostic Medicine/Pathobiology, Insect Microbial Ecology (2002). BS 1987, Mendel Agricultural University; PhD 1998, University of Alberta.

ZWEIMILLER, KATHRYN A., Medical Technologist, Lafene Health Center (1999). BS 1998, Kansas State University.

ZWEIMILLER, LANNIE W., Director Emeritus of Lafene Health Center (1989). BS 1974, Fort Hays State University, MHA 1981, University of Minnesota.

Auxiliary Services and Facilities

Note: All addresses are in Manhattan, unless otherwise noted.

Office of Institutional Equity

103 Edwards Hall
785-532-6220
E-mail: equity@k-state.edu
www.k-state.edu/oie

The Office of Institutional Equity is available to students on matters of equal opportunity in admissions, access to University sponsored programs and activities, and employment due to race, color, ethnic or national origin, sex, sexual violence, sexual orientation, gender identity, religion, age, ancestry, disability, military status, veteran status, dating or domestic violence, or stalking. Students with concerns about any of the basis listed above may contact the office. The Office of Institutional Equity also includes the University's Title IX Coordinator and investigation team. These individuals are available to assist in coordinating support and services to students in need of assistance after experiencing any form of discrimination, harassment, sexual violence, stalking, or relationship violence.

Alumni Association

Amy Button Renz, President and CEO
K-State Alumni Association
1720 Alumni Center
785-532-6260 or 1-800-600-2586
E-mail: alumni@k-state.com
www.k-state.com

The K-State Alumni Association is a 41,000-member, nonprofit organization whose mission is to lead and inspire lifelong involvement that will benefit Kansas State University and all members of our Wildcats Community. This is accomplished through student recruitment programs, quality publications and communications, constituent events, affinity programs and maintenance of records on more than 320,000 alumni and friends.

Child Care

K-State Center for Child Development

Debra Ring, Director
1 East Jardine Drive
785-532-3700
E-mail: childcare@k-state.edu
www.k-state.edu/ksucdc

The K-State Center for Child Development is a Student Life department serving the child care and early childhood education needs of K-State students, faculty, staff and the community. It is fully licensed by the Kansas Department of Health and Environment and is a nationally accredited program through NAFYC. It is professionally staffed and uses a nationally acclaimed curriculum. The Center also partners with Army Childcare in Your Neighborhood to offer subsidies to military families. The Center provides a variety of subsidies to make childcare affordable to all families. The Center offers full-day high quality and educational programs for infants through school age (6 weeks through 5th grade). The Center is open year-round offering care Monday through Friday from 7 a.m. to 5:30 p.m.

School of Family Studies and Human Services

Dr. Dorothy Bagwell Durband, School Director
Dr. Mary DeLuccie, Administrator of Early Childhood Programs
303 Justin Hall
785-532-5510
Fax: 785-532-5505
E-mail: fshs@k-state.edu
www.he.k-state.edu/fshs

The School operates six early childhood classrooms for children aged 6 weeks through five years at The Stone House Ruth Hoeflin Early Childhood Education Center and C.Q. and Georgia Chandler III Institute for Child and Family Studies on N. Manhattan Avenue. The site serves as a teacher training facility for students enrolled in the pre-service early childhood education program. Enrollment in the program is open to members of the K-State and Manhattan communities. The facility is licensed by the state of Kansas and accredited by the National Association for the Education of Young Children. The learning environments and planned experiences are designed to foster children's cognitive, language, social, emotional, and physical growth and development. Enrollment application forms are available online.

Four of the classrooms provide year-round, full-day care and education for the children ranging in age from 6 weeks through five years of age. Priority in enrollment is given to children of parents working full- time. Two classrooms, The Early Childhood Laboratory, host an interagency program with USD 383. The classrooms integrate children identified by USD 383 who have delays and/or disabilities with non-handicapped children. Forty-eight children, ranging in age from 3 to 5 years, are enrolled in this part-year, part-day preschool program.

K-State Family Center

Nancy T. O'Conner, Director Marriage and Family Therapy Clinic
139 Campus Creek Complex
785-532-6984

Fax: 785-532-6523
E-mail: family@k-state.edu
www.he.k-state.edu/familycenter

The K-State Family Center provides applied educational training to students while offering counseling, family-related educational programs, consultation, and mediation services to Manhattan and the state. On-site services include individual, couple, family and group therapy, and parent education. Outreach programs include contracts with Junction City Smart Start program providing home-based family play therapy, parent education and staff consultation. State sponsored home-based family therapy training is also provided for clinicians throughout the state through contracts with SRS and KHS.

Communications and Marketing

Jeffery B. Morris, Vice President for Communications and Marketing
128 Dole Hall
785-532-2535
Fax: 785-532-7355
E-mail: jbmorris@k-state.edu

The Division of Communications and Marketing has a mission to fully integrate our university image and message delivery; to increase the impact and efficiency of institutional and marketing objectives; and to unify the brand voice in order to continue K-State on the path to an improved state, national, and international reputation. The division is charged with creating and leading a comprehensive communications and integrated marketing program that emphasizes Kansas State University's unique brand and enhances the visibility of the university.

Marketing Services

Ashley N. Martin, Director
128 Dole Hall
785-532-2535
Fax: 785-532-7355
E-mail: ashley07@k-state.edu
www.k-state.edu/marketing

The University Marketing provides all administrative units, academic colleges and departments, and university-sponsored organizations and initiatives with direct access to integrated marketing expertise, free of charge. The marketing team consults on and develops marketing strategies that are both university-wide and unit-specific, and we specialize in creative copy writing that is tailored to your marketing needs. Our team of client managers serves as your first point of contact to access all of the free creative services the division offers. The marketing staff coordinates with the division's graphic designers, Web services, video and engineering services, news and communications services, photographers, and social media staff to create and deliver your message.

News and Communications Services

Cindy Hollingsworth, Director
128 Dole Hall
785-532-2535
Fax: 785-532-7355
E-mail: cholling@k-state.edu
media@k-state.edu

socialmedia@k-state.edu
www.k-state.edu/media

News and Communications Services coordinates public information about K-State faculty, staff and student activities and events. It is the official outlet for print and broadcast news materials relating to K-State policies and administration and is one of three university units sanctioned to distribute news. The unit administers the general university social media accounts and offers editing and writing assistance to university colleges, departments and units. Additionally, News and Communications Services produces and distributes video news releases and distributes the official daily newsletters, *K-State Today*, for faculty and staff, and *K-State Today Student Edition*. The unit also works in conjunction with the Vice President for Research to publish the university's flagship research magazine, *Seek*.

Photographic Services

Tommy Theis, Photographic Services Manager
128 Dole Hall
785-532-2535
Fax: 785-532-7355
E-mail: photo@k-state.edu
www.k-state.edu/photo

Photographic Services offers location and studio photography. We offer walk-in portrait days twice monthly.

Design Services

Ben Cleveland, Creative Director
128 Dole Hall
785-532-2535
Fax: 785-532-7355
E-mail: abclevel@k-state.edu
http://www.k-state.edu/design

Design Services is responsible for designing and coordinating production for print and Web projects used in the advancement of Kansas State University.

Video and Engineering Services

Robert F. Nelson, Executive Director
128 Dole Hall
785-532-2535
Fax: 785-532-7355
E-mail: ves@k-state.edu
www.k-state.edu/video

Video and Engineering Services offer a full-service production facility with skilled broadcast and production professionals ready to assist you with studio, remote, or other video production needs. Facilities include a professional broadcast studio, remote production truck and digital satellite uplink vehicle. Producers, directors, and engineers will work with you to turn your idea into a product you'll be proud to share. From pre-production to post-production, Video and Engineering Services is your "one-stop shop" for audio and video production for all of your marketing and professional needs.

Web Services

Neil Erdwien, Director
128 Dole Hall
785-532-2535
Fax: 785-532-7355
Email: webservices@k-state.edu
www.k-state.edu/webservices

Web services promotes a consistent, positive image of K-State by managing the university's Web presence and overseeing K-State's content management system. Services include Web design, information architecture, multimedia content, user experience research and email marketing.

Division of Information Technology

IT Help Desk
Kansas State University
Hale Library
2nd Floor
117 Mid-Campus Dr. North
Manhattan, KS 66506

785-532-7722
800-865-6143
helpdesk@k-state.edu
www.k-state.edu/its

The university provides technology resources and facilities for student, faculty, and staff use. K-State's high-speed data network allows access from residence halls, the K-State Student Union, Hale Library, university computing labs, centrally scheduled classrooms, and locations equipped with wireless access points.

To learn about information technology at K-State, visit the Welcome to Information Technology at K-State website.

For questions or assistance with any information technology resources, contact the IT Help Desk:

- Email: helpdesk@k-state.edu
- Phone: 785-532-7722
- Website: IT Help Desk

Responsible use of the university's technology resources is expected of everyone and use of K-State's systems constitutes agreement to abide by all relevant policies. Unauthorized or inappropriate use may limit or revoke use privileges and administrative, civil, or criminal penalties. For more information, visit the Information Technology Usage Policy.

eIDs and passwords

All K-State students and employees are required to have an eID (electronic identifier). Your eID is your K-State user name and becomes part of your K-State email, is used to enroll in classes, access Canvas, and KSIS, view online paychecks, and much more.

With your eID, you can also manage your eProfile to change your password, sign up for K-State Alerts emergency messages and phone calls, and more.

Your eID's security is your responsibility. Keep your eID password private. K-State policy prohibits using someone else's eID or sharing passwords. Your eID password does not expire. You do not need to change your password unless the password becomes compromised. Visit the K-State eID and password page.

K-State will never ask for your password in an email. Delete any email that asks for your password.

Email

K-State provides email service to all students and employees. Your official, primary K-State email address has two forms: eid@k-state.edu and eid@ksu.edu. The university sends official correspondence to K-Staters via their primary email address with the full expectation that communications will be received and read in a timely manner.

For information about the central email services offered at K-State, visit the Office 365 website.

Microsoft Office software

Office 365 is free for all K-Staters and includes desktop and mobile app versions of the Microsoft Office Suite and can be installed on up to five PCs or Macs, five tablets, and five phones. For help and support with Office 365, visit the Office 365 Help and Support website.

Antivirus and security

K-Staters connecting their computers to the Kansas State University network can use the approved antivirus software of their choice or choose from the recommended software listed on the K-State Antivirus Software website.

Emergency notices (K-State Alerts)

K-State Alerts is Kansas State University's emergency notification system that gives campus authorities the ability to communicate emergency information quickly to the university community. To sign up, visit eID.k-state.edu.

Computing

Windows and Mac computer stations are available in Hale Library (Windows on 1st and 2nd floors, Macs on 2nd floor) and the K-State Student Union. There are two lab computers in the Cardwell Math/Physics Library. One of the computers is located in the corridor (Cardwell 105C). Mac computers in Hale Library include Adobe Creative Cloud. Computer labs provide free access to electronic information resources and software programs, including email, internet access, word processing, spreadsheets, databases, statistical analysis, and programming languages.

To locate public computers and to print on campus and learn more, visit the University Computing Labs website.

Media Studio

The Media Studio is located on the first floor of the Sunderland Foundation Innovation Lab in Hale Library. To learn more, visit the Media Studio website.

Equipment checkout

Equipment available for checkout varies. For up-to-date information, do one of the following:

- Call: 785-532-4918
- Email: itcheckout@k-state.edu
- Visit the website: Equipment Checkout

Connecting to K-State (wireless and direct network)

The wireless networks include KSU Wireless, KSU Guest, and KSU Housing (for individuals living in the residence halls and Jardine Apartments). Eduroam also is available. For more information, visit the Wireless Networks website.

There are two ways to connect to the campus data network and then to the internet:

1. **Direct network connection, using a hard-wired line and an Ethernet card.** K-State buildings are directly connected to the internet.
2. **Wireless network connection.** K-State's wireless computer network allows laptops and other mobile computing devices to link to the internet without being physically tied to an Ethernet connection line.

A current K-State eID and password are required to configure your device and access the secure wireless network. For more information, visit the Wireless Connect web page.

Information resources

Information resources include:

- KSIS (the student information system)
- Canvas (learning management system)
- K-State Libraries' catalog system
- K-State Research Exchange (K-REx) institutional repository
- Software
- and more.

For links to the many IT resources, visit the IT Services website.

Electronic Theses, Dissertations, and Reports

Graduate students are required to submit an electronic version of their thesis, dissertation, or report. Information on formatting, templates, help and support and more are available from the ETDR website.

Chief Information Officer and Vice President

Gary Pratt, Chief Information Officer
116 Unger Complex
2323 Anderson Ave.
785-532-6520
E-mail: its@k-state.edu
www.k-state.edu/it

https://catalog.k-state.edu/content.php?catoid=44&navoid=8020#info_tech_services

KSU Foundation

Greg Willems, President and CEO
1800 Kimball Avenue, Suite 200
785-532-6266
E-mail: foundation@found.k-state.edu
www.found.k-state.edu

The KSU Foundation was established in 1944 as the official fundraising arm of Kansas State University. It is a separate, independent organization chartered by the state of Kansas as a 501(c)(3) nonprofit educational corporation. Gifts to the foundation are tax-deductible to the full extent of the law.

Foundation staff members work in close partnership with university administrators, deans and faculty to secure charitable contributions from individuals, corporations and foundations to support identified priorities for the university. Gifts received through the foundation fund undergraduate and graduate student scholarships, establish faculty chairs and professorships, provide departmental support, and enhance the campus infrastructure.

A volunteer board of trustees governs the foundation. A 15-member board of directors meets quarterly and is authorized to act on the trustees' behalf.

K-State Speech and Hearing Center

Robert Garcia, Program Director
Melanie Hilgers, Director of Clinical Services
139 Campus Creek Complex
785-532-6879
E-mail: mhilgers@k-state.edu
www.he.k-state.edu/speech/

The K-State Speech and Hearing Center provides evaluation, intervention, and consultation services to individuals with articulation, fluency, voice, language and swallowing, or hearing impairments. These clinical services are available to university students, children, and adults of the surrounding communities. The center provides educational and clinical experiences for students preparing for careers in speech-language pathology and audiology.

Libraries

K-State Libraries
Lori Goetsch, Dean of Libraries
Hale Library
785-532-3014
E-mail: library@k-state.edu
www.lib.k-state.edu

On May 22, 2018, a fire in Hale Library resulted in significant smoke and water damage. While the building will be closed for the 2018-2019 school year, library and IT services are available, including Ask a Librarian and the IT Help Desk, which is located in the Student Union. Online resources such as databases, ebooks, and journals are available, but most physical collections that were in Hale during the fire will not be accessible during the 2018-2019 school year. Students should request books and articles that are no longer available

from K-State using the Library's free inter-library loan service. They will work to get these items from other libraries for you. Alternate computer, printing, and study locations have also been identified. For more information about the fire and alternate study locations, visit the Hale Library Recovery website at www.k-state.edu/hale.

K-State Libraries manifests the land-grant values and rich history of Kansas State University. We elevate academic success as an integral partner in research, learning, and discovery. We advocate for our campus and our community, connect their imaginations to information, and number their successes among our own.

All of the K-State Libraries venues offer areas for individual and group study and often include technology-enabled meeting rooms. Inside Hale Library, the Great Room anchors the third floor Quiet Zone for focused individual work, while the area around Library Help on the second floor is a hub of activity for group projects and study.

When classes are in session, Hale Library is open 24 hours a day, 5 days a week, plus weekend hours. This ensures that whenever students need a place to study, the Libraries can be a first option. Additionally, the Anita C. Lehner 24 Hour Study Area inside Hale Library is open 365 days a year for study space or computer use.

The Libraries employ approximately 100 staff full-time, including faculty librarians, unclassified professionals, and classified professionals. The part-time student staff numbers approximately 60.

Collectively the Libraries maintain three million volumes to support the diverse academic, instructional, and research activities of Kansas State University. Technology allows students and faculty to be outside the library building, off campus, and even out of the country and still have the ability to access online databases, journals, and books. Personal research assistance is available from anywhere through the Libraries' website and services like Ask a Librarian that include chat, text message, and email options. We've been answering your questions since 1863 and finding new ways to do so every day.

In addition to Hale Library, there are five specialized branch libraries: Fiedler Engineering Library, Math/Physics Library, K-State Polytechnic Campus Library, Veterinary Medical Library, and Paul Weigel Library of Architecture, Planning and Design.

K-State Libraries: Elevating Academic Success!

Police Department

108 Edwards Hall
785-532-6412
E-mail: police@k-state.edu
www.k-state.edu/police

LiveSafe

The Kansas State University Police Department helps preserve a safe campus environment where diverse social, cultural and academic values are allowed to develop and prosper.

The department has 23 police officers serving the campus community. Patrols operate 24 hours a day, seven days a week, 365 days a year through the campus, KSU Foundation property, parking lots, residence halls, Jardine apartments and athletic complex grounds.

University police officers derive their authority from KSA 76-726 and are fully commissioned law enforcement officers vested with full police/law enforcement authority with arrest powers. Officers are state-certified and receive their basic law enforcement training from the Kansas Law Enforcement Training Academy. Officers receive a minimum of 40 hours of in-service training each year to maintain their state certification.

24 hour services include Multi-Media Messaging (similar to Text to 9-1-1) through LiveSafe, K-State Alerts, and Wildcat Walk (escort across campus). Additional services provided upon request include ALICE training, Community Safety Talks, and Emergency Operations Planning. Fingerprinting is offered during limited hours.

Postal Service

Contract Post Office
113 Dykstra Hall
785-532-6306 (messages only, clerk will return call)
www.k-state.edu/facilities/operations/cms/ContactractPostOffice.html

Central Mail Services
109 Dykstra Hall
785-532-7751 (distribution of all interdepartmental mail and metering of departmental outgoing mail)
E-mail: centralmailservices@k-state.edu
www.k-state.edu/facilities/operations/cms/

All mail for students must be addressed to their off-campus Manhattan address or residence hall/Greek address. Postage should be applied to this mail, and it should be sent through the United States Postal Service.

Manhattan Post Office personnel deliver U.S. mail directly to university buildings and residence halls and pick up outgoing U.S. mail from various locations on the campus.

The Contract Post Office sells stamps, and other postal supplies; weighs, insures, and registers mail; and receives outgoing U.S. mail.

Collegian Media Group

Stephen Wolgast, Director
103 Kedzie Hall
785-370-6355
E-mail: swolgast@collegianmedia.com
www.kstatecollegian.com

K-State students of all majors produce the *Kansas State Collegian* daily newspaper and *Royal Purple* yearbook the nation's most honored tandem of collegiate publications.

Student journalists produce and select all content in the *Collegian* and *Royal Purple*. Their experience as reporters, photojournalists, designers, graphics journalists, illustrators, copy editors, and editors launches them into internships and careers across the nation. A student staff also sells thousands of dollars in advertising to help underwrite the publications.

Collegian Media Group is an independent local agency that publishes the newspaper, yearbook, and Manhappenin' magazine. Its board of directors hires editors in chief and supervises finances, but content decisions rest with the student staffs of the publications. The newspaper advisor also teaches in the A.Q. Miller School of Journalism and Mass Communications.

Royal Purple staffs are hired annually. *Collegian* staffs are hired by semester. Staff applications are available in 103 Kedzie Hall, with applications due in early November and early March for subsequent semesters.

University Press of Kansas

Charles Myers, Director
2502 Westbrooke Circle
Lawrence, Kansas 66045-4444
785-864-4154
E-mail: upress@ku.edu
www.kansaspress.ku.edu

Kansas State University, in association with the other five Regents' universities, operates and supports the University Press of Kansas for the purpose of publishing scholarly and regional books on a nonprofit basis. The press is governed by a board of trustees composed of the chief academic officers of the sponsoring institutions.

K-State Athletics

Gene Taylor, Director of Athletics
E-mail: kstatead@kstatesports.com
www.k-statesports.com

Head Coaches: Dibbini, S. L. Fritz, Godfrey, Hughes, Klieman, Knight, Mittie, Robbins, Rovelto, Jordan Smith, Sweeney, and Weber
Associate Head Coaches: Grove, Lowery, Ostermann, and S. Snyder
Assistant Coaches: Carr, Coleman, DeMars, Dickey, Dykmann, Fabris, Frazier, Garrett, Hanson, Helin, Hickson, Johnson, Klien, Korn, Kurey, Latimore, Norwood, Ott, Romo, Seiler, Jessica Smith, Sorensen, Stone, Taylor, Wates, and Wiltfong
Senior Administrative Staff: Babock, Garrett, Lannou, McCowan, Niederwerder, Scott, Shields, Shubert, Thomas, and Waller
Athletics Trainers: Burris, Davis, Fabrizius, Fitzgerald, Harvey, Henderson, Hoffman, Kienstra, LeMair, Sauber, Seiler, Thomason (Head Trainer), E. Trausch, Trausch (Sports Dietitian, nutritionist), and Weese
Athletic Communications: Brown, Gilbert, Kutz, Lackey, Lannou (Director), McCarty, Moline, and Peterson
Strength and Conditioning Coaches: Allen, Cavender, Cyr, Dawson (Director), Honeycutt, Kloss, Meredith, O'Donnel, Rapp, and Ryan

K-State is a member of the Big 12 Conference and through that affiliation competes with Baylor University, Iowa State University, the University of Kansas, the University of Oklahoma, Oklahoma State University, the University of Texas, Texas Christian University, Texas Tech University, and West Virginia University.

Intercollegiate competition is open to all students and is coached by staff members who are specialists in their fields.

The men's intercollegiate program competes in football, basketball, baseball, track (indoor and outdoor), cross country, and golf. The women's program offers competition in cross country, volleyball, basketball, track (indoor and outdoor), tennis, golf, crew, and soccer.

Athletics courses

The following courses may be repeated for credit.

Course	Course Title	Credit Hours	When Offered	Pre-Requisites
ATHM 101	Varsity Baseball	1	Fall, Spring	Prerequisite: Consent of instructor

ATHM 102	Varsity Basketball	1	Fall, Spring	Prerequisite: Consent of instructor
ATHM 104	Varsity Football	1	Fall, Spring	Prerequisite: Consent of instructor
ATHM 105	Varsity Golf	1	Fall, Spring	Prerequisite: Consent of instructor
ATHM 108	Varsity Track	1	Fall, Spring	Prerequisite: Consent of instructor
ATHW 150	Intercollegiate Basketball	1	Fall, Spring	Prerequisite: Consent of instructor
ATHW 152	Intercollegiate Track	1	Fall, Spring	Prerequisite: Consent of instructor
ATHW 154	Intercollegiate Tennis	1	Spring	Prerequisite: Consent of instructor
ATHW 155	Intercollegiate Volleyball	1	Fall	Prerequisite: Consent of instructor
ATHW 156	Intercollegiate Crew	1	Fall, Spring	Prerequisite: Consent of instructor
ATHW 157	Intercollegiate Golf	1	Fall, Spring	Prerequisite: Consent of instructor
ATHW 158	Intercollegiate Soccer	1	Fall, Spring	Prerequisite: Consent of instructor

Research Facilities and Centers

Special Research Guidelines

James Guikema, Associate Vice President for Research
Office of Research and Sponsored Programs
102 Fairchild Hall
785-532-6195
785-532-2983 Fax
E-mail: research@k-state.edu
www.ksu.edu/research

Special research guidelines are in place for scholarly activities that fall into a variety of categories. These include work involving human subjects, which must be reviewed by a human safety oversight committee, and research involving animals, which must be reviewed by the Institutional Animal Care and Use Committee. Research that is focused on infectious diseases and hazardous chemicals, or which uses recombinant DNA technology, must be reviewed by a biosafety oversight committee. Research involving artifacts that may be of Native American origin are subject to special federal guidelines. Guidelines for all of these activities, and suggestions regarding the appropriate oversight committees, are found in the Office of Research Compliance.

The purpose of a university is to develop and transmit knowledge. Consistent with this purpose, Kansas State University is committed to making ideas and research results available to all who might wish to use them. Therefore, by University policy, classified research may not be carried out under University auspices by any faculty member, staff, or student. Classified research is broadly defined as research in which the purpose, the investigators, the research procedures, or the results are kept secret for an indefinite period of time, and with the control of their release or publication resting in an agency other than the University.

Below is a partial list of research facilities and centers at Kansas State University. For a more complete listing contact Research and Sponsored Programs at 785-532-6195 or website *www.ksu.edu/research*.

Advanced Manufacturing Institute

510 McCall Road
Manhattan, KS 66502-5034
785-532-7044
785-532-7031 Fax
E-mail: ami@ksu.edu
www.amiksu.org

The Advanced Manufacturing Institute contributes to the economic development in Kansas by helping manufacturers become familiar with and adopt advanced technologies. Through research, technology transfer, and technical assistance AMI helps small and medium-sized manufacturing companies become more competitive nationally and internationally. AMI's interdisciplinary research teams consisting of faculty from various university departments develop technologies vital to manufacturing enterprises.

Clients working with AMI benefit by taking advantage of AMI's professional staff and facilities as well as Kansas State University's faculty expertise and resources to assist them in their manufacturing research and development activities. AMI is a KTEC-funded Center of Excellence. AMI also presents seminars and workshops focusing on advanced technology.

AMI is now a Certified Education Center for the Fabricators & Manufacturers Association, International (FMA). This alliance provides work force training to the metal forming and fabricating industry.

As a Certified Education Center, AMI and FMA can offer industry partners: Customized training programs, training and technical conferences, greater access to advanced technology, programs with equipment demonstrations and hands-on activities, an organized network of renowned experts, expanded offering of FMA benefits and services.

Beach Museum of Art

Lorne E. Render, Director
Marianna Kistler Beach Museum of Art
701 Beach Lane
Manhattan, KS 66506
785-532-7718
785-532-7498 Fax
E-mail: beachart@ksu.edu
http://www.k-state.edu/bma/

The Marianna Kistler Beach Museum of Art opened in October 1996. The 26,000 square-foot, award-winning building was designed by Moore/Andersson Architects of Austin, Texas. It was built with private funds, led by the gift of Ross and Marianna Beach of Hays, Kansas. It houses K-State's art collection, which was established in 1928 by Professor John Helm with the purchase of two large oil paintings by the Kansas artist Birger Sandzen. Since that time, the collection has grown to include approximately 4,300 works of art. From the collection's inception, the focus has been on 20th century American art, with a special emphasis on the works of Kansas and regional artists and the works of American printmakers. These features of the collection promise to make the Museum the premier center for the study and appreciation of regional painting and printmaking. Special collections includes works by John Steuart Curry, the photographs of Gordon Parks, the Konza Prairie works of Patricia DuBose Duncan, and prints issued by the Associated American Artists print club.

The 9,000 square-foot gallery area of the Museum features five exhibition spaces for displaying the permanent collection and traveling exhibitions. The Crosby Kemper Educational center houses the 120-seat UMB Theatre and the LouAnn McKinnon Dunn Activity Center. A variety of educational programming is available to the University, public schools, and Manhattan community. The Theatre may be used for lectures, films, seminars and receptions. The Activity Room has been designed for art workshops, family activities, artist demonstrations and small group meetings. A Works Examination Studio allows scholars and visitors to view works of art not on exhibition. Additional resources include artists files, catalogue files, photographic files of the

collection, and a lending resource library for teachers. Visit the Museum's web page at *www.ksu.edu/bma* for more information and to view archived exhibitions.

Museum Hours Tuesday - Friday, 10 a.m.-5:00 p.m.
Saturday - Sunday, 1 p.m.-5:00 p.m.
Closed on Mondays and Holidays
Open on selected Thursdays for public programs.
Phone: (785) 532-7718
Admission is free.
Complimentary parking adjacent to the Museum.

Biology Research Microscopy and Image Processing Facility

Kansas State University Microscopy Facility
Dan Boyle, Director
Division of Biology
6 Ackert Hall
785-532-0134
785-532-6653 Fax
E-mail: dboyle@ksu.edu

The Biology Microscopy and Image Processing Facility, located in the basement of Ackert Hall, is a fee-for-service facility available to Kansas State University faculty, staff and students, and individuals from state and outside institutions. This modern facility is fully equipped to meet your research microscopy and imaging needs. Individual or small group training and familiarization with equipment and techniques used by electron and confocal microscopist are provided by this facility. Clients can be trained to use equipment at this facility by themselves or request assistance from facility staff members.

Biosecurity Research Institute (BRI)

Dr. Ron Trewyn, Vice President for Research
Dr. Beth Montelone, Interim Research Program Director
Scott Rusk, Director Pat Roberts Hall
1041 Pat Roberts Hall
785-532-1333
www.bri-k-state.edu/

The Biosecurity Research Institute located in Pat Roberts Hall provides unique biocontainment space for research on food crop, food animal and food safety diseases. Active research will address agriculture and public health issues. In addition to the research missions, Pat Roberts Hall also houses training and education space that provides for hands-on laboratory biosafety training and biocontainment operations training, as well as, educational programs for scientific information exchange and conference capabilities.

Center for BioServe Space Technologies

230 Ackert Hall
785-532-6705
Fax: 785-532-6707
E-mail: bioserv@k-state.edu
http://www.colorado.edu/engineering/BioServe/

The Division of Biology, in cooperation with Aerospace Engineering Sciences at the University of Colorado, has been selected by the National Aeronautics and Space Administration to lead BioServe Space Technologies, a NASA Center for the Commercial Development of Space. The division activities are focused on the life science application of the center, which adds a vast new dimension to the scientific education of future generations of students. This space training and research program gives biologists, students training in the animal and plant sciences, engineers and others an awareness of opportunities in space sciences that will

intellectually involve them in space missions of the future. Initial research projects are directed towards an understanding of many biological processes in microgravity. Projects also are focused on the application of the space environment in areas of significant market value, such as biotechnology and bioengineered pharmaceuticals, synthetic organ products and high efficiency agriproducts and agrigenetic materials. Faculty scientists and students participating in BioServe Space Technologies have an opportunity to conduct important research by NASA's reduced gravity program on the KC-135 aircraft, as well as on sounding rockets and space shuttles.

Biotechnology Core Facility

Dr. John M. Tomich, Director
Burt Hall, Rooms 201, 207, 211, and 216
785-532-5956
Fax: 785-532-6297
E-mail: jtomich@k-state.edu
http://www.k-state.edu/bchem/biotech/

The Biotechnology Core Laboratory was established to provide a number of centralized services to researchers at KSU and elsewhere. Significant university support from the deans of the College of Agriculture and the Graduate School has enabled us to offer a number of services at very competitive rates. Our services include: DNA/RNA oligonucleotide synthesis, peptide/protein synthesis, amino acid analysis, peptide/protein sequencing, peptide mapping, and MALDI-TOF mass spectrometry.

Center for Basic Cancer Research

Terry C. Johnson Center for Basic Cancer Research
Dr. Rob Denell, Director
1 Chalmers Hall
785-532-6705
Fax: 785-532-6707
E-mail: rdenell@ksu.edu
www.ksu.edu/cancer.center

The Center for Basic Cancer Research sponsors numerous educational and research programs related to cancer studies at KSU. The center developed a cancer research award program designed specifically for undergraduate students. Funded entirely by private and corporate gifts, these research awards are given to deserving undergraduate students on a competitive basis. An integral part of the cancer center is the Anti-Cancer Drug Laboratory where studies are conducted on the cellular and molecular events associated with tumor promoters which, unfortunately, enhance cancer growth. Support is provided for graduate student and faculty travel, summer stipends, laboratory equipment and supplies. These programs are interdisciplinary in nature and include faculty scientists in biology, biochemistry, chemistry, psychology, laboratory medicine, pathobiology, family services, foods and nutrition, and plant pathology. The unique administrative structure and the quality of the faculty scientists have made this multidisciplinary program both powerful and successful.

Center for Gravitational Studies in Cellular and Developmental Biology

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TO

E-mail: nasaepscor@ksu.edu
http://www.k-state.edu/epscor/

The Division of Biology is the home of the Center for Gravitational Studies in Cellular and Developmental Biology. This center has been funded as a NASA Specialized Center for Research and Training in Gravitational Biology, as the Gravity as a Determinant in Cellular and Developmental Biology NASA-EPSCoR Program, and by individual NASA grants to Center investigators. Research in this center is focused on the potential role of gravity on cell and developmental biology of both plant and animal systems. Investigations are based both on basic sciences and applications for long-term space travel. This center has a

major emphasis on graduate and post-graduate training, offering a unique opportunity for student preparation in space life sciences.

COBRE in Epithelial Function in Health and Disease

Dr. Daniel C. Marcus, Program Director
124 Coles Hall
785-532-4864
Fax: 785-532-4557
E-mail: marcus@ksu.edu
www.vet.ksu.edu/depts/ap/COBRE/

The College of Veterinary Medicine (CVM) at Kansas State University hosts the COBRE for epithelial function. This multi-year National Institute of Health (NIH) award provides the resources needed to enhance the epithelial research programs of junior basic scientists and clinician scientists at Kansas institutions. The ultimate goal of the COBRE is to assist the junior investigators in their development, and to help them become NIH-funded investigators as rapidly as possible. The COBRE includes seven teams of junior investigators and mentors in the KSU CVM, along with collaborating departments at KSU and the University of Kansas Medical Center. As junior investigators graduate from the program and are successful at obtaining NIH funding, other junior investigator/mentor teams will be actively sought and brought into the COBRE. COBRE programs center on epithelial cell physiology or pathophysiology and provide a strong foundation for translational research. To ensure programmatic success, three core facilities are being established for the center: 1) a state-of-the-art confocal microscope facility; 2) a gene array analysis station; and 3) an epithelial electrophysiology facility.

Dow Multicultural Resource Center

Rhondalyn Peairs, Director
Hale Library, Room 302
785-532-7430
E-mail: dowmrc@gw.ksu.edu
http://www.lib.ksu.edu/depts/dowmrc/index.html

The Dow Chemical Multicultural Resource Center (DOWMRC) provides research and instructional services in support of K-State's American ethnic studies program. Research emphasis is placed on the following ethnic groups: African Americans, Hispanic Americans, Native Americans, and Asian Americans.

DOWMRC features a reference collection of encyclopedias, dictionaries, and indexes related to various American ethnic groups; magazines and periodicals; and multicultural and international newspapers. Visitors can view displays showcasing the University's unique multicultural activities and programs.

Electronics Design Laboratory

Tim, J. Sobering, Director
124 Burt Hall
785-532-7826
Fax: 785-532-2092
E-mail: edl@ksu.edu
www.ksu.edu/ksuedl

The Electronics Design Laboratory (EDL) provides full-time engineering support, electronics design and software development for research and teaching at Kansas State University through the design and manufacturer of advanced instrumentation, data acquisition systems, sensors, and other high-end electronics. Established in 1996, EDL eases researchers' access to advanced electronics, assists with integrating electronics technology into research and teaching programs, and aids in electronics technology transfer to users by providing ongoing technical support. EDL works in cooperation with many diverse academic departments, allowing a symbiotic approach to problem solving.

By delegating technical electronics issues to EDL, investigators free themselves to focus more fully on core research objectives.

EDL is headed by an experienced electrical engineer, who supervises a full-time technical staff and a number of graduate and undergraduate interns. More information on EDL capabilities and services can be obtained at our web site.

Food Safety and Security

216 Call Hall
785-532-1234
Fax: 785-532-5861
E-mail: fss@k-state.edu
http://fss.k-state.edu

The U.S. and international food system is so complex that any effort to understand its multiple dimensions must draw on multiple academic disciplines. By integrating insights from multiple disciplines, researchers can better describe problems and prescribe solutions in this system. K-State's Food Safety and Security program pursues excellence in such interdisciplinary scholarship. By highlighting research from the fields of microbiology, sociology, economics, et cetera--indeed, the list does and should go on--universities can paint truer pictures of today's food safety and food security problems and solutions. In 2001, K-State formed the Food Science Institute to facilitate initiatives across five colleges and 11 departments. Food Safety and Security is one of the major program areas of the Food Science Institute. Owing to the Institute's unique interdepartmental and interdisciplinary mission, the Food Safety and Security program has thrived din this environment.

Food Science Institute

Dr. Curtis Kastner, Director
216 Call Hall
785-532-4057
Fax: 785-532-5861
E-mail: foodsci@ksu.edu
www.foodsci.k-state.edu

The Food Science Institute (FSI) was established in 2001 to integrate the wide range of expertise in Food Science at K-State. Approximately 40 faculty in more than a dozen disciples are collectively involved in facilitating undergraduate and graduate academic programs and providing research and technical assistance for the food industries.

State-of-the-art laboratories and pilot plants are available to fulfill research, teaching, and extension missions that address food-related issues. Facilities include bakery, milling, dairy, meat, poultry, egg, thermal, extrusion, fermentation, sensory analysis, and value-added processing/evaluation capabilities. Interaction with other existing institutes, centers, and programs expands the base of expertise needed to address food-related issues.

Frontier Program

Dr. Justin Kastner, Assistant Professor, Food Safety and Security
Co-Coordinator of Frontier
Department of Diagnostic Medicine/Pathobiology
310 Coles Hall
785-532-4820
Fax: 785-532-4851
E-mail: jkastner@k-state.edu
www.frontier.k-state.edu

Frontier is an interdisciplinary program for the historical studies of border security, food security, and trade policy, which Dr. Justin Kastner coordinates in partnership with Dr. Jason Ackleson of New Mexico State University. Frontier undergraduate and graduate students blend academic perspectives from history, food security and trade policy, and international relations to study border and trade issues arising at the frontier.

Geographic Information Systems Spatial Analysis Laboratory (GISSAL)

Shawn Hutchinson, Director
164A Seaton Hall
785-532-5685
Fax: 785-532-7310
E-mail: gissal@ksu.edu
http://www.k-state.edu/geography/research/gissal.htm

The Geographic Information System Spatial Analysis Laboratory (GISSAL) at Kansas State University is a multidisciplinary center supporting spatial research, education, and outreach activities at Kansas State University. Established in August 1990 and recognized as a National Center of Digitizing Excellence by the USDA Natural Resource Conservation Service, GISSAL combines faculty expertise and trained graduate and undergraduate student technicians with advanced geospatial technology and sophisticated spatial analysis capabilities.

GISSAL offers a modern computing infrastructure, access to state-of-the-art data visualization tools, and the most powerful GIS, satellite remote sensing, CAD, digital mapping, database, and statistical analysis software packages. Contract services include GIS database design and construction, digital cartographic support and production (including web-servable interactive maps), and customized GIS workshops and software training.

Hazardous Substance Research, Center for

Dr. Larry E. Erickson, Center Director
104 Ward Hall
785-532-6519
Fax: 785-532-5985
E-mail:chsr@k-state.edu
www.engg.ksu.edu/HSRC

Kansas State University leads the consortium comprising the Great Plains/Rocky Mountain Hazardous Substance Research Center which serves Environmental Protection Agency (EPA) Regions 7 and 8. Other member universities are Colorado State, Haskell Indian Nations, Lincoln, Montana State, South Dakota State, and Utah State Universities, along with the Universities of Iowa, Missouri, Montana, Nebraska, Northern Iowa, Utah, and Wyoming. The center was established in 1989 to conduct research pertaining to identification, treatment, and reduction of hazardous substances resulting from agriculture, forestry, mining, mineral processing, and other activities of local interest. In 1994, efforts of principal investigators were broadened to include programs for minority academic institutions, technical outreach services for communities, and research and re-education for displaced military and Department of Defense personnel.

The center has undertaken research in the following areas: studies of soil and water contamination by heavy metals and mining wastes; research on soil and groundwater contamination from a variety of sources; development of biodegradation and immobilization technology; development of simplified and inexpensive methods for analyzing contaminated soil; hazardous waste minimization; and determination of safe concentration levels of hazardous substances in soil and water.

Diversity of interests in EPA Regions 7 and 8 and the large geographic area represented are further reflected in the training and technology transfer program the center currently supports. Issues of the center newsletter HazTech Transfer have been widely disseminated across the nation; an information clearinghouse at Kansas State University Hale Library has been established and contains over 1,000 publications, including center-funded theses, dissertations, reports, and videos; the center has held annual conferences on hazardous waste research since 1986 with more than 70 papers presented at each conference; and general public environmental information activities are ongoing. Many center publications, including proceedings of the 1995-1999 conferences, are now available on our web site at *http://www.engg.ksu.edu/HSRC*.

Huck Boyd National Center for Community Media

Gloria Freeland, Director
105 Kedzie Hall
785-532-0721
Fax: 785-532-5484
E-mail: huckboyd@ksu.edu
huckboyd.jmc.ksu.edu

The Huck Boyd National Center for Community Media was founded in 1990 to serve and strengthen the local newspapers, radio stations, cable systems, and other media that play a key role in the survival and revitalization of America's small towns. The center's mission is to assist in sustaining and enhancing the positive qualities of life characteristic of small communities in America through strengthening community media.

Kansas Center for Agricultural Resources and the Environment (KCARE)

Bill Hargrove, Director
15 Waters Hall
785-532-6147
Fax: 785-532-6563
E-mail: kcare@ksu.edu
www.oznet.ksu.edu/kcare

KCARE provides research and educational programs that help Kansans balance "utilization" and "protection" of natural resources today and into the future. The health and prosperity of future generations depends on a mutually beneficial relationship between agriculture, natural resources, the environment and consumers. The Kansas Center for Agricultural Resources and the Environment was established to coordinate and enhance research, extension, and teaching activities pertaining to environmental issues related to agriculture.

KCARE's roles are to foster interdisciplinary team approaches to solve environmental problems related to agriculture; serve as a liaison for state and federal agencies, non-government organizations and private groups outside K-State; communicate the relationship of agriculture and the environment to producers and the public; and develop financial resources for interdisciplinary research, extension and communications activities at the Center.

Center for Engagement and Community Development

Dr. David E. Procter, Director
202 Ahearn
785-532-6868
Fax: 785-532-6808
E-mail: cecd@k-stat.edu
www.k-state.edu/cecd/

The Center for Engagement and Community Development (CEDC) will extend and expand K-State's historic mission of engagement and outreach. CECD is a place where university faculty and community leaders can come together to address community challenges, meet community needs, and realize community dreams through effective scholarship-based engagement. In this process, we plan to help make Kansas State University one of the truly premiere land-grant universities.

Kansas Center for Sustainable Agriculture and Alternative Crops (KCSAAC)

Jana Beckman, Coordinator
Kansas Center for Sustainable Agriculture and Alternative Crops
c/o HFRR
3029 Throckmorton

785-532-1440
Fax: 785-532-5780
E-mail: kcsaac@oznet.ksu.edu
www.oznet.ksu.edu/kcsaac

KCSAAC was created in 2000 by the Kansas Legislature to facilitate research, education, and outreach related to sustainable agriculture. The future of agriculture must balance agricultural production, use of natural resources, profitability, the environment and the needs of consumers.

KCSAAC's role is to work with university faculty, government agencies and other agricultural groups to educate family farmers on environmental stewardship, boosting family farm profitability, building community support for agriculture, and enhancing rural communities.

Educational Communication Center

Doug VonFeldt, Interim Director
128 Dole Hall
785-532-7041
Fax: 785-532-7355
E-mail: ecc@ksu.edu
www.ksu.edu/ecc

The Educational Communications Center (ECC) in Dole Hall was established in 1986, the facilities and equipment were made possible through a grant from the U.S. Department of Education. The mission and purpose of the ECC is to develop and enrich human resources within the state by providing access for residents of Kansas, the nation and the world to educational opportunity at all levels through the appropriate utilization of technology.

Dole Hall, is a 32,000 square foot production and distribution facility with three production studios, control rooms and satellite uplink, educational development laboratory, editing suites, multimedia lab, graphic design studio, offices, conference rooms and a Channel 49 ABC News Bureau. A large garage houses a mobile satellite uplink unit and a video production truck to provide services from any location. Other tenants in Dole Hall include offices and student facilities for the A.Q. Miller School of Journalism, Kansas Regents Network (Telenet), Kansas audio and videoconferencing network, and the Department of Communications Extension Television.

Information about the ECC's services and staff along with pictures of the facilities can be seen on the ECC website at www.k-state.edu/ecc.

Kansas Water Resources Research Institute (KWRRI)

The Kansas Water Resources Research Institute is part of a national network of research institutes in every state and trust territory of the U.S. established by law in the Water Resources Research Act of 1964. The network is funded by a combination of federal funds through the U.S. Geological Survey and non-federal funds from state and other sources. The mission of KWRRI is to develop and support research on the high priority water resources problems of the state, to foster the dissemination and application of research results, and to facilitate effective communication amongst water resources professions in Kansas. The mission is accomplished through: 1) Supporting research through a competitive grants program that encourages interdisciplinary approaches, interagency collaboration, scientific innovation, cost-effectiveness, relevance to present and future water resource issues/problems as identified in the State Water Plan, and dissemination and interpretation of results to appropriate audiences; 2) Fostering dissemination and application of results through conferences, briefings, white papers, and/or newsletters; and 3) Facilitating communication through an electronic network. KWRRI currently is administratively under the Kansas Center for Agricultural Resources and the Environment (KCARE) at Kansas State University.

Konza Prairie Biological Station (KPBS)

Dr. Eva Horne, Interim Director
Division of Biology
232 Ackert Hall
785-587-0441
Fax: 785-532-6653
E-mail: konza@ksu.edu
www.ksu.edu/konza

Konza Prairie Biological Station (KPBS) is a 8,600 acre tallgrass prairie preserve owned by The Nature Conservancy and Kansas State University and operated as a field research station by the K-State Division of Biology. The station is dedicated to a three-fold mission of long-term ecological research, education, and conservation. It is a unique outdoor laboratory that provides opportunities for the study of tallgrass prairie ecosystems and for basic biological research on a wide range of organisms and processes. The station is open to scientists and students from throughout the world. It also serves as a "benchmark" for comparisons with areas that have been affected by human activities, and as an environmental education facility for students and the public. KPBS is a member of the Organization of Biological Field Stations and the Association of Ecosystem Research Centers, and is a National Science Foundation Long-Term Ecological Research (LTER) site.

Libraries

Dr. Lori Goetsch, Dean of Libraries
Hale Library
785-532-7400
Fax: 785-532-7415
E-mail: library@gw.ksu.edu
www.lib.ksu.edu

Kansas State University Libraries provides support for the educational, research, extension and public service objectives of K-State. Staff acquires and maintains the libraries' electronic and print collection needed for the University to achieve its objectives.

K-State Libraries consists of four libraries: Hale Library, known historically as Farrell Library, Weigel Library of Architecture, Planning and Design (Seaton Hall), Fiedler Engineering Library (Fiedler Hall), Math/Physics Library (Cardwell Hall), and Veterinary Medicine Library (Trotter Hall). K-State Salina Library is a cooperating library that shares integrated electronic access systems and databases.

Reference staff provides assistance in helping patrons access materials or information needed. Staff help initiate literature searches and assist with electronic resources. Librarians, in addition to their reference staff duties, serve as subject specialists. Subject librarians, who are knowledgeable of the resources in a specific subject matter, assist patrons with their particular information needs. Subject librarians are available for one-on-one consultations or for groups and classes.

K-State Libraries offers state-of-the-art electronic data information retrieval systems for the catalog and databases unique for K-State's diverse academic areas. The libraries' web site provides information about its collections and services. An extensive section is devoted to electronic information available to K-State and around the world. Remote access to the libraries' electronic resources are available to K-State students.

The Information Commons is located in Hale Library, the main library. InfoCommons consists of more than 200 computers located on all four floors. The most attractive feature of InfoCommons is that it brings together electronic, print and microform resources. Also, InfoCommons is consistent among all student computing facilities supported by CNS. In addition, InfoCommons has technical assistance on hand to answer questions regarding the computers and application software. Another exciting feature of InfoCommons is the laptop computers available for check out.

Other areas in Hale Library providing information or access services include circulation, interlibrary services, government documents, microforms, science library, and reserves. The Anita C. Lehner 24-hour study area is available on the first floor. Most services available at Hale Library are also available at the branch libraries.

Award-winning Hale Library is impressive with its seven-arch loggia entrance, six and seven-story towers topped with decorative finials. Oak hardwood floors and brass handrails adorn the interior finishes. The carved and etched limestone facings, sculpted

metal banisters and door ornamentations depict native Kansas plants, trees, shrubs and wildlife. The largest academic building on campus with nearly 400,000 square feet, centrally located on K-State's Manhattan campus, Hale Library is the academic heart of Kansas State University.

Nuclear Reactor

Dr. Mike Whaley, Nuclear Reactor Manager
112 Ward Hall
785-532-6657
E-mail: whaley@mne.ksu.edu
www.mne.ksu.edu/research/centers/reactor

The University operates a TRIGA Mark II nuclear reactor and related laboratories. Inherently safe by design, the reactor normally operates at 250 kW, but can be pulsed to peak power levels of 250 MW. Researchers throughout the world use the reactor for neutron activation analysis, neutron radiography, fission track studies, neutron spectroscopy, and isotope geochronology. The reactor is also used for student education and public demonstrations.

Particle Accelerators: James R. Macdonald Laboratory

Dr. Itzik Ben-Itzhak, Director
116 Cardwell Hall
785-532-6782
Fax: 785-532-6806
E-mail: jrmlab@phys.ksu.edu
http://jrm.phys.k-state.edu/

Kansas State University operates a national user facility, the James R. Macdonald Laboratory, which is supported by the U. S. Department of Energy. The laboratory has ion sources and particle accelerators that provide highly stripped heavy ions over an energy range of a few eV to the order of 100 MeV. This facility is dedicated to the investigation of the interactions of highly charged heavy ions with atoms, ions, molecules, and surfaces. The equipment available to researchers includes a 7MV tandem Van de Graaff accelerator, a superconducting LINAC (booster/decelerator), an ion source for the production of highly charged low velocity heavy ions (CRYEBIS), a crossed beam ion-ion collisions facility, and five independent multiparameter data acquisition/analysis systems. The laboratory provides high-level technical support to aid users in the design, construction, and implementation of experimental projects. The laboratory is unique in its ability to provide long term access to state-of-the-art complex experimental apparatus related to ion collision studies.

Pollution Prevention Institute

Nancy Larson, Director
133 Willard Hall
785-532-6501
1-800-578-8898 (toll free)
Fax: 785-532-6952
E-mail: sbeap@ksu.edu
www.engg.ksu.edu/enggext/ppi

This institute provides free, confidential technical assistance and training in source reduction and other environmentally sound practices to businesses, regulatory agencies, technical assistance groups, and private citizens throughout the Midwest. The institute also serves as a meeting ground for faculty involved in pollution and other related activities.

Sensory Analysis Center

Dr. Delores H. Chambers, Co-director
Dr. Edgar Chambers IV, Co-director
145A Justin Hall
785-532-0166

Fax: 785-532-0176
E-mail: eciv@ksu.edu and delores@ksu.edu
www.sensoryanalysis.com

The Sensory Analysis Center, a part of the College of Human Ecology, is one of the outstanding providers of sensory services in the nation. The Center assists in teaching sensory analysis by providing students with opportunities to gain practical experiences and it provides outstanding research capabilities for university researchers and consumer products industries. Clients of the Center have included researchers on campus from numerous departments, Kansas businesses, and national and international corporations. The Center provides two major types of analyses: 1) descriptive analysis that defines the characteristics of a product or service and the amount or intensity of that characteristics, and 2) consumer evaluation that provides information on benefits, liking, or acceptance or helps to determine what consumers understand about the product, service, or information.

Technology and Aviation

Dr. Dennis K. Kuhlman, Dean
2310 Centennial Road
Salina, KS 67401-8196
785-826-2601
Fax: 785-826-2998
E-mail: dkuhlman@sal.k-state.edu
www.sal.k-state.edu

The College of Technology and Aviation, located at the Salina campus, provides a comprehensive array of associate and baccalaureate degree programs in engineering technology, aviation, and technology management. Many of the engineering technology programs are TAC of ABET accredited, while the aviation programs maintain FAA certification and accreditation by the Aviation Accreditation Board International. The college also engages in cooperative scholarship and creative endeavors with regional and national industry partners.

University Transportation Center

Dr. Brian Coon, Director
2118 Fiedler Hall
785-532-1573
Fax: 785-532-7717
E-mail:bcoon@ksu.edu
www.transport.ksu.edu

The University Transportation Center coordinates faculty, industry and governmental agencies in multidisciplinary research efforts focusing on the Center's Theme: The Sustainability and Safety of Rural Transportation Systems and Infrastructure. As rural populations throughout the United States are decreasing as well as becoming more elderly, the status of rural transportation systems becomes increasingly critical--both from a sustainability perspective as well as that of safety. The Center focuses on improving the quality of life of rural America through increased infrastructure life and economy, improved safety and EMS response times, improved driver training and testing, as well as bringing a holistic, multi-disciplinary perspective to transportation research. Transportation Engineering: transportation planning, transportation systems, analysis and simulation, geometric design of highways, highway safety, pavements and highway materials, and rural transportation policy. Psychology: driver behavior, driver education and testing.