

Geography-Graduate Catalog

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Overview:

The Department of Geography at Kansas State University offers degrees at both the master's and doctoral levels. Drawing upon the research interests and experience of the faculty, the department's core areas of geographic inquiry are: human-environment interaction, population and health, culture and landscape, and regional systems. At the master's level students receive training in the fundamentals of geographic thought and research, which prepares them for either an applied professional career or advanced study and research. At the Ph.D. level, students are encouraged to pursue research that fits with the core areas of the department and complements the rural and land grant tradition of Kansas State University. Doctoral students undertake original independent research and make scholarly contributions in their selected field(s) of specialization. Within each of the four core areas, human-environmental interaction, population and health, culture and landscape, and regional systems, students may pursue research more specific to their individual interests. A wide variety of pursuits are available within the core of human-environment interaction, including studies of human dimensions of environmental change, natural hazards, rural land use change, biogeography and landscape ecology, climate variability and change, environmental modeling, water resources, and environmental perception. The department has a long tradition of research in population and health studies, including work in population migration and distribution, rural settlement patterns, and sustainable rural

communities. A growing core within the department is the field of culture and landscape, including research in landscape symbolism, ethnic landscapes, place identity, homelands, religious landscapes and sacred lands, and gender studies. Within the regional systems theme faculty have expertise in the Great Plains, American West, Southwest Borderlands, China, South Asia, Europe, and Sub-Saharan Africa; in many cases the focus is on rural or small town settings. Providing a methodological foundation for these core areas is the department's strength in geospatial techniques. The department is particularly well equipped to facilitate research that employs remote sensing, digital cartography/geographic visualization, spatial statistics, and GIS methods. A graduate certificate in GIScience is also available. Competency in GIScience and Technology can be earned as a stand-alone certificate or in conjunction with either a master's or doctoral degree.

The department has a strong research and teaching reputation and ranks highly among the social sciences at Kansas State University. These strengths have translated into several large grants that support collaborative research between students and faculty. Benefits of the graduate program at K-State include a balanced curriculum, a broad-based approach to research/scholarship, and a commitment to fieldwork as a component of geographic inquiry. The moderate size of the department fosters an informal, friendly atmosphere with ample opportunity to develop close rapport with faculty. The department is centrally located on campus near the libraries, most classrooms, and the Student Union. The University's library system is amply stocked with research resources for most geographic study. Department resources include the Geographic Information Systems/Spatial Analysis Laboratory (GISSAL), a Remote Sensing Research Laboratory, hyperspectral radiometers, GPS receivers, a GIS/Remote Sensing teaching laboratory, photogrammetric instrumentation, and an extensive library of satellite images of Kansas. Other valuable K-State research resources include the Konza Prairie Biological Station, Statistical Laboratory, Population Research Laboratory, the University Computing Center, the Kansas Center for Rural Initiatives, and research and extension projects affiliated with a land grant institution.

Programs of study

Ph.D. program

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

Program 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 GEOG 830 (Seminar in Rural Resource Management - 3 credits), and GEOG 900 (Methods, Theory, and Models in Geography - 3 credits). These courses must be taken while in residence.

complete at least 24 additional credit hours in courses that support the doctoral research objective. Twelve credit hours must be at the 800-level or above. 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.

Complete two geography research seminars (6 credits), both of which must be at the 800 or 900 level. These two research seminars may not be used to meet the research tools 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.

Students may not include more than six credits of independent study course work.

complete the research tools requirement. The student in consultation with the advisory committee, selects two tool areas and appropriate course work to develop competency in each area. Tool areas include but are not limited to: a foreign language, quantitative methods, GIS, remote sensing, qualitative methods, survey research methods, and field methods.

At least six hours of course work must be in classes that help meet the research tools requirement. A short letter from the major professor, to be placed in the student's departmental file, will document the two areas selected and the work needed to complete the research tools requirement. For those selecting a foreign language, the student must demonstrate a reading knowledge of the foreign language based on standards established by the Department of Modern Languages at Kansas State University. Students whose first language is not English must document that they will be using their native language in their dissertation research if they want to use their native language to help meet this requirement.

spend at least one full academic year in residence.

pass a 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 course work with a grade point average of 3.33 or better are eligible to take the preliminary exam. 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 matter in four sub-fields, knowledge of related geographic literature, and an understanding of research theory and methods. Successful completion of the preliminary examination is required for the student to become a doctoral candidate.

complete a written dissertation proposal following completion of the preliminary examination. An oral defense of the proposal will be conducted before the supervisory committee, other faculty, and students.

complete 30 credit hours of GEOG 999 (Ph.D. Research in Geography).

Dissertation

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. 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 supervisory committee. Two weeks prior to the dissertation defense the written dissertation will be available for review by the supervisory committee, other faculty, and graduate students. Other faculty and students are encouraged to attend the defense.

Sample program of study

1st Semester

GEOG 830

GEOG 800-level research seminar

- Program Planning Interview

2nd Semester

GEOG 900

GEOG 800-level research seminar

Research Tools course

- Form Supervisory Committee

- Submit doctoral program of study to the Graduate School

3rd Semester

Research Tools course

700- or 800-level elective

700- or 800-level elective

4th Semester

700- or 800-level elective

Independent Study (with the major professor)

- Preliminary Exam (early in the semester)

- Defend dissertation proposal (late in the semester)

5th Semester

GEOG 999 Ph.D. Research in Geography

6th Semester

GEOG 999 Ph.D. Research in Geography

M.A. Program

Program objectives

The Master of Arts 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.

Program requirements

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. All geography candidates for the Master of Arts degree are required to take GEOG 700 Quantitative Analysis in Geography (except students completing the Report Option for Teachers), GEOG 800 Graduate Colloquium I, GEOG 801 Graduate Colloquium II, and GEOG 820 History and Philosophy of Geography. Students may include no more than three credits of independent study coursework on the program of study, and no more than two hours may be with an individual faculty member.

Students may choose, in consultation with their advisors, one of the three programs leading to the M.A. 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. Two seminars in geography are required, with at least one at the 800 level.

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 only 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 hours of graduate course work are required; at least eighteen must be in geography. The two-credit hour Master's Report (GEOG 898) shall consist of the design of a teaching syllabus in some subfield 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 ultimately continue for the doctorate in geography.

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.

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.

Admission procedures and requirements

Regular admission to the Graduate School and the Department of Geography requires a 3.0 grade point average on a 4.0 scale, three letters of recommendation, submission of Graduate Record Exam scores, official transcripts, and a one- to two-page statement of interests and objectives.

Ph.D. applicants should have attained a score of at least 1100 on the combined verbal and quantitative components of the GRE. Admission to the Ph.D. program is contingent upon the willingness of a geography faculty member to serve as the student's advisor. Students who have not completed the master's degree by the end of their first semester in the Ph.D. program will be 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.

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; limited support may also be available for summer months. Full-time GTAs receive a stipend and a full waiver of tuition. GRAs, supported from geography faculty research grants, receive a stipend and a tuition reduction from out-of-state to in-state rates. A limited number of competitive Graduate School stipend supplements may also enhance graduate stipends.

Graduate assistantships are continued for a second year for M.A. students and a third year 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.

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, Bureau of the Census, and Bureau of Land Management employ numerous geographers each year, particularly those with environmental or spatial techniques and analysis expertise. 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.

Geographic information science graduate certificate program

The graduate certificate in geographic information science is designed to provide graduate students with the fundamentals necessary to enter and succeed in the rapidly expanding field of geographic information science (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.

Certification requirements:

The course requirements for the graduate certificate in GIScience are shown below. The graduate faculty for the program will periodically review the certificate requirements and have the authority to pass modifications to the approved list of courses.

Prerequisites:

Prerequisite preparation in four general areas provides essential background for participation in the certificate program. Courses can 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.

- A. Competence in cartography (mapping): GEOG 302 or equivalent.
- B. Competence in elementary statistics: STAT 330 or equivalent.
- C. Competence in mathematics through elementary calculus: MATH 205 or equivalent.
- D. Competence in computer programming and relational database management: CIS 103 and CIS 200 or equivalents.

Geospatial Core (9 credit hours):

Three core geospatial technique courses expose students to the conceptual framework of GIScience and methods of data capture, storage, retrieval, modeling, and digital map display of biophysical and/or cultural geographic phenomena.

GEOG 508	Geographic Information Systems I (3 cr)
GEOG 705	Remote Sensing of the Environment (3 cr)
GEOG 708	Geographic Information Systems II (3 cr)

Elective Courses - Select Two (minimum of 6 credit hours)

In addition to the geospatial core courses, students enrolled in the Graduate Certificate in GIScience will take a minimum of 6 additional credit hours of electives consisting of courses in advanced GIScience or applications of GIScience in related fields of study. Elective requirements may be satisfied from the following course list or 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 (3 cr)
BAE 690	Non-Point Pollution Engineering (3 cr)
CE 585	Civil Engineering Project - must have GIScience focus (3 cr)
CIS 501	Software Architecture and Design (3 cr)
CIS 560	Database System Concepts (3 cr)
CIS 635	Introduction to Computer-based Knowledge Systems (3 cr)
CIS 636	Introduction to Computer Graphics (3 cr)
DAS/DEN/GENAG 582	Natural Resources/Environmental Sciences Project - Must have GIScience focus (3 cr)
GEOG 610	Geography Internship - must have GIScience focus (2-3 cr)

GEOG 700	Quantitative Analysis in Geography (3 cr)
GEOG 702	Computer Mapping and Geographic Visualization (3 cr)
GEOG 711	Topics in Remote Sensing (3 cr)
GEOL 560	Field Methods (3 cr)
LAR 758	Land Resource Information Systems (3 cr)

Additional certification criteria

- A. 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.
- B. 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.
- C. 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 and elective courses that comprise the Graduate Certificate in GIScience program. The GPA for certificate purposes will be computed in accordance with Kansas State University policy.
- D. 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 prerequisites, geospatial core, and/or elective courses completed more than five years prior to the semester in which the certificate requirements are completed.

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 scholarships may be available to exceptional applicants. Contact the certificate coordinator for further details.

Geography courses

GEOG 500. Geography of the United States. (3) I. In odd years. 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.

GEOG 505. South Asian Civilizations. (3) I, in even years. 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. Pr.: 3 hours of Social Science or junior standing. Same as ECON 505, HIST 505, POLSC 505, SOCIO 505, ANTH 505.

GEOG 508. Geographic Information Systems I. (3) II. Examination of the major concepts, theories, and operations in geographic information systems (GIS). Topics include: the nature of geo-referenced data, data acquisition, and spatial database management, coordinate systems and maps, data structure, and the basic GIS operations that are available for spatial analysis. The course will consist of two hours of lec. and two hours of lab a week. Pr.: GEOG 302 or instructor permission.

GEOG 510. Geography of the American West. (3) II, in even years. 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. Pr.: A previous course in geography and sophomore standing.

GEOG 535. Fundamentals of Climatology. (3) II. An examination of climatology on global, regional, and local scales, with emphasis on the physical processes and environmental factors that influence and control climate. Climatic change and its impact on human activities are explored. Pr.: GEOG 321.

GEOG 600. Mountain Geography. (3) I, in even years. 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.

GEOG 610. Geography Internship. (Var.) I, II, S. 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. Pr.: Permission of the instructor and junior standing in geography is required.

GEOG 620. Geography of Latin America. (3) II, in even years. A broad survey of the physical and human patterns of the Latin American culture area, past and present, with emphasis on the changing landscape features in the successive patterns of human occupancy.

GEOG 640. Geography of Europe. (3) II. 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.

GEOG 660. Geography of East Asia/China. (3) I, in even years. 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.

GEOG 650. Geography of Former Soviet Lands. (3) II. In odd years. Physical limitations, resource potentials, economic capabilities, and political and nationality issues, with particular emphasis on agriculture, manufacturing, urbanization, cultural diversity, and regional development. Pr.: Six hours of social science.

GEOG 680. Seminar in Regional Geography. (1-3) Pr.: Consent of instructor.

GEOG 690. Historical Geography of the United States. (3) S. 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. This is a seminar course. Pr.: GEOG 100 and one course in American history.

GEOG 700. Quantitative Analysis in Geography. (3) II. 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. Pr.: One course in statistics.

GEOG 702. Computer Mapping and Geographic Visualization. (3) II. Basic cartographic principles, advanced methods for representing spatial data, 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 cartographic and illustration software. The course will consist of two hours of lec. and two hours of lab a week. Pr.: GEOG 302 or instructor permission and junior standing.

GEOG 705. Remote Sensing of the Environment. (3) I, II. Remote sensing and its application to earth study, especially environmental problems and land use. Course employs both readings and the use of imagery. Two hours lec., two hours lab. Pr.: One course in physical science and one in biological science.

GEOG 708. Geographic Information Systems II. (3) I. 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 geographic data from physical and/or cultural sources to explore software procedures and techniques of spatial analysis, decision support, and geographic visualization. The course will consist of two hours of lec. and two hours of lab a week. Pr.: GEOG 302 and 508 (or consent of instructor).

GEOG 709. Geography Field Research Techniques. (2-3) S. Explores methods and techniques employed in modern field research. Stresses research design, field data acquisition techniques, and data analysis. Pr.: junior standing and at least 6 hours in geography.

GEOG 711. Topics in Remote Sensing. (3) II. Examination of a selected remote sensing topic in an area of faculty specialization. Repeatable once with change in topic. Pr.: GEOG 705.

GEOG 715. World Population Patterns. (3) I, in even years. Geographical processes that govern population distributions, growth rates, and migrations. Emphasis on international comparisons and implications for world society of continued differential growth rates Pr.: Six hours of social science.

GEOG 718. Geography of Public Lands. (3) II. 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. Pr.: Six hours of social science.

GEOG 720. Geography of Land Use. (3) I, in odd years. 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. Pr.: Six hours of social science.

GEOG 725. Geography of Water Resources. (3) II, in even years. 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. Pr.: Six hours of social science.

GEOG 730. World Agricultural Systems. (3) II, in odd years. Description and analysis of the spatial distribution of farm systems emphasizing traditional resource systems in the third world. The major objective is to analyze the interrelationships between natural and human elements in farm systems in order to gain an awareness and understanding of the complex issues involved in agricultural change and development. Pr.: Six hours of social science.

GEOG 735. Topics in Climatology. (3) I. Examination of a selected climatology topic in an area of faculty specialization. Repeatable once with change in topic. Pr.: GEOG 535.

GEOG 750. Urban Geography. (3) I. A study of geographic principles relating to the distribution, function, and structure of cities: a geographic analysis and classification of urban settlements. Pr.: Six hours of social science or planning.

GEOG 760. Human Impact on the Environment. (3) I. 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. Pr.: Six hours of social science.

GEOG 765. Geography of Natural Hazards. (3) I. Examines important emergency management issues related to hazard mitigation, preparedness, disaster response, and recovery, including socio-cultural and physical components of disaster process. Assesses human vulnerability and risk to environmental calamities, such as droughts, floods, tornadoes, hurricanes, and earthquakes. Pr.: Nine hours of Social Science.

GEOG 770. Perception of the Environment. (3) II, in odd years. 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. Pr.: 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.

GEOG 780. Cultural Geography. (3) II, in even years. 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. Pr.: Six hours of social science.

GEOG 790. Seminar in Geography. (1-3) Pr.: Consent of instructor.

GEOG 795. Topics in Geographic Information Science. (1-3) I, II. Selected geographic information science topic in science topic in an area of faculty specialization. Repeatable once with change in topic. Pr.: GEOG 302 or consent of instructor.

GEOG 800. Graduate Seminar in Geography. (0) I, II. Attendance of presentations and

discussion of research procedures, results and philosophies. Required of all geography graduate students in residence. Pr.: Graduate standing.

GEOG 815. Rural Population Geography. (3) I, in even years. 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. Pr.: STAT 702 or GEOG 700 or equiv., and GEOG 715 or SOCIO 830.

GEOG 820. History and Philosophy of Geography. (3) I. History of geographic thought from ancient to modern times, emphasizing major themes and significant individual contributions. Required for all Master's students in geography. Pr.: Open to all graduate students in social sciences.

GEOG 821. Geographic Research Methods. (3) II. The nature of geographic research and the processes involved in its structuring, development, and articulation. Each student will produce and present a research proposal. Required of all Master's degree students in geography.

GEOG 830. Rural Resource Management. (3) I. Examines the natural resource base supporting rural habitation, and the threats to resource sustainability and management response; explores forces of instability to which rural land use decision-makers have had to adapt; considers rural resources in Great Plains context. Topics may vary. Pr.: GEOG 440.

GEOG 835. Rural Economic Development. (3) I. 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. Pr.: GEOG 700 or 700-level statistics course.

GEOG 840. Advanced Environmental Geography. (3) I, in odd years. 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. Pr.: GEOG 221; GEOL 520.

GEOG 850. Topics in Environmental Geography. (1-3) I, II, S. Pr.: Consent of instructor.

GEOG 855. The Rural Cultural Geography of the United States. (3) II, in even years. An examination of the development and distribution of the rural cultural landscapes, focusing particularly on elements of the material landscape. Emphasis is placed upon research conducted in the Great Plains. Pr.: GEOG 500.

GEOG 860. Topics in Economic Geography. (1-3) I, II, S. Pr.: Consent of instructor.

GEOG 865. Rural Medical Geography. (3) II, in odd years. 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. Pr.: STAT 702 or GEOG 700.

GEOG 870. Topics in Cultural Geography. (1-3) I, II, S. Pr.: Consent of instructor.

GEOG 880. Spatial Data Analysis and Modeling. (3) II. 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). Pr.: GEOG 508 and GEOG 700 or equivalents.

GEOG 890. Advanced Spatial Analysis Techniques. (3) II. 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. Pr.: GEOG 705 and 708; GEOG 700 or

STAT 702.

GEOG 895. Topics in Spatial Analysis. (1-3) I, II, S. Independent advanced study of a selected topic. An example is the use of remote sensing and GIS in environmental modeling. Pr.: Consent of instructor.

GEOG 898. Master's Report. (2) I, II, S. For students enrolled in geography option B. Pr.: Registration in Graduate School, with sufficient training to carry on the line of research undertaken. Consent of instructor.

GEOG 899. Master's Thesis. (6) I, II, S. For student enrolled in geography option A. Pr.: Registration in the Graduate School, with sufficient training to carry on the line of research undertaken. Consent of instructor.

GEOG 900. Methods, Theory, and Models in Geography. (3) I. 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. Pr.: M.A. and consent of instructor.

GEOG 990. Research Problems in Rural Geography. (Var) I, II. Individual study and research for students admitted to doctoral standing in the graduate school. Pr.: M.A. and consent of instructor.

GEOG 999. Ph.D. Dissertation Research. (Var.)

For more information

For additional information and application materials please contact:

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