Supplemental Information
Course and Curriculum items
FS Academic Affairs Committee Review
January 20, 2015 Meeting

College of Human Ecology (12-14-14)

School of Family Studies and Human Services

Course Change	
FSHS 405 **ADVANCED PERSONAL ~~AND FAMILY FINANCE~~** **Short Title:** Adv Personal ~~and Family Finance~~ **Credits:** (3) In-depth applications of personal and family money management principles with emphasis on credit, savings, insurance, and budgeting. **When Offered:** Fall UGE: None K-State 8: Empirical and Quantitative Reasoning Social Sciences **Pre-Requisite:** FSHS 105 with grade of "B" or better ~~and~~ CIS 102 or CMST 108	**FSHS 405** **ADVANCED PERSONAL FINANCIAL PLANNING** **Short Title:** Adv Personal Financial Plan **Credits:** (3) In-depth applications of personal and family money management principles with emphasis on credit, savings, insurance, and budgeting. **When Offered:** Fall UGE: None K-State 8: Empirical and Quantitative Reasoning Social Sciences **Pre-Requisite:** FSHS 105 with grade of "B" or better, CIS 102 or CMST 108, Math 100 or college level calculus course with grade of "B" or better, and KSU cumulative GPA of 2.5 or higher.

Rationale: Students must demonstrate a basic understanding of time value of money, spreadsheet concepts, and general quantitative skills to be successful in this advanced course.

IMPACT: Department of Mathematics for requirement of B or better. Pre-requisites are already required as part of the curriculum. Students may have to retake the courses to meet the minimum grade requirements. A request was forwarded to Andrew Bennett, Department Head, Mathematics, on November 12, 2014. The math department has no objection to this change.

Effective: Summer 2015

College of Technology and Aviation, K-State Salina (12-16-14)

NON-EXPEDITED COURSE PROPOSALS
Courses Numbered 000-599

Department of Aviation

Primary Contact Person: Barney King, Interim Department Head
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ADD: **AVT 373. UAS Design for Non-Aviators.** (3) Fall. Topics include: Unmanned Aircraft System platform, payload and component design and interfacing, system and vehicle maintenance, and systems integration. Intended for non-pilot majors and those without the FAA certifications and ratings required for AVT 370. Studio format incorporating lecture and lab elements. Coreq.: AVT 270.
K-State 8:
- None

RATIONAL: The addition of this course is necessary to acquaint non-aviation majors with UAS design considerations and constraints respecting the entire unmanned system including platform flight dynamics and construction, autopilot integration, and avionics, onboard artificial intelligence and command and control subsystems and components. Inclusion of AVT 373 in the UAS curriculum will provide a pathway by which non-UAS majors may acquire the knowledge and skills necessary to engage or become employed in areas of UAS enterprises outside flight and field operations.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD **AVT 463. UAS Mission Planning and Operations for Non-Aviators**. (3) Spring. Focus is on mission planning and operations within the context of the simulated environment. Students are introduced to commercial, open source and/or proprietary autopilots and are required to complete simulated training missions with the ultimate goal of demonstrating skills competency and knowledge acquisition through evaluations of proficiency (e.g., through “check-outs” or “check-rides”). Intended for non-UAS majors and those without the FAA certifications and ratings required for AVT 460. Studio format Incorporating lecture and lab elements. Pr.: AVT 373.
K-State 8:
- None

RATIONAL: The addition of this course will provide non-aviation and non-UAS majors with the ability to perform payload integrations and the knowledge and skills necessary to operate UAS equipped with both commercial off-the-shelf autopilots and high-end proprietary autonomous navigation and flight systems. Inclusion of AVT 463 in the UAS curriculum will provide the means by which non-UAS majors would otherwise be unable to acquire the knowledge and skills necessary to engage or become employed in areas of UAS enterprises outside flight and field operations.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

NON-EXPEDITED UNDERGRADUATE CURRICULUM MODIFICATION

Department of Aviation
Composites Repair Certificate (CCOMRC)

Current Composites Repair Certificate

Fall Semester (~~3~~ credit hours)
AVT 317 Composites I 3

Spring Semester (7 credit hours)
AVT 400 Composites II 4
AVT 417 Composites III 3

Total: ~~10~~ Credit Hours

Proposed Composites Repair Certificate

Fall Semester (5 credit hours)
AVT 317 Composites I 3
AVT 318 Composites I Laboratory.....2

Spring Semester (7 credit hours)
AVT 400 Composites II 4
AVT 417 Composites III 3

Total: 12 Credit Hours

RATIONALE: New Board of Regents requirements create the need to increase the required credit hours for the Composites Repair Certificate (CCOMRC) from ten credit hours to twelve credit hours.

IMPACT: Aviation, UAS, and Engineering Technology students will be required to take AVT 318 Composites I Laboratory to complete the certificate requirements. This will change AVT 318 from an optional course and make it a required course to complete the certificate.

EFFECTIVE DATE: Fall 2015

New B.S. degree option in ENGINEERING TECHNOLOGY:

Bachelor of Science in Engineering Technology, Unmanned Aircraft Systems option
121 credit hours required

Primary Contact Person: Mark Jackson, Department Head
Phone: 785-826-7197
Email: mjjackson@ksu.edu

Major Requirements (80 credit hours)
Core courses (68 credit hours)

AVT 270	Introduction to Unmanned Aircraft Systems	3
AVT 300	UAS Powerplant Fundamentals	3
AVT 317	Composites I	3
AVT 373	UAS Design for Non-Aviators	3
AVT 450	Aviation Safety Management	3
AVT 463	UAS Mission Planning and Operations for Non-Aviators	3
CMST 103	Introduction to Program Design	3
CMST 250	Networking I	3
CMST 302	Applications in C Programming for Engineering Technology	3
ECET 100	Basic Electronics	4
ECET 101	Direct Current Circuits	3
ECET 110	Semiconductor Electronics	4
ECET 201	Alternating Current Circuits	4
ECET 250	Digital Logic	4
ECET 320	Electronic Communication Systems	4
ETA 020	Engineering Technology Seminar	0
ETB 480	UAS Senior Design I	1
ETB 481	UAS Senior Design II	2
MET 111	Technical Graphics	3
MET 211	Statics	3
MET 245	Material Strength and Testing	3
MET 246	Dynamics of Machines	3
	UAS elective*	3

Technical Electives (12 credit hours, 6 credits upper level)
Choose from the following electives:

AVT 400	Composites II	4
AVT 417	Composites III	3
CMST 315	Networking II	3
CMST 344	Internetworking	3
ECET 350	Microprocessor Fundamentals	4
ECET 352	Digital Circuits and Systems	4
ECET 430	Network Analysis	3
ECET 450	Digital Systems and Computer Architecture	4
MET 117	Mechanical Detailing	3
MET 121	Manufacturing Methods	3
MET 231	Physical Materials and Metallurgy	3
MET 252	Fluid Power Technology	3
MET 353	Fluid Mechanics	3
MET 471	Thermodynamics and Heat Transfer	3

Other electives may be used if approved by the department or advisor.

Math requirements (10 credit hours)

MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry and Calculus I	4

Science requirements (8 credit hours)

PHYS 113	General Physics I	4
CHM 110	General Chemistry	3
CHM 111	General Chemistry Laboratory	1

Other requirements (11 credit hours)

COMM 105	Public Speaking IA	2
ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL 302	Technical Writing	3

Other electives (12 credit hours, 9 credits upper level)

	Business elective	3
	Humanities/Social science elective	3
	Humanities/Social science elective	3
	Humanities/Social science elective	3

*Marked electives must be upper-level courses, 300 and above

RATIONALE:

The proposal for the new engineering technology option in unmanned aircraft systems (BETB-US) is consistent with Board approved mission statement of the institution that includes the 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 BETB-US program responds to the need for skilled engineering and technology professionals for the high growth UAS (Unmanned Aircraft Systems) area for both commercial and defense applications. UAS is already being used in a variety of applications such as wildfire mapping; agricultural monitoring; disaster management; thermal infrared power line surveys; law enforcement; telecommunication; weather

monitoring; aerial imaging/mapping; television news coverage; sporting events; moviemaking; oil and gas exploration; and freight transport[1].

Education needs of the UAS industry consistently fall into one of two categories, UAS Operations and UAS Engineering. The "common core" of the BETB-US program is focused on an applied engineering background that combines computer science, electronic engineering, and mechanical engineering skills that are fundamental to designing and implementing UAS systems. Students in the BETB-US program will expand technical knowledge and applied research skills through a required capstone experience and advanced elective coursework. More specifically, graduates from this program will provide the UAS industry with the skilled manpower that it needs to develop and implement technologies for interoperability, autonomy, airspace integration, propulsion & power, and communications purposes; the importance of focusing on the technologies mentioned can be found in the *Unmanned Systems Integrated Roadmap FY2011-2036 publication by the Department of Defense*[2].

The proposed program is very much aligned with the University's strategic plan and the K-State 2025 Strategic Action and Alignment Plan for K-State Salina which sites a key activity for the undergraduate experience theme as the ability to "provide undergraduate degree programs that are relevant, effective (high impact learning), accessible, and valuable."[3] K-State Salina has identified areas of scholarship focus to channel research and creative energy emphasizing collaborative synergies across departments, campuses, and institutions/agencies. This is completely aligned with the setting up of this new program that would facilitate collaboration between the engineering technology and aviation departments as well as the applied aviation research center (AARC). The ETB-US program would also foster new interdisciplinary opportunities for undergraduate research through collaborative endeavors.

Student Demand for the Program:

The BETB-US program would be the first-of-its-kind program that emphasizes an applied engineering approach in the curriculum; hence, it is not an easy matter to gauge student interest. What is evident is that students and faculty most closely associated with our existing UAS operations program (BATN-US) have been calling for this type of program for some time now. Also, according to engineering technology faculty who have been teaching lower-level electronics courses to BATN-US majors, have noted an interest on the part of their students for more applied engineering content.

The lead instructor (Dr. Michael Most) for the UAS Operations program made the following statement with regard to an UAS engineering type program's desirability based on his experience, "Students who are interested in Unmanned Aircraft Systems enroll in the Kansas State UAS degree program, which heavily focuses on flight and field operations. It happens, not infrequently, that through their coursework and involvement with related student activities (e.g., the UAS Club and AUVSI competitions) they receive exposure to the more technical aspects of unmanned systems which triggers the realization in these students that they are more interested in the design, control and construction of unmanned vehicles than in their operation. It is at this point that they come to me, as their adviser, asking about what career options would be available to them in the UAS industry as an engineer, technician or technical liaison. Whenever that happens, I council that they would be well served by either a dual major or a change in major to electrical or mechanical engineering technology. Offering a degree more specifically focused on UAS engineering technology would not only afford these students additional educational

1 The economic impact of unmanned aircraft systems integration in the United States, AUVSI, http://www.auvsi.org/econreport

2 http://www.defenseinnovationmarketplace.mil/resources/UnmannedSystemsIntegratedRoadmapFY2011.pdf

3 http://www.k-state.edu/2025/documents/college-planning/K-State-2025-K-State_Salina-Strategic-Action-and-Alignment-Plan-June-2013-Final.pdf

choices, but also the opportunity to focus more narrowly on their interests in unmanned vehicles." The BATN-US degree has been in place on this campus since 2010 and has enjoyed steady growth and a 100% graduate placement rate with starting salaries all averaging over $60,000 annually.

In addition to the existing undergraduate degree in UAS operations, since 2008 K-State Salina has hosted an internationally recognized leading applied research program in this area related to UAS systems and airspace integration. To date this center funding is approaching $4 million in multi-agency and sponsored research funding. This program reports a strong need for UAS-engineering focused graduates.

Demand for Graduates:

UAS is already a tremendous area of job growth for graduates with applied engineering skills and this is expected to grow even faster with the integration of UAS into the national aerospace system (NAS). The association for unmanned vehicle systems International predicts that "first three years of integration more than 70,000 jobs will be created in the United States with an economic impact of more than $13.6 billion. This benefit will grow through 2025 when we foresee more than 100,000 jobs created and economic impact of $82 billion."[4] Kansas is listed in this report as number 7 out of 50 states expected to realize the most gain in this area given the rich aviation heritage associated with Kansas.

Program Location and Comparative Advantages of the Program:

The BETB-US program will have the advantage of being located in a growing industrial town 70 miles from K-State's Manhattan campus only 90 miles from the large industrial base of Wichita, Kansas which has long-been considered the home of general aviation (or light aircraft). Our degree will also benefit in multiple ways from the strong ties that bind K-State Salina with its industrial partners. Industry relationships will help us with ideas for real-world capstone projects and provide a source of guest lecturers among other things.

IMPACT STATEMENT: Engineering Technology and Aviation are impacted by this proposal. Both departments have collaborated on the development of the Engineering Technology Unmanned Aircraft Systems (BETB-US) option.

CONTACT: Saeed M. Khan (785-826-2677; E-mail: saeed@ksu.edu)

EFFECTIVE DATE: Fall 2015

B.S. in Engineering Technology – Unmanned Aircraft Systems Option (BETB-US)

A. College, Department, and Date

College: Technology and Aviation
Department: Engineering Technology
Date: January 31, 2014

B. Contact Person(s) for the Assessment Plans

Saeed Khan

4 The economic impact of unmanned aircraft systems integration in the United States, AUVSI, http://www.auvsi.org/econreport

C. DEGREE PROGRAM

B.S. in Engineering Technology – Unmanned Aircraft Systems Option (BETB-US)

D. ASSESSMENT OF STUDENT LEARNING THREE-YEAR PLAN

Student Learning Outcomes:

Engineering Technology Unmanned Aircraft Systems Option (BETB-US) graduates will demonstrate:

A. Technical Skills and Knowledge.

1. basic understanding of electric circuits, circuit analysis techniques, analog circuit design, digital systems, and electronic communication systems .
2. basic understanding of computer programming and networking.
3. ability to understand and analyze the structural design and construction of a small unmanned aircraft vehicle (UAV).

B. Creative Design, Application, and Lifelong Learning.

1. application of physics or chemistry to electrical, electronic, and computer systems in a rigorous mathematical environment at or above the level of algebra and trigonometry.
2. ability to analyze, design, and implement control systems, communication systems, computer hardware and software systems as applied to unmanned aircraft systems.
3. ability to be life-long learners.
4. commitment to quality and continuous improvement.

C. Communication.

1. ability to write clear and effective technical reports, proposals, and business correspondence.
2. ability to communicate orally technical information to a variety of audiences.

D. Professional Behavior in a Diverse World.

1. understanding and respect for diversity in the workplace.
2. importance of working effectively as teams.
3. awareness of the impact of technology on our society.

E. **Professional Development.**

1. ability to apply project management techniques to UAS systems.
2. ability to practice professional ethics and social responsibility.

Relationship to K-State Student Learning Outcomes:

All K-State undergraduate student learning outcomes (SLO) are mapped into the BETB-US SLOs.

Mapping of K-State SLOs with BETB-US SLOs														
K-State Undergraduate SLOs	BETB-US SLOs													
	A1	**A2**	**A3**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**D1**	**D2**	**D3**	**E1**	E2
Knowledge: Students will demonstrate a depth of knowledge and apply the methods of inquiry in a discipline of their choosing, and they will demonstrate a breadth of knowledge across	√	√	√											

their choice of varied disciplines.														
Skills: Students will demonstrate the ability to access and interpret information, respond and adapt to changing situations, make complex decisions, solve problems, and evaluate actions.				√	√	√	√							
Communication: Students will demonstrate the ability to communicate clearly and effectively.								√	√					
Diversity: Students will demonstrate awareness and understanding of the skills necessary to live and work in a diverse world.										√	√	√		
Academic and Professional Integrity: Students will demonstrate awareness and understanding of the ethical standards of their academic discipline and/or profession.													√	√

ALIGNMENT MATRIX:

COURSES USED TO ASSESS STUDENT LEARNING OUTCOMES FOR THE ENGINEEING TECHNOLOGY OPTION IN UNMANNED AIRCRAFT SYSTEMS (BETB-US) **Note: "√" marks where outcomes are assessed**						
BETB-US SLOs	**ECET 100, ECET 101, ECET 110, ECET 250, ECET 201, ECET 320**	**CMST 103, CMST 250, CMST 302**	**AVT 317, AVT 373, MET 211, MET 111, MET 245, MET 246**	**ETB 480, ETB 481**	**ETA 020, Hum/SS Electives**	**ENGL 302**
A1 **basic understanding of electric circuits circuit analysis techniques, analog circ design, digital systems, and electronic communication systems .**	√					
A2 **basic understanding of computer programming and networking.**		√				
A3 **ability to understand and analyze the structural design and construction of a unmanned aircraft vehicle (UAV)**			√			

B1 application of physics or chemistry to electrical, electronic, and computer sys in a rigorous mathematical environmen above the level of algebra and trigonom	√			√		
B2 ability to analyze, design, and implemer control systems, communication syste computer hardware and software syste applied to unmanned aircraft systems.	√			√		
B3 ability to be life-long learners.		√		√		
B4 commitment to quality and continuous improvement.	√			√		
C1 ability to write clear and effective techn reports, proposals, and business correspondence.	√			√		√
C2 ability to communicate orally technical information to a variety of audiences.				√		√
D1 Understanding and respect for diversity the workplace.				√	√	√
D2 importance of working effectively as te				√	√	
D3 awareness of the impact of technology on our society.				√		
E1 ability to apply project management techniques to UAS systems.				√		
E2 ability to practice professional ethics a social responsibility.	√	√	√	√	√	√

Assessment measures – A combination of projects, assignments, and exam questions will be used as direct measures. Rubrics will be used to evaluate projects and assignments. Student surveys will be used as indirect measures.

Timetable for Assessment Learning Outcomes			
SLOs	**2015-16**	**2016-17**	**2017-18**
A.1.	√		
A.2.	√		
A.3.	√		
B.1.			√
B.2.		√	
B.3.			√
B.4.		√	
C.1.			√
C.2.	√		√

D.1.		√	
D.2.			√
D.3.			
E.1.		√	
E.2.		√	

Discussion of Results
Meeting of program faculty - At the end of each semester the information will be combined and documented. The primary instructors in the curriculum will conduct an informal discussion at the end of each semester. *At the beginning of the spring semester, a formal evaluation of the student learning outcomes will be conducted. This evaluation will be conducted by the curriculum primary instructors.* ***Annual industrial advisory board meeting** - Results will be shared with industry representatives and program faculty in attendance. Reaction and suggestions of board members will be noted and considered toward improvement efforts.*

Based on the program faculty meetings and advisory board feedback, faculty will recommend changes to the respective classes and curriculum. It is anticipated that the first year will be used to help establish a baseline and test the assessment process and tools. Strengths and weaknesses will be acknowledged and shared with students, colleagues and advisory board members. In addition, these groups will be made aware of how the weaknesses are being addressed. Students will be made aware through revised syllabi and verbal communication during classes. Information will be shared with faculty and administrators during faculty meetings and annual assessment reports.

The BETB-US faculty will work closely with the faculty of the K-State Salina Writing Center. The Writing Center and English faculty with assist in the development of rubrics and the evaluation of writing.

PROGRAM FACULTY:

The BETB-US Degree will benefit from the combined expertise of nine faculty members from the aviation and engineering technology departments. Selected program faculty will also be designated coordinator roles in admissions, assessment, program review, and accreditation. The table below lists faculty resources available to teach in the program.

Name of Program Faculty	Rank	Area of Expertise	Other Teaching Area	Core Faculty	BETB-US Courses
Raylene Alexander	Associate Professor	Avionics	Aviation		**Electives in avionics**
Tim Bower	Associate Professor	Computer Systems	Engineering Technology	√	**Electives in Robotics, CMST 302**
Evan Beckman	Instructor	Aviation Maintenance	Aviation		**AVM 241, AVT 300, AVT 317**
Dr. Raju Dandu	Professor	Mechanical Engineering	Engineering Technology	√	**Electives in machine design**
Troy Harding	Professor	Computer Systems	Engineering Technology		**Electives in networking**
Dr. Saeed Khan	Associate Professor	Electrical Engineering	Engineering Technology	√	**Electives in communications, ECET 250, ECET 320**
Dr. Michael Most	Associate Professor	UAS Operations, Avionics	Aviation		**AVT 270, AVT 370, AVT 460, AVT 470**
Eduard Plett	Associate Professor	Electrical Engineering	Engineering Technology		**Electives in artificial intelligence, ECET 201**
Aaron Westerman	Instructor	Electronics	Engineering Technology		**ECET 100, ECET 110**

ACADEMIC SUPPORT:

Media Services
The K-State Salina Media Services provides instructional equipment, equipment training and media service consulting for COTA instructors. Media services are also available to coordinate training and facilitation for online courses.

Writing Center
The K-State Salina Writing Center provides one-on-one writing instruction to faculty, staff, and students across all disciplines and should also be able to provide support to graduate students. Trained peer tutors assist students with all phases of the writing process, including development, writing, organization, and editing. Writing Center tutors are also cross-trained with Career and Employment Services to assist students with the development and writing of professional resumes and cover letters. The Writing Center is currently considering options to help online students such as dialoguing with users over web-based systems.

Office of Student Life
The Office of Student Life provides leadership opportunities and development. It will oversee all BETB-US student club and activities.

Career and Employment Services
Career and Employment Services provides assistance in job placement and provides counseling in choosing a career, developing a resume, and practicing interview techniques. CES coordinates interviews with employers seeking job applicants.

Professional Education and Outreach
The Professional Education and Outreach department provides student services to support online and distance students in reaching academic success at K-State Salina. The department utilizes online and distance learning technology to deliver affordable and accessible educational options to meet student needs. The department's faculty services assist instructors who develop and teach online and distance courses.

K-State Online
K-State Online, an Internet based learning management system, transforms the everyday classroom into interactive web sessions for K-State's on-campus and distance education communities. It extends and enhances K-State course instruction, enabling students with time and geographic restrictions to take advantage of the flexibility of learning over the Internet.

K-State Salina Library
K-State at Salina students have access to 188 electronic databases that span multiple disciplines. These databases provide access to 2,312 electronic journals in engineering and aviation; 3,544 electronic journals in business, economy, and management; and 709 electronic journals in mathematical sciences.

The current library facility is physically limited in its ability to grow the print collection. Thus, the library will increase our reliance on Hale Library for advanced material. The library is in the process of working out an agreement for shared collections, which will improve Salina students' ability to access and borrow Hale Library's material.

FACILITIES AND EQUIPMENT:

The BETB-US program will not require any new facilities as the program relies on existing offerings required courses. The existing facilities that it will use are itemized below.

1. Electronic Instrumentation Lab (room STC 142) – 1,296 square feet

The Electronic Instrumentation Lab supports many of the analog electronics courses in the Electronic Engineering Technology, including Semiconductor Electronics, Linear Circuit Applications, Industrial Electronics, and Electronic Communications Circuits.

In addition to the equipment listed below, an RF spectrum analyzer is leased each year to support the Communications courses. The eight benches in the lab can accommodate up to 16 students. In addition to modern workbenches and lab stools, conference tables and chairs accommodate team project work sessions.

Equipment in this lab includes these items:

Eight benches, each equipped with the following items:
→ Agilent Technologies E5062A ENA Series Network Analyzer-3GHz
→ IFR 3 GHz Spectrum Analyzer
→ Digital Oscilloscopes
→ Multimeters
→ Arbitrary waveform generator
→ Digital multimeter
→ Triple output DC power supplies
→ Programmable DC power supplies

→ 2.26 GHz Pentium 4 computers Laboratory
→ 20.1" LCD monitors

Additional items include:
→ RF signal generators
→ 200 Mhz Network analyzer
→ Transistor curve tracer
→ Spectrum analyzer
→ Power meters
→ Volt-ohm-milliammeters
→ Frequency counters
→ LCR meter
→ Metallic cable time domain reflectometer (TDR)
→ Time interval standard
→ Impedance bridge
→ Variable transformers (Variacs)
→ HF communications receivers
→ Laser printer
→ L-C meter
→ Capacitor-inductor analyzer
→ Distortion analyzer
→ Vector impedance bridge
→ Laboratory breadboards

2. Digital Electronics Lab (Room STC 154) – 764 square feet

   This laboratory provides resources for the Digital Electronics, Microprocessor Fundamentals, Digital Circuits and Systems, and Digital Systems and Computer Architecture courses. This lab is equipped as follows:

   Eight benches, each equipped with the following items:
   → Digital Oscilloscope
   → Multimeter
   → Function generator
   → Universal counter
   → Digital multimeter
   → Triple output DC power supplies
   → 2.26 GHz Pentium 4 computers Laboratory
   → 20.1" LCD monitors
   → Laboratory breadboard
   → Epson data projectors Additional items for Digital Lab include:
   → Altera DE1 development kits
   → Alera DE2 development kits
   → Atmel AVR Butterfly demonstration and evaluation kits
   → UP2 and UP1 FPGA Boards development boards
   → Microcontroller assembler software
   → C cross compilers for microcontrollers
   → Microprocessor evaluation boards
   → Device Programmers

→ Logic Analyzer

3. Networking Lab (STC 171) – 842 square feet

   This laboratory is utilized by the Electronic and Computer Systems Technology students, as well as by the students majoring in Computer Systems Technology. It includes the following items that support computer networking activities:

   → Servers

   → Hubs

   → Routers

   → Switches

   → Cable termination equipment

   → Hand tools

4. Student Project Lab (Room STC 152) – 412 square feet

   The Student Project Lab supports the Electronic Design courses, which are our senior-level capstone design courses. Equipment in this lab varies, depending on the nature of the design project. As a minimum, the lab contains two stations, each equipped with a multimeter, power supply, oscilloscope, and computer. Several workbenches provide ample space for students to prototype their design projects.

5. Computer Labs (Room STC 163 and STC 167) – 718 and 754 square feet, respectively

   The general-purpose computer laboratories support Electronic and Computer Engineering Technology courses, as well as courses offered in other areas. Both of these rooms contain 18 computers, plus an instructor's computer and a data projector. Software available to students in these (or other labs in the building) includes:

6. Manufacturing Laboratory (Room STC 121) – 5,243 square feet

   This spacious laboratory forms the backbone of our Mechanical Engineering Technology program, but also supports design prototyping and manufacture needs for other program areas. Capabilities of particular interest to the BETB-US program are 3-D polymer printing (rapid prototyping), CNC and manual machining, sheet metal, and welding processes. The laboratory is regularly used in student design teams and student club projects, in addition to its support of courses in manufacturing methods, CNC machine processes, automated manufacturing, and machine design.

   Equipment in this laboratory includes:

   CNC Machining Equipment

   → Machining Center (CNC Mill) with 10-station automatic tool changer
   → Mastercam For Solidworks CNC programming software (for generating complex code)
   → 5 LabVolt CNC lathes and PC stations
   → 1 LabVolt CNC mill and PC station

Metal Cutting and Abrasive Equipment

→ 5 engine lathes and tooling
→ 3 vertical milling machines with digital readout
→ 5 drill presses
→ 1 combination vertical-horizontal milling machine
→ band saws: 1 horizontal, 1 vertical
→ abrasive cut-off saw
→ 1 arbor press with broaching set
→ hand tap/die set
→ assorted hand power tools: 3/8 power drills, saber saw
→ 5 bench grinders
→ disk/belt sander
→ die grinder, angle-head grinder, disc grinder (assorted hand power tools)

Metal Forming and Shearing Equipment

→ CNC plasma arc cutter with programming software
→ 1 40 ton hydraulic press
→ hydraulic press brake (bending) tool (90° and air bending)
→ manual brake (sheet metal bending)

→ hydraulic iron worker (shearing, piercing)
→ slip roll (sheet metal cylinder or ring forming)
→ manual shear
→ tubing bender

Welding Equipment

→ 3 GMAW (MIG) welders
→ 1 TMAW/SMAW (TIG/stick) welder
→ 2 225/250 Amp SMAW arc (stick) welders
→ oxyacetylene cutting/welding unit
→ spot welder

Measurement and Inspection Equipment

→ optical comparator with surface projection
→ vernier height gage
→ gage block set, plug gage set
→ 3 granite surface plates
→ 1 cast iron surface table
→ assorted (dial) indicator gages
→ bevel and toolmaker's protractors
→ sine bar
→ 3 depth micrometers
→ metric micrometers (25mm and 25 to 50mm)
→ inch micrometers, micrometer sets (1-inch to 4-inch)
→ tubing micrometer
→ inside micrometer (1.5 to 5.5 inches)
→ telescoping (hole) gage
→ small hole gage
→ radius gages

→ thread pitch gages

Robot Automation Cell

→ 6-axis Mitsubishi Industrial Robot
→ motorized pallet conveyor with pneumatic station sensors and stops
→ industrial vision inspection system
→ programmable touch screen system
→ cell control panel with
○DirectLogix 205 PLC
○24 DC power supply
○Industrial relays
○Industrial-standard DIN rail wiring connectors
→ electropneumatic directional control valve manifold system
→ miscellaneous electropneumatic components (actuators, directional control valves, sensors)

Vision System Equipment
→ Vision and lighting investigation cabinet

Other Project Equipment
→ chronograph used to measure speed of objects
→ portable air compressor and tank
→ automotive battery charger
→ variable DC power supplies
→ 3 variable AC transformers (STC 122, 153)
→ 2 electrical multitesters
→ soldering station
→ wire cutters/strippers
→ industrial labeler

7. Fluids Laboratory (Room STC 124) – 763 square feet

   This facility supports our courses in fluid power applications and fluid mechanics. In addition, In addition, students use the equipment in this room for their design projects in other courses. Items in this laboratory include:

   → LabVolt hydraulic control benchtop system
   → 12 different student-built demonstration stations
   → Automation Studio software simulation of electropneumatic and electrohydraulic systems (located in STC 119, 115, and 153 – 5 floating licenses)

8. Materials and Metallurgy Laboratory (Room STC 122) – 567 square feet

   This facility supports coursework and project investigation of physical materials and metallurgy. Items in this laboratory include:

   → 2 resistance-type heat treating furnaces
   → 1 low temperature oven

   → 1 metallurgical cut-off saw
   → 1 dual abrasive belt sander
   → 1 dual disk sander
   → 1 dual buffing/polishing station
   → 2 hand lapping fixtures
   → 6 power grinder/polisher (lapping) stations

→ chemical etching booth

→ 1 inverted binocular metallurgical microscope with digital camera adaptor
→ 3 binocular upright microscopes
→ 3 monocular microscopes
→ 2 macroscopes

→ 1 electronic mass scale, 3 balance scales

9. Mechanical Testing Laboratory (Room STC 123) – 789 square feet

   This facility supports coursework and testing of strength of materials and mechanical properties. Items in this laboratory include:

   → Universal testing machine with data acquisition system
   → Fatigue and vibration testing machine
   → 2 Rockwell hardness testers
   → 1 Brinell hardness tester
   → 1 portable hardness tester
   → torsional testing machine
   → impact testing machine with notch cutter
   → force gages
   → polariscope for photoelastic testing
   → Vishay Instrumentation to demonstrate strain gage applications

10. Engineering CAD Laboratories (Room STC 115 and 119)

    These computer laboratories provide student access to engineering software used in engineering projects. Software of particular interest to BETB-US design projects includes:

    → SolidWorks with Simulation Professional (for geometric and mechanical modeling and mechanical analysis of design projects)
    → Mastercam for Solidworks (for development of CNC machining code for complex geometries)

11. Unmanned Systems Laboratory

    The UAS lab has state-of-the-art simulators for training purposes. Its fleet of UAVs include the following:

    Aerosonde Mk 4.7(E) UAS platform from AAI (a Textron Company):
    • The Aerosonde is a fixed wing aircraft capable of launch and recovery from most any road, runway (improved and non-improved), or field. The aircraft can be launched off the top of a vehicle accelerating to 45 MPH. This newer model will be catapult launched and recovered by belly landing.
    • It is a versatile and proven platform with thousands of flight hours in theater.
    • Aircraft is currently equipped with a TASE Duo gimbal payload incorporating both EO and IR cameras.
    • The aircraft is currently integrated with the world's smallest Mode C transponder. KSU has teamed with Sagetech Inc and is testing the first experimental unit and follow up TSO'd Mode S with ADS-B capabilities.
    • The aircraft is used for Airspace Integration, UAS Avionics Research, Student training and Search and Rescue.
    • The aircraft is equipped with a C-Band analog video transmitter that can be received by any L3 ROVER system. This transmitter is planned to upgrade to a digital S or L band

with more capabilities.
• Capabilities:
– 18 hour flight duration
– ~ 8 mile operating distance on 900MHz (can be indefinite if upgraded to KUBand).
– 8 pounds of payload
– 17,000' service ceiling
– ~ 45 minute setup time to launch

Two Penguin B UAS from UAV Factory:
• Fixed wing UAS Platforms
• The Penguin B has an unleaded fuel 2-stroke engine with long endurance capabilities.
• The Penguins is currently being used for student training, airspace integration research, and Search and Rescue in the State.
• KSU modified a gimbaled digital camera system that communicates via network protocol (IEEE 802.11)
• Capabilities:
– 10 hours with reserve flight duration
– 7 miles
– 12 pound payload
– 20 minute setup time to launch
– 15000' + operating altitude

Fixed-wing UAS, the Crow from KSU:
• Fixed-wing electric UAS platform and all supporting equipment
• This is a fixed-wing UAS platform from a modified electric RC platform.
• The Crow is used for airspace integration research (specifically class D UAS operations), and student training.
• Specs:
– Cruise Speed –35 MPH
– Ceiling –10,000 ft
– Wingspan –6.5 ft
– Weight –12 lbs
– Payload –2 lbs
– Flight Duration-30 hrs

Piccolo UAS Autopilot system from Cloud Cap Technology:
• UAS Autopilot, Ground Control Station and supporting Software
• This autopilot system is top of the line and gives KSU – Salina the ability to fly both fixed wing or rotor wing UAVs.
• Currently one of the Piccolo systems is integrated into our new Aerosonde 4.7.
• Two more Piccolo systems are integrated into Crow platforms. These platforms are being used for student education regarding how to initially setup UAS autopilots, conduct Hardware in the Loop simulations, map gains files, and integrate the systems as a whole.
• This autopilot uses 900Mhz or KU band satellite for C2
• We will also be integrating a FreeWave OEM board radio for 2C2 capability.

Quad-rotor VTOL UAS, the Scout from Aeryon:
• Multi-rotor electric UAS platform and all supporting equipment
• This is a production UAS platform from a DoD supplier.
• The Scout is used for emergency response and search and rescue research (specifically rapid deployment operations), and demonstration.
• Fits into two small cases for easy mobility
• Controlled by a rugged tablet PC

• Specs:
– Cruise Speed –0 to 40 MPH
– Ceiling –15,000 ft
– Diameter –32 in
– Weight –3.5 lbs
– Payload –400 grams
– Flight Duration-20 min.

Hexa-rotor VTOL UAS, the S-800 from DJI:
• Multi-rotor electric UAS platform and all supporting equipment
• This is an off the shelf UAS platform from a recreational hobbyist supplier.
• The S-800 is used for a low cost, emergency response and search and rescue research (specifically rapid deployment operations), and student training.
• Capable of carry a variety of different camera gimbals
• Controlled by a rugged tablet PC or Remote Controller console
• Specs:
– Cruise Speed –0 to 30 MPH
– Ceiling –15,000 ft
– Diameter –46.5 in
– Weight –13.5 lbs
– Payload –5 lbs
– Flight Duration-20 min.

Quad-rotor VTOL UAS, the Phantom from DJI:
• Multi-rotor electric UAS platform and all supporting equipment
• This is an off the shelf UAS platform from a recreational hobbyist supplier.
• The Phantom is used for emergency response and search and rescue research (specifically rapid deployment operations), and demonstration.
• Fits into one small case for easy mobility
• Controlled by a simple Remote Controller console
• Carries a fixed mount GoPro camera payload
• No waypoint navigation, only GPS position hold for local VLOS operation
• Specs:
– Cruise Speed –0 to 20 MPH
– Ceiling –15,000 ft
– Diameter –14 in
– Weight –2.2 lbs
– Payload –400 grams
– Flight Duration-15 min.

Fixed-wing UAS, the Vireo from UTC Aerospace:
• Fixed-wing electric UAS platform and all supporting equipment
• This is a hand launched, rapidly deployable, fixed-wing UAS platform from a DoD supplier.
• The Vireo is used for emergency response and

search and rescue research (specifically rapid deployment operations), and demonstration.

• Specs:
– Cruise Speed –30 MPH
– Ceiling –10,000 ft.
– Wingspan – 38 in.
– Weight – 3.1 lbs.
– Payload –0.5 lb.
– Flight Duration- 1 hr.

Fixed-wing UAS, the Zephyr from KSU:

• Fixed-wing electric UAS platform and all supporting equipment
• This is a fixed-wing UAS platform from a modified electric RC platform.
• The Zephyr is used for mapping and disaster assessment research.
• Specs:
– Cruise Speed –35 MPH
– Ceiling –10,000 ft.
– Wingspan –56 in
– Weight –6 lbs.
– Payload –1 lb.
– Flight Duration- 30 min

PROGRAM COST:

There are no new equipment and facilities that have to be procured or built at this time as 65 credits in the core (out of 71) are using existing courses. A new 3 credit course being developed for the core (AVT 300 UAS Powerplant Fundamentals) will utilize the same facilities as the existing course that it is derived from (AVM 321 Powerplant Fundamentals). The two part senior project (3 credits) will utilize the teaching lab space already being used by senior projects in the engineering technology department.

College of Technology and Aviation, K-State Salina (1-7-15)

NON-EXPEDITED COURSE ADDITIONS
Courses Numbered 000-599

Department of Aviation

Primary Contact Person: Barney King, Aviation
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ADD: **AVM 101. Introduction to Aircraft Materials and Tooling Standards.** (2) Fall. Skills and techniques essential to understanding aircraft material properties and fabrication techniques. Emphasizes knowledge and practical experiences involving: shop safety, organization and human factors associated with shop practices, basic aircraft structural materials and hardware familiarization, fluid lines and fittings, hand tool selection and use, and aviation-specific dimensional inspection tools and techniques, aircraft hardware identification and applications, cleaning and corrosion control, aircraft metal selection an applications, and aircraft material inspection fundamentals. Two hours lecture and three hours lab a week.
K-State 8:
- Empirical and Quantitative Reasoning

RATIONALE: **Course fulfills and exceeds** FAR Part 147 requirements.

KS 8 RATIONALE: Students will be given a variety of tasks associated with tool and material selection and applications that must be completed in accordance with specific technical procedures and to standards that meet regulatory requirements.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 102. Aviation Regulations, Compliance and Operations.** (2) Spring. A review of the role and organizational structure of the Federal Aviation Administration (FAA) as it relates to the certification and continued airworthiness of aircraft and its operation in general, business, and commercial aviation environments. Emphasis on the privileges and limitations of certificated personnel who maintain aircraft systems in the context of the FAA regulations. Includes practical applications of aircraft weight and balance, effective completion of maintenance record entries, accurate use of graphs and charts to determine critical performance values, and the servicing, staring, ground operations, and security of aircraft. Students demonstrate the ability to read, comprehend, and apply information contained in FAA and manufacturers' aircraft maintenance specifications, data sheets, manuals, publications, and related Federal Aviation Regulations, Airworthiness Directives, and Advisory material. Includes laboratory activities involving student flight of aircraft. Two hours lecture and two hours lab a week.
K-State 8:
- Ethical Reasoning and Responsibility

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will be immersed in technical and legal documentation, required record entries and regulatory requirements associated with Federal Aviation Regulations. The student will be required to apply this knowledge in realistic scenarios and lab projects that require effective judgment and compliance to industry and regulatory standards.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 201. Aircraft Metallic Primary Structures.** (3) Fall. A study of aircraft metal primary structures and materials commonly used in the design and construction of airframes including fuselages, wings, and control surfaces. Students gain theoretical knowledge and practical experience associated with the structural properties of materials used in the manufacturing process as well as the methods used to fabricate and repair those structures. Students practice structural metal repairs according to FAA approved data and manufacturer's recommended procedures. Skills in aluminum sheet metal fabrication and repairs are stressed. Two hours lecture and four hours lab a week. Pr.: AVM 101 and MET 121.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

RATIONALE: **Course fulfills and exceeds** FAR Part 147 requirements.

KS 8 RATIONALE: Students will learn about materials and their properties associated with aircraft structures and how those structures behave in flight under aerodynamic loads. Lab projects require understanding and application of blue prints and processes necessary to fabricate and repair metal structures to specific design requirements.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 203. Aircraft Environmental and Fire Protection Systems.** (3) Spring. An in-depth study in small and large air vehicle environmental and fire detection and extinguishing systems. Emphasis on cabin pressurization and temperature climate control, supplemental oxygen, airframe and propulsion fire detection and extinguishing systems, crew visibility enhancement, and air toxicity detection. Students gain extensive practical experiences related to system design, operation, inspection, maintenance methodology, and fault analysis for both airframe and powerplant systems using manufacturer's technical instructions. Three hours lecture and four hours lab a week.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

RATIONALE: **Course fulfills and exceeds** FAR Part 147 requirements.

KS 8 RATIONALE: Students will learn about aircraft environmental control systems and how human life support processes are sustained in a high altitude environment. They will also learn about characteristics and sources of fire within an aircraft and how systems are designed and operated to suppress them in accordance with technical data.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 205. Aircraft Landing Gear and Fluid Power Systems.** (3) Spring. A study of the design and application of compressible and incompressible fluid power systems used in both simple and complex aircraft flight control, auxiliary, emergency, and landing gear systems. Emphasis on landing gear and deceleration systems to include components, structures, operation, and fault analysis of shock struts, position and warning, single and multiple disk brakes, anti-skid, wheel assemblies, retraction and extension systems and methods of emergency landing gear extension. Topics include landing gear door operation and sequencing. Students practice inspection, servicing, repair and troubleshooting of key fluid power and landing gear systems necessary to ensure continued airworthiness of these systems. Three hours lecture and four hours lab a week.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will be removing, disassembling, inspecting, and performing repairs to hydraulic and landing gear system components in accordance with manufacturer's technical data. Student will have to understand and select specific hydraulic fluid and seals based upon required material properties and operational design requirements.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 207. Aircraft Electrical Systems.** (3) Spring. A review and advanced study of DC/AC circuits, and laws relating to circuit analysis and a detailed study of measuring instruments applied to aircraft. Study of relays, switches, alternators, and other devices encountered in circuit analysis, troubleshooting, and repair. Theory of operation and fault isolation on solid-state devices in aircraft circuitry. Inspection of aircraft electrical systems, including wire inspections and the types of repairs allowed using appropriate technical manuals. A study of battery, magneto high and low tension ignition systems, including turbine igniters. Also a study of powerplant starting and charging systems and related components. Emphasis on effective fault diagnostics, repair, and timing of aircraft ignition systems. Three hours lecture and six hours lab a week. Pr.: ECET 100.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

RATIONALE: **Course fulfills and exceeds** FAR Part 147 requirements.

KS 8 RATIONALE: Students are required to have a mastery of electron theory and characteristics and application of voltage and current flow necessary to operate, repair and troubleshoot electrical components found on aircraft.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 214. Introduction to Aircraft Propulsion Theory, Design and Systems.** (3) Fall. A broad introductory study in the theory of operation of heat engines utilizing principles of the Otto and Brayton cycles found in aircraft reciprocating and gas turbine powerplants. Students gain a solid understanding of the basic

principles of the construction, design, lubrication, cooling, and exhaust systems, including maintenance practices of reciprocating and gas turbine powerplants installed in aircraft. Thrust reverser operation of gas turbine engines is also included. The course has a practical component that includes the inspection, fault analysis, servicing and repair of key engines systems covered in the course. Three hours lecture and three hours lab a week.
K-State 8:
- Ethical Reasoning and Responsibility
- Natural and Physical Science

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will be required to understand and apply thermodynamic theory associated with Brayton and Otto Cycles and the systems used for reciprocating and turbine engines. Classroom and lab exercises will involve the analysis of component operation for these systems and determine if components are in an airworthy condition for return to service in accordance with manufacture's technical data and regulatory requirements.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 216. Aircraft Propulsion Drive Systems.** (3) Spring. A detail study of aircraft propulsion drive systems that convert engine power to thrust necessary for sustained flight. Drive systems include propellers, unducted fans (open rotor), and rotor-blades found on small, medium, and large fixed, and rotary-wing aircraft. Emphasis on fixed and controllable-pitch propellers applications as well as rotor-blades, and rotor-hubs assemblies found on helicopters. Topics include theory of operation, dynamic and static balancing, vibration analysis, design characteristics, materials, and maintenance practices. Students practice inspection, servicing, balance, maintenance and repair of propeller and rotor systems. Three hours lecture and four hours lab a week.
K-State 8:
- Empirical and Quantitative Reasoning

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will remove, install, inspect, repair and balance propellers and other rotating systems in accordance with manufacturer's technical data and make record entries in accordance with regulatory requirements.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 301. Advanced Reciprocating Powerplant Technology.** (3) Fall. Advanced study in the theory, operation, construction, design, and maintenance of reciprocating powerplants installed in aircraft. Topics include emerging trends in the design and application of reciprocating heat engines including aviation diesel engines. Emphasize the disassembly and inspection of modern reciprocating engines found in single and twin engine aircraft using visual, dimensional and non-destructive techniques. Maintenance tasks include engine removal, installation and troubleshooting to an airworthy standard. Three hours lecture and six hours lab a week. Pr.: AVM 214.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: For reciprocating powerplants, students will disassemble, inspect and make repair recommendations based upon approved technical data and in accordance with regulatory requirements. Students will understand and apply advanced operational characteristics of the engine that support engine performance design criteria in flight.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 303. Introduction to Aircraft Composite Structures.** (3) Spring. Introduces composite materials used in the design and production of legacy and modern aircraft. Emphasizes material characteristics, fabrication, inspection, and repair of non-metallic primary and secondary structures and materials including fabric, wood, fiberglass, plastics, honeycomb, and others using manufacturer's instructions. Students practice the selection, installation and removal of special fasteners used in these structures, and to appropriately and economically apply protective coatings. Modern composite structure fabrication, inspection and repair are emphasized within laboratory exercises. Two hours lecture and four hours lab a week.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Sciences

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will understand the properties of a variety of non-metallic materials used in aircraft structures and fabricate and repair sample components in accordance with specific manufacturer’s procedures and design criteria.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 304. Aircraft Fuel Management and Metering Systems.** (3) Spring. A comprehensive study of airframe and propulsion engine fuel systems associated with fuel storage, management, transfer and metering as applied to both reciprocating and turbine powered aircraft. Lecture topics include systems operation, maintenance methods, procedures and safety precautions associated with aircraft fueling and defueling for over-the-wing and pressure fueling systems. Fuel quantity, pressure and temperature indicating and warning systems, fuel dump, and detail reciprocating and turbine engine fuel metering systems including carburetor overhaul, electronic engine fuel controls (EEC and FADEC) are covered. Students practice the inspection, check, service, troubleshooting and repair of the various fuel systems found on board the aircraft to a level that assures continued airworthiness and safety. Two hours lecture and six hours of lab a week. Pr.: AVM 214.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will remove, install, inspect, and troubleshoot fuel storage, transfer and metering systems in accordance with manufacturer’s technical data and regulatory standards. Fuel properties, characteristics, and blending methods will

be studied for fuel selection requirements and applications in an aviation operational environment.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 305. Introduction to Aircraft Avionics and Instrument Systems.** (3) Fall. Introduces basic flight instrument systems and navigation/communication electronic aids installed on General Aviation aircraft that weigh less than 12,500 lbs. The course includes both lecture and practical applications of these systems to include operation, inspection, fault analysis and repair. The student will be exposed to mechanical and electronic airframe and powerplant indication equipment including flight instrument systems for heading, speed, altitude, temperature, pressure, RPM, and position indicating. Emphasis will be placed on NAV/COMM systems found in modern light aircraft and associated antenna applications and installation methods. Pitot/Static instruments and systems are also discussed. Students practice inspection, service, fault analysis, installation and repair of these systems. Three hours lecture and three hours lab a week. Pr.: ECET 100.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will apply understanding of basic electronics in an operational environment for navigation, communication, avionics, and other performance measuring instruments. Specific technical data and wiring diagrams will be followed to effectively install, repair and troubleshoot these systems to an airworthy standard.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 306. Rotary and Fixed Wing Aircraft Design and Assembly.** (3) Spring. A detailed study of the purpose of fixed-wing and rotary-wing aircraft designs and aerodynamic characteristics, their construction methods and assembly procedures. The course provides an insight critical maintenance tasks performed that impact the safe operation of the aircraft as well as exposure to the manufacture and assembly of aircraft. Students practice the rigging, assembly, jacking, weighing, and balancing of aircraft and flight control surfaces according to manufacturer's technical manuals; and making accurate record entries for tasks performed in accordance with FARs. Three hours lecture and four hours lab a week. Pr.: AVM 101 and MET 111.
K-State 8:
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will disassemble, inspect, weigh, balance, and install critical components necessary for safe flight in accordance with manufacturer’s technical data and design criteria. Effective decision making associated with analysis of data and component position and condition will be performed to ensure compliance with manufacture’s and regulatory requirements for airworthiness.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 401. Aircraft Airworthiness, Conformity, and Quality Assurance.** (3) Spring. A capstone course requiring students to tie all previous coursework associated with airframe and powerplant systems maintenance and operations together to perform an effective and safe inspection of the entire aircraft in compliance with manufacturer's recommendations and FAR requirements. This course emphasizes practical experiences necessary to inspect the aircraft for continued airworthiness. Aircraft is weighed and conformity inspections are performed. All work and inspection status is recorded and documented using approved maintenance entries. Part 145 operational requirements are included in the course experience and work team scheduling and coordination is emphasized. Three hours lecture and four hours lab a week. Pr.: Senior standing and instructor consent.
K-State 8:
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will inspect the condition of aircraft systems and components for compliance to manufacture's requirements and regulatory standards for safe operation and condition necessary for continued airworthiness. Student must determine if the aircraft is in a condition safe for flight and that all documentation has been properly completed.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 402. Advanced Gas Turbine Powerplant Technology.** (3) Fall. Advanced study in the theory, operation, construction, design, and maintenance of small and large gas turbine powerplants installed in corporate and transport category aircraft. Topics include emerging trends in the design and application of gas turbine engines as well as engine test cell operations. Practical experiences emphasize the disassembly and inspection of small turboprop/turboshaft engines commonly found on turbine twin-engine aircraft and helicopters. Maintenance tasks include engine removal, installation and troubleshooting to an airworthy standard. This course has a research and presentation requirement. Three hours lecture and six hours lab a week. Pr.: AVM 214.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: For gas turbine powerplants, students will disassemble, inspect and make repair recommendations based upon approved data and in accordance with regulatory requirements. Students will understand and apply advanced operational characteristics of the engine that support engine performance design criteria for flight.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

ADD: **AVM 403. Advanced Aircraft Avionics and Instrument Systems.** (2) Fall. Advanced study of flight instrument systems and navigation/communication

electronic aids installed on large Corporate and Transport Category aircraft. The course includes both lecture and practical applications of these systems to include operation, inspection, fault analysis and repair. The course includes flight management systems, and GPWS, TAWS, laser gyro and advanced Comm/Nav applications. Two hours lecture and three hours lab a week. Pr.: AVM 305.
K-State 8:
- Natural and Physical Science

RATIONALE: Course fulfills and exceeds FAR Part 147 requirements.

KS 8 RATIONALE: Students will continue to build upon their experiences in basic electronics and instrument systems to install, repair, troubleshoot and operationally check advanced avionics and instrument systems found on larger aircraft. Student will be required to apply principles of magnetism, discrete optical frequencies, and global positioning systems to determine system functional integrity.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

NON-EXPEDITED COURSE MODIFICATIONS
Courses Numbered 000-599

Department of Aviation

Primary Contact Person: Barney King, Aviation
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FROM: **AVT 405. Non-Destructive Testing.** ~~(3) Fall~~. Introduction to non-destructive testing ~~and inspection methods in use in the aviation industry. The course will cover the following types of inspection methods: visual, x-ray (radiographic) magnetic particle, ultrasonic, dye penetrant~~. Pr.: ~~AVM 112 and AVM 261~~; or MET 231 and MET 245.
K-State 8:
- Empirical and Quantitative Reasoning
- ~~Ethical Reasoning and Responsibility~~

TO: **AVT 405. Introduction to Non-destructive Testing.** (2) Spring. Introduction to non-destructive testing (NDT) and inspection methods commonly used to detect material anomalies in diverse industries. NDT methods used in aviation/mechanical structures and components is emphasized. Students gain practice using Visual, x-ray (radiographic, magnetic particle, ultra-sound, eddy current and dye penetrant), NDT methods and techniques on test samples. Serviceability of the components is determined using approved manufacturers service limits. Two hours lecture and three hours lab a week. Pr.: MET 121, or MET 231 and MET 245.
K-State 8:
- Empirical and Quantitative Reasoning

RATIONALE: AVT 405 is being added to fulfill FAR Part 147 curriculum requirements and to meet expressed recommendations by Industry Advisory Board to develop student competencies in this topic. Credit hour assignment is consistent with methodology used in new AVM curriculum.

IMPACT: Change and course requirements for aviation students has been agreed to by Dept. Head Dr. Mark Jackson and Dr. Raju Dandu. Course enhances curriculum integration opportunities between Aviation and Engineering Technology.

EFFECTIVE DATE: Fall 2015

NON-EXPEDITED UNDERGRADUATE CERTIFICATE DELETION:

DROP: **Airframe and Powerplant Certificate (CAPC)**

RATIONALE: This option has had chronic low participation and has a negative impact on the degree option program of study. Course requirements (AVM 141) differ between the certificate only and the degree option programs. Intent is to maintain collegiate-level standards and to add engineering-level learning objectives to the degree option curriculum.

IMPACT: No impact on any other department. KSU will remain as an FAA approved Authorized Maintenance Technician School under FAR Part 147. The degree option curriculum will retain those courses that are required for eligibility to earn the FAA Airframe & Powerplant certificate.

EFFECTIVE DATE: Fall 2015

DROP: **Unmanned Aircraft Systems Operations Certificate (CUASOC)**

RATIONALE: The certificate is to be replaced by a five course UAS Minor having two areas of focus.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

NON-EXPEDITED UNDERGRADUATE CURRICULUM CHANGE

Department of Aviation
Bachelor of Science in Aeronautical Technology, Aviation Maintenance Management (BATN-AM)

CURRENT:
Aviation Maintenance Management Option, 126 credit hours
Freshman
Fall 1st Semester (~~17 credit hours~~)

~~AVM 111~~	~~Basic Aircraft Electricity~~	~~4~~
~~AVM 131~~	~~Introduction to Aviation~~	~~4~~
~~AVM 151~~	~~Aviation Fundamentals~~	~~3~~
ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3

Spring 2nd Semester (~~15 credit hours~~)

~~AVM 112~~	~~Aircraft Welding~~	~~2~~
~~AVM 132~~	~~Aircraft Fluid Power~~	~~3~~
~~AVM 142~~	~~Airframe Systems~~	~~4~~
AVT 100	Introduction to Aviation	3
~~MATH 150~~	~~Plane Trigonometry~~	~~3~~

Sophomore
Fall 3rd Semester (~~15 credit hours~~)

~~AVM 121~~	~~Aircraft Drawings~~	~~1~~
~~AVM 231~~	~~Aircraft Finish and Fabrication~~	~~3~~
~~AVM 321~~	~~Powerplant Fundamentals~~	~~4~~
~~AVM 351~~	~~Powerplant Ignition and Electrical Systems~~	~~3~~
~~PHYS 113~~	~~General Physics I~~	~~4~~

Spring 4th Semester (~~17 credit hours~~)

~~AVM 152~~	~~Airframe Structures and Repair~~	~~5~~
~~AVM 162~~	~~Airframe Electrical Systems~~	~~4~~
~~AVM 312~~	~~Aircraft Propellers~~	~~2~~
~~COMM 106~~	~~Public Speaking~~	~~3~~
	~~Computer Elective~~	~~3~~

Junior
Fall 5th Semester (~~17 credit hours~~)

~~AVM 241~~	~~Navigational Aids and Communication Systems~~	~~3~~
~~AVM 261~~	~~Aircraft Inspection and Assembly~~	~~5~~
~~ENGL 200~~	~~Expository Writing II~~	~~3~~
MATH 205	General Calculus and Linear Algebra	3
	~~Natural Science Elective~~	~~3~~

Spring 6th Semester (~~18 credit hours~~)

~~AVM 322~~	~~Powerplant Operations and Troubleshooting~~	~~3~~
~~AVM 332~~	~~Gas Turbine Powerplant~~	~~5~~
~~AVM 342~~	~~Powerplant Induction and Fuel Systems~~	~~4~~
~~AVM 352~~	~~Powerplant Overhaul~~	~~3~~
	~~Humanities/Social Science/Business/ Elective~~	~~3~~

Senior
Fall 7th Semester (~~15 credit hours~~)

~~AVT 400~~	~~Aviation Maintenance Management~~	~~3~~
~~BUS 315~~	~~Supervisory Management~~	~~3~~
~~COMM 311~~	~~Business and Professional Speaking~~	~~3~~
	~~Aviation Elective~~	~~3~~
	~~Aviation Elective*~~	~~3~~

Spring 8th Semester (12 credit hours)

~~ENGL 302~~	~~Technical Writing~~	~~3~~
	~~Aviation Elective*~~	~~3~~
	~~Humanities/Business/Social Science Elective~~	~~3~~
	~~Humanities/Social Science Elective*~~	~~1~~

*Marked electives must be upper division courses, 300 and above.

PROPOSED:
Aviation Maintenance Management Option, 124 credit hours
Freshman
Fall 1st Semester (14 credit hours)

AVM 101	Introduction to Aircraft Materials and Tooling Standards	2
ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3
MET 111	Technical Graphics	3
MET 121	Manufacturing Methods	3

Spring 2nd Semester (14 credit hours)

AVM 102	Aviation Regulations, Compliance and Operations	2
AVM 203	Aircraft Environmental and Fire Protection Systems	3
AVM 205	Aircraft Landing Gear and Fluid Power Systems	3
AVT 100	Introduction to Aviation	3
COMM 106	Public Speaking I	3

Sophomore
Fall 3rd Semester (16 credit hours)

AVM 201	Aircraft Metallic Primary Structures	3
AVM 214	Introduction to Aircraft Propulsion, Theory, Design and Systems	3
ECET 100	Basic Electronics	4
ENGL 200	Expository Writing II	3
MATH 150	Plane Trigonometry	3

Spring 4th Semester (16 credit hours)

AVM 207	Aircraft Electrical Systems	3
AVM 216	Aircraft Propulsion Drive Systems	3
AVM 303	Introduction to Aircraft Composite Structures	3
ENGL 302	Technical Writing	3
PHYS 113	General Physics I	4

Junior
Fall 5th Semester (18 credit hours)

AVM 301	Advanced Reciprocating Powerplant Technology	3
AVM 305	Introduction to Aircraft Avionics and Instrument Systems	3
MATH 205	General Calculus and Linear Algebra	3
STAT 325	Introduction to Statistics	3
	Aviation Safety Elective	3
	Area of Concentration Elective	3

Spring 6th Semester (15 credit hours)

AVM 304	Aircraft Fuel Management and Metering Systems	3
AVM 306	Rotary and Fixed Wing Aircraft Design and Assembly	3
BUS 315	Supervisory Management	3
PHILO 390	Business Ethics	3
	Area of Concentration Elective	3

Senior
Fall 7th Semester (14 credit hours)

AVM 402	Advanced Gas Turbine Powerplant Technology	3
AVM 403	Advanced Aircraft Avionics and Instrument Systems	2
AVT 340	Human Factors in Aviation	3
AVT 410	Aviation Maintenance Management	3
	-OR-	

AVT 446	Corporate and Business Aviation Management	3
	Area of Concentration Elective	3

Spring 8th Semester (17 credit hours)

AVM 401	Aircraft Airworthiness, Conformity, and Quality Assurance	3
AVT 405	Introduction to Non-Destructive Testing	2
AVT 445	Aviation Law	3
	Area of Concentration Elective*	3
	Area of Concentration Elective*	3

CULMINATING EXPERIENCE

Choose one of the following

AVT 497	Senior Project	3
COT 495	Industrial Internship	3

*Marked electives must be upper division courses, 300 and above.

AREA OF CONCENTRATION ELECTIVE COURSES (15 credit hours)

Choose 15 credit hours from the following list:

AVT 242	Aviation Meteorology	4
AVT 250	Safety and Security of Airport Ground Operations	3
**AVT 315	Advanced Avionics	3
AVT 316	AET and FCC Training	1
AVT 317	Composites I	3
AVT 327	Avionics Repair	3
AVT 330	Avionics Troubleshooting	4
AVT 340	Human Factors in Aviation	3
AVT 386	Aerodynamics	3
AVT 400	Composites II	4
AVT 417	Composites III	3
AVT 420	Aviation Accident Investigation	3
AVT 428	Avionics Installation	3
AVT 429	Avionics Maintenance	3
AVT 430	Advanced Avionics Installation	4
AVT 450	Aviation Safety Management	3
AVT 451	System Safety	3
BUS 251	Financial Accounting	3
BUS 252	Managerial Accounting	3
***COT 721	Reliability Centered Maintenance of Plant Equipment	3
**FINAN 450	Principles of Finance	3
MANGT 420	Management Concepts	3
MANGT 421	Introduction to Operations Management	3
MANGT 530	Industrial and Labor Relations	3
MET 117	Mechanical Detailing	3
MET 121	Manufacturing Methods	3
MET 125	CNC Machining Processes	2
MET 230	Automated Manufacturing Systems	3
**MET 231	Physical Materials and Metallurgy	3
MET 252	Fluid Power Technology	3
**MKTG 400	Introduction to Marketing	3
MKTG 542	Professional Selling	3
PPIL 111	Private Pilot	4
PPIL 112	Professional Instrument Pilot	3
PPIL 113	Private Pilot Flight Lab	1
PPIL 114	Professional Instrument Pilot Flight Lab I	1

Other programming electives may be used if approved by the BATN-AM program coordinator. Selection of some Areas of Concentration may result in an increase in the number of course credit hours taken above the minimum degree option graduation credit hour requirements.

*** Courses require additional completion of course pre-requisites or co-requisites.*

****Courses at 600+ level will require the approval of the graduate program director.*

AVIATION SAFETY ELECTIVE COURSES (3 credit hours)
Choose 3 credit hours from the following list:

AVT 250	Safety and Security of Airport Ground Operations	3
AVT 420	Aviation Accident Investigation	3
AVT 450	Aviation Safety Management	3
AVT 451	System Safety	3

RATIONALE: The Vision 2025 strategy for the degree option Aviation Maintenance Management includes the objective "Improve the Curriculum and Achieve National Accreditation" with the goal to improve program enrollment and national recognition. To achieve this requires the curriculum to be revised in a manner that fulfills FAA Part 147 requirements while at the same time increasing collegiate-level curricula rigor to meet the constant evolving regulatory, safety, technology, services, and business needs of the aerospace industry. Direct and indirect industry feedback has demonstrated the benefits of the program progressing towards national accreditation. The curricular updates improve integration and participation of students between aviation and engineering technology degree option courses and enhance the blending of curricula, equipment, and facilities within shared technologies. Synergies associated with research opportunities will also be enhanced.

IMPACT: Engineering Technology and Aviation are impacted by this proposal.

EFFECTIVE DATE: Fall 2015

Bachelor of Science in Aeronautical Technology, Avionics Systems and Management option (BATN-AV)

CURRENT: Avionics Option, ~~124~~ credit hours

Freshman

Fall semester (14 credit hours)

~~AVM 131~~	~~Aircraft Standards~~	~~4~~
ECET 100	Basic Electronics	4
ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3

Spring semester (12 credit hours)

AVT 100	Introduction to Aviation	3
COMM 106	Public Speaking I	3
ECET 101	Direct Current Circuits	3
MATH 150	Plane Trigonometry	3

Sophomore

Fall semester (18 credit hours)

~~AVM 241~~	~~Navigational Aids and Communication Systems~~	~~3~~
~~or~~		
~~AVM 242~~	~~Navigational Aids and Communication Systems for Avionics~~	~~3~~
ECET 201	Alternating Current Circuits	4
ECET 250	Digital Logic	4
MATH 205	General Calculus and Linear Algebra	3
PHYS 113	General Physics I	4

Spring semester (16 credit hours)

~~AVM 162~~	~~Airframe Electrical Systems~~	~~4~~
ENGL 200	Expository Writing II	3
	Aviation/Electronics Elective	3
	Humanities/Social Science Elective	3
	Natural Science Elective	3

Junior

Fall semester (16 credit hours)

AVT 315	Advanced Avionics	3
AVT 317	Composites I	3
AVT 327	Avionics Repair	3
	*Aviation Elective	3
	Electronics Elective	4

Spring 6th semester – 16 credit hours

AVT 330	Avionics Troubleshooting	4
~~BUS 315~~	~~Supervisory Management~~	~~3~~
COMM 311	Business and Professional Speaking	3
	*Humanities/Business/Social Science Elective.	3
	Humanities/Social Science Elective	3

Senior

Fall 7th semester – 16 credit hours

AVT 410	Aviation Maintenance Management	3
AVT 430	Advanced Avionics Installation	4
ENGL 302	Technical Writing	3
	Aviation/Electronics elective	3
	Aviation/Electronics elective	3

Spring 8th semester – 16 credit hours

~~AVT 428~~	~~Avionics Installation~~	~~3~~
AVT 429	Avionics Maintenance	3
	Aviation Elective	4
	*Aviation/Electronics Elective	3
	*Humanities/Business/Social Science Elective.	3

*Marked electives must be upper-level courses, 300 and above.

PROPOSED: Avionics Option, <u>125</u> credit hours

Freshman

Fall semester (12 credit hours)

<u>AVM 101</u>	<u>Introduction to Aircraft Materials and Tooling Standards</u>	<u>2</u>
ECET 100	Basic Electronics	4
ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3

Spring semester (14 credit hours)

<u>AVM 102</u>	<u>Aviation Regulations, Compliance and Operations</u>	<u>2</u>
AVT 100	Introduction to Aviation	3
COMM 106	Public Speaking I	3
ECET 101	Direct Current Circuits	3
MATH 150	Plane Trigonometry	3

Sophomore

Fall semester (18 credit hours)

<u>AVM 305</u>	<u>Introduction to Aircraft Avionics and Instrument Systems</u>	<u>3</u>
ECET 201	Alternating Current Circuits	4
ECET 250	Digital Logic	4
MATH 205	General Calculus and Linear Algebra	3
PHYS 113	General Physics I	4

Spring semester (15 credit hours)

<u>AVM 207</u>	<u>Aircraft Electrical Systems</u>	<u>3</u>
ENGL 200	Expository Writing II	3
	Aviation/Electronics Elective	3
	Humanities/Social Science Elective	3
	Natural Science Elective	3

Junior

Fall semester (18 credit hours)

<u>AVM 403</u>	<u>Advanced Aircraft Avionics and Instrument Systems</u>	<u>2</u>
AVT 315	Advanced Avionics	3
AVT 317	Composites I	3
AVT 327	Avionics Repair	3
	*Aviation Elective	3
	Electronics Elective	4

Spring semester (16 credit hours)

AVT 330	Avionics Troubleshooting	4
<u>AVT 428</u>	<u>Avionics Installation</u>	<u>3</u>
COMM 311	Business and Professional Speaking	3
	*Humanities/Business/Social Science Elective	3
	Humanities/Social Science Elective	3

Senior

Fall semester (16 credit hours)

AVT 410	Aviation Maintenance Management	3
AVT 430	Advanced Avionics Installation	4
ENGL 302	Technical Writing	3
	Aviation/Electronics elective	3
	Aviation/Electronics elective	3

Spring semester (16 credit hours)

AVT 429	Avionics Maintenance	3
<u>BUS 315</u>	<u>Supervisory Management</u>	<u>3</u>
	Aviation Elective	4
	*Aviation/Electronics Elective	3
	*Humanities/Business/Social Science Elective	3

*Marked electives must be upper-level courses, 300 and above.

RATIONALE: The purpose of this change is to adjust AVT 428 and AVT 429 to reflect correct term offerings. It incorporates changes in the AVM course numbers due to changes in that option. Changes in the AVM courses caused the hours in the degree to change.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

Department of Aviation

Bachelor of Science in Aeronautical Technology, Unmanned Aircraft Systems Option (BATN-US)

CURRENT: 127 credit hours

Freshman

Fall semester (18 credit hours)

AVT 100	Introduction to Aviation	3
ECET 100	Basic Electronics	4
ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3
PPIL 111	Private Pilot	4
PPIL 113	Private Pilot Flight Lab	1

Spring semester (17 credit hours)

AVT 242	Aviation Meteorology	4
AVT 270	Introduction to Unmanned Aircraft Systems	3
COMM 106	Public Speaking I	3
MATH 150	Plane Trigonometry	3
PPIL 112	Professional Instrument Pilot	3
PPIL 114	Professional Instrument Pilot Flight Lab	1

Sophomore

Fall semester (16 credit hours)

AVT 317	Composites I	3
AVT 370	UAS Design	3
ENGL 200	Expository Writing II	3
MATH 205	General Calculus and Linear Algebra	3
PHYS 113	General Physics I	4

Spring semester (15 credit hours)

AVT 340	Human Factors in Aviation	3
AVT 386	Aerodynamics	3
ECET 101	Direct Current Circuits	3
ENGL 302	Technical Writing	3
PHILO 105	Introduction to Critical Thinking	3

Junior

Fall semester (15 credit hours)

~~AVM 242~~	~~Navigational Aids and Communication Systems for Avionics~~	~~3~~
AVT 327	Avionics Repair	3
ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
	Computer Elective	3

Spring semester (16 credit hours)

AVT 460	UAS Mission Planning and Operations	3
BUS 315	Supervisory Management	3
CMST 250	Networking I	3
ECET 110	Semiconductor Electronics	4
MKTG 400	Introduction to Marketing	3

Senior

Fall semester (15 credit hours)

AVT 470	UAS Flight and Data Acquisition Lab	3
STAT 325	Introduction to Statistics	3
	~~Aviation/Computer Elective~~	~~3~~
	Aviation/Electronics Elective*	3
	*Humanities/Soc Science/Business Elective	3

Spring semester (15 credit hours)

~~AVT 450~~	~~Aviation Safety Management~~	~~3~~
AVT 497	Senior Project	3
	*Aviation Elective	3
	*Humanities/Social Science Elective	3
	Natural Science Elective	3

*Marked electives must be upper-level courses, 300 and above.

PROPOSED: **127 credit hours**

Freshman

Fall semester (18 credit hours)

AVT 100	Introduction to Aviation	3
ECET 100	Basic Electronics	4
ENGL 100	Expository Writing I	3
MATH 100	College Algebra	3
PPIL 111	Private Pilot	4
PPIL 113	Private Pilot Flight Lab	1

Spring semester (17 credit hours)

AVT 242	Aviation Meteorology	4
AVT 270	Introduction to Unmanned Aircraft Systems	3
COMM 106	Public Speaking I	3
MATH 150	Plane Trigonometry	3
PPIL 112	Professional Instrument Pilot	3
PPIL 114	Professional Instrument Pilot Flight Lab	1

Sophomore

Fall semester (16 credit hours)

AVT 317	Composites I	3
AVT 370	UAS Design	3
ENGL 200	Expository Writing II	3
MATH 205	General Calculus and Linear Algebra	3
PHYS 113	General Physics I	4

Spring semester (15 credit hours)

AVT 340	Human Factors in Aviation	3
AVT 386	Aerodynamics	3
ECET 101	Direct Current Circuits	3
ENGL 302	Technical Writing	3
PHILO 105	Introduction to Critical Thinking	3

Junior

Fall semester (15 credit hours)

AVM 305	Introduction to Aircraft Avionics and Instrument Systems	3
AVT 327	Avionics Repair	3
ECON 110	Principles of Macroeconomics	3
PSYCH 110	General Psychology	3
	Computer Elective	3

Spring semester (16 credit hours)

AVT 460	UAS Mission Planning and Operations	3
BUS 315	Supervisory Management	3
CMST 250	Networking I	3
ECET 110	Semiconductor Electronics	4
MKTG 400	Introduction to Marketing	3

Senior

Fall semester (15 credit hours)

AVT 450	Aviation Safety Management	3
AVT 470	UAS Flight and Data Acquisition Lab	3
STAT 325	Introduction to Statistics	3
	*Aviation/Electronics Elective	3
	*Humanities/Soc Science/Business Elective	3

Spring semester (15 credit hours)

AVT 497	Senior Project	3
	*Aviation Elective	3
	Aviation/Computer Elective	3
	*Humanities/Social Science Elective	3
	Natural Science Elective	3

*Marked electives must be upper-level courses, 300 and above.

RATIONALE:	The purpose of these modifications is to reflect revision of course title and description changes as well as correcting semester offering.
IMPACT:	No impact on any other department.
EFFECTIVE DATE:	Fall 2015

Department of Arts, Sciences and Business
Bachelor of Science in Technology Management (BTCMG)

Primary Contact Person: Don Von Bergen, Department Head
Phone: 785-826-2696
Email: dvb@ksu.edu

CURRENT: Technology Management, ~~124~~ credit hours

Area of Concentration (39-~~43~~ credit hours)

~~The block of technology courses must demonstrate a breadth and depth of course work in one area of concentration. Courses accepted for transfer to K-State are college-level and academic in nature. Courses not accepted for transfer in technology concentration include remedial courses, continuing education units, business courses, and personal-interest courses.~~

Arts and Sciences (~~54-58~~ credit hours)

Communications (~~14~~-15 credit hours)

~~**Written**~~

ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL 302	Technical Writing	3

~~**Oral**~~

~~COMM 105 Public Speaking IA 2~~
~~or~~
COMM 106 Public Speaking I 3
~~COMM 311 Business and Professional Speaking 3~~

Quantitative (15 credit hours)

~~CMST 108 PC Desktop Software 3~~
MATH 100 College Algebra 3
MATH 205 General Calculus and Linear Algebra 3
~~or~~
~~MATH 220 Analytic Geometry and Calculus I 4~~
STAT 325 Introduction to Statistics 3
Computer Elective 3

Natural Science (7 credit hours)

~~One lab course required. Choose two natural science elective courses (including one lab) from the following list:~~

~~BIOCH – All courses~~
~~BIOL – All courses~~
~~CHM – All courses~~
~~GEOL – All courses~~
~~PHYS – All courses~~

Social sciences (12 credit hours)

ECON 110	Principles of Macroeconomics	3
ECON 120	Principles of Microeconomics	3
	Social Science Electives	3
	Social Science Electives	3

Humanities (6 credit hours)

Business and management (27 credit hours)

BUS 251	Financial Accounting	3
BUS 252	Managerial Accounting	3
BUS 315	Supervisory Management	3
MANGT 366	Information Technology for Business	3
MANGT 420	Management Concepts	3

Choose 12 credit hours from the following:

~~BUS 320 Total Quality Management for Technology 3~~
FINAN 450 Principles of Finance 3

PROPOSED: Technology Management, 121 credit hours

Area of Concentration (39 credit hours)

This block of courses must demonstrate a breadth of course work in one area of concentration other than business. Courses accepted for transfer to K-State must be academic college-level courses.

Arts and Sciences (55 credit hours)

Communications (15 credit hours)

COMM 106	Public Speaking I	3
ENGL 100	Expository Writing I	3
ENGL 200	Expository Writing II	3
ENGL 302	Technical Writing	3
	*Communication elective	3

Quantitative (15 credit hours)

MATH 100	College Algebra	3
MATH 205	General Calculus and Linear Algebra	3
STAT 325	Introduction to Statistics	3
	Computer Elective	3
	Computer Elective	3

Natural Science (7 credit hours)

Choose two natural science elective courses. One course must include a lab component.

Social sciences (12 credit hours)

ECON 110	Principles of Macroeconomics	3
ECON 120	Principles of Microeconomics	3
	Social Science Elective	3
	Social Science Elective	3

Humanities (6 credit hours)

Business and management (27 credit hours)

BUS 251	Financial Accounting	3
BUS 252	Managerial Accounting	3
BUS 315	Supervisory Management	3
MANGT 366	Information Technology for Business	3
MANGT 420	Management Concepts	3

Choose 12 credit hours from the following:

BUS 410	Managerial and Project Economics	3
FINAN 450	Principles of Finance	3
MANGT 390	Business Law	3
MANGT 421	Introduction to Operations Management	3
MANGT 530	Industrial and Labor Relations	3
MANGT 531	Human Resources Management	3
MKTG 400	Introduction to Marketing	3
MKTG 542	Fundamentals of Professional Selling	3

*Marked electives must be upper-level courses, 300 and above.

MANGT 390	Business Law	3
MANGT 421	Introduction to Operations Management	3
MANGT 530	Industrial and Labor Relations	3
~~MANGT 595~~	~~Business Strategy~~	~~3~~
~~MANGT 596~~	~~Business Ethics and Corporate Citizenship~~	~~3~~
~~MET~~ 410	Managerial and Project Economics	3
MKTG 400	Introduction to Marketing	3
MKTG 542	Fundamentals of Professional Selling	3

~~**Restricted Electives (optional) (4 credit hours)**~~

~~Students may take additional hours from any of the above fields to meet the 124 hour requirement of the degree.~~

*Marked electives must be upper-level courses, 300 and above.

RATIONALE: After a careful review of the curriculum, Arts, Sciences and Business faculty proposed these changes to remove items of ambiguity, increase course choices for students, and accommodate the needs of online and 2+2 students.

IMPACT: No impact on any other department.

EFFECTIVE DATE: Fall 2015

NON-EXPEDITED UNDERGRADUATE MINOR PROPOSAL

Department of Aviation

Primary Contact Person: Barney King, Aviation
Phone: 785-826-2683
Email: kingb@ksu.edu

PROPOSED:
Unmanned Aircraft Systems Minor (RUAS)
15 credit hours required for completion

Intended for those not majoring in unmanned aircraft systems (UAS), the UAS minor provides a solid grounding in topics that include the current regulatory environment, platform design and field operations with an emphasis on the acquisition of information and processing of data obtained through low altitude remote sensing and surveillance. Students pursuing majors in areas such as manned aviation, agriculture, biology, civil engineering, criminal justice, ecology, emergency management, environmental sciences, geography, geology, landscape architecture and wildlife science and management may benefit from completion of this academic minor, particularly those individuals whose academic interests or career goals include the use of remotely sensed data products for research or commercial spatial, metric or informatory applications. Two areas of emphasis are provided to accommodate students having diverse interests: The Air Vehicle Operations Focus is intended for those holding the minimum of an FAA-issued private pilot certificate with an instrument rating and are interested in field operations and in flying unmanned aircraft in the National Airspace; The Data Acquisition and Management Focus, is offered for those whose academic or career goals require greater knowledge of the acquisition and use of information and data obtained from the operation of unmanned aircraft as remote sensing platforms. This minor is not available to students pursuing a Bachelor of Science in Engineering Technology – Unmanned Aircraft Systems option (BETB-US) or a Bachelor of Science in Aeronautical Technology – Unmanned Aircraft Systems option (BATN-US).

Course Requirements (15 Hours)
Due to course sequencing, a minimum of four semesters in residence will be required for completion of the minor. Students must achieve a minimum GPA of 2.5 and a grade of "C" or better is required in all coursework.

Required Courses (9 hours)

AVT 270	Introduction to Unmanned Aircraft Systems	3
COT 674	Processing Techniques for Low Altitude Remotely Sensed Data	3
COT 675	Acquisition and Advanced Processing of LARS Data	3

Elective Courses (6 hours)

AVT 370	UAS Design	3
AVT 373	UAS Design for Non-Aviators	3
AVT 460	UAS Mission Planning and Operations	3
AVT 463	UAS Mission Planning and Operations for Non-Aviators	3

Rationale: According to a study produced by the Association of Unmanned Vehicles International (2013), within 10 years of adoption of the applications enabled by the use of unmanned aircraft systems, the expected economic benefits associated with the introduction of this technology will include 100,000 new jobs created in the United States and additional total revenues of $82 billion directly added to the US gross domestic product. According to this same study, Kansas will rank seventh among the 50 states, annually receiving $29.13 million in additional tax revenues on nearly $3 billion in revenue increases and the creation of more than 3,700 new jobs. The sole raison d'être of an unmanned aircraft system is to obtain data, whether spatial, metric or informatory. The preparation of an aircraft and subsequent flight operations require an investment of only about 20 percent of the total time involved in the enterprise, whereas the acquisition and processing of the data consumes the remainder. Thus, 80 percent of the efforts invested to create these economic benefits will be attributable to the acquisition and processing of data to support areas such as precision agriculture, infrastructure monitoring and evaluation, surveying and mapping, wildlife and wildfire management, pipeline and power line patrols, weather and environmental monitoring, mineral and energy exploration, among a multitude of other applications. The rationale for proposing this minor is to provide students with the research tools with which to obtain empirically derived information and the skills and knowledge to obtain employment as productive employees in the anticipated expansion of

the global economy. The addition of this “stand-alone” minor to the K-State curricula will benefit a diverse group of students, including those from other universities. The minor is available to students currently enrolled at accredited universities or graduates who have a cumulative GPA of 2.0 (on a scale of zero to four) or higher. Non-Kansas State University students must apply to the university and be accepted as an undergraduate student. It is hoped that, subsequent to approval of the UAS Minor, a mutually beneficial articulation can be reached with Kansas Wesleyan University, whereby students from the KWU Emergency Management program will enroll in the KSU UAS Minor and those from K-State can enroll in the KWU Emergency Management Minor. Discussions in this area are ongoing. This minor is intended to replace the existing three-course UAS certificate.

IMPACT: No impact on any other department

EFFECTIVE DATE: Fall 2015

Graduate course and curriculum changes (12-2-14)

Non-Expedited New Courses

DMP 690. Essential Practices for BSL-3 Research Settings. (1) I, II, S. 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.

RATIONALE: A hands-on laboratory based course focusing on biosafety and biocontainment practices will provide KSU students with a competitive advantage as they apply for research and faculty positions. Additionally, the course will provide foundational skills required for work at NBAF and biotechnical companies in the animal health corridor.

IMPACT: ~~BIOL 697~~ Per comment from Arts & Sciences, the concurrent enrollment existed for only one semester – this is no longer a conflict.

EFFECTIVE DATE: Fall 2015

DMP 691. Introduction to High Containment Research Topics and Techniques. (2) I, II, S. This course examines the rationale behind the skills and techniques taught in Essential Practices for BSL-3 Research Settings. Students will gain familiarity with case studies, scientific readings, and laboratory practices. Students review and discuss research papers, topics, and practices related to biological agents and toxins appropriate for research conducted in BSL-3, ABSL-3, and BSL-3Ag facilities.

RATIONALE: This course provides students with background knowledge to support hands-on laboratory skills taught in Essential Practices for BSL-3 Research Settings. This understanding will provide KSU students with a competitive advantage as they apply for research and faculty positions. Additionally, the course will provide foundational skills required for work at NBAF and biotechnical companies in the animal health corridor.

IMPACT: ~~**BIOL 697**~~ Per comment from Arts & Sciences, the concurrent enrollment existed for only one semester – this is no longer a conflict.

EFFECTIVE DATE: Fall 2015

HN 706. Nutritional Immunology. Credits: (3). **When Offered:** FALL, Even Years. Principles and issues related to nutrition and immunology. Impact of nutrients and nutritional status on immune responses. Impact of disease states on nutritional status.

RATIONALE: New course added for participation in the Master of Science in Dietetics through the Great Plains Interactive Distance Education Alliance (GPIDEA)

IMPACT: NONE

EFFECTIVE DATE: Fall 2016

HN 720. Global Health and Nutrition. Credits: (3). **When Offered:** Spring
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. **Pre-Requisites:** Graduate level classification, or undergraduate student with instructor permission.

RATIONALE: This falls in line with the university's global food initiative and educates students about global food issues.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 703. Food Across Cultures and Countries. Credits: (2). **When Offered:** Spring
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.

RATIONALE: The department has discontinued teaching a lower division course HN301 Food Trends, Legislation, and Regulation, which contained some basic information related to this topic. This class will provide students with a more in-depth knowledge, appreciation, and understanding of foods from around the globe and the cultures within. This type of information is necessary when working with consumers from diverse cultures, when developing products for various market segments, and when conducting research in a global marketplace.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 833. Descriptive Sensory Analysis: Methods: (1). **When Offered:** Spring
Specification and application of descriptive sensory analysis methods for use in product development, research, and quality control. Practical experiences in conducting these tests. Lecture.

RATIONALE: The current 3-hour class (HN 831 Descriptive Sensory Analysis) is not sufficient for teaching all the topics necessary. We propose to drop a 3-hour class and instead have 4 1-hour modular classes. There is increased focus on non-food applications which aren't in current classes.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 834. Descriptive Sensory Analysis: Food and Fragrance: (1). **When Offered:** Spring
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. Lecture.

RATIONALE: The current 3-hour class (HN 831 Descriptive Sensory Analysis) is not sufficient for teaching all the topics necessary. We propose to drop a 3 hour class and instead have 4 1-hour modular classes. This will give students more flexibility and allow them to take portions of the class that are more specific to their interests and needs. This module covers descriptive sensory analysis of food and fragrance products.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 835. Descriptive Sensory Analysis: Non-Food: (1). **When Offered:** Spring
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. Lecture.

RATIONALE: The current 3-hour class (HN 831 Descriptive Sensory Analysis) is not sufficient for teaching all the topics necessary. We propose to discontinue the 3 hour class and instead have 4 1-hour modular classes. This will give students more flexibility and allow them to take portions of the class that are more specific to their interests and needs. This course provides the students an introduction to studies of non-food descriptive sensory analysis, such as textiles, personal goods, or cosmetics. Almost half of current sensory students work in non-food industries. So far there has not been a course to focus on these types of studies.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 836. Descriptive Sensory Analysis: Panel Training: (1). **When Offered:** Spring
Techniques for training and evaluating sensory descriptive panels for use in product development, research, and quality control. Lecture.

RATIONALE: The current 3-hour class (HN 831 Descriptive Sensory Analysis) is not sufficient for teaching all the topics necessary. We propose to drop a 3 hour class and instead have 4 1-hour modular classes. This will give students more flexibility and allow them to take portions of the class that are more specific to their interests and needs. This module relates to training panels for descriptive analysis.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 843. Consumer Research - Qualitative: (1). **When Offered:** Fall
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. Lecture.

RATIONALE: The reason these courses are being taught in modules is: Several modules may be taught in parallel during the same section of semester (e.g., M-W-F 9:30-10:20 for #1, M-W-F 10:30-11:20 for #2; with both being taught in first 1/3 of semester), or they can be taught in sequence/series throughout semester (e.g., M-W-F 9:30-10:20 for first third and second third of semester). With students having internships and study abroad opportunities that can fall at inconvenient times, this flexibility in the schedule allows the program to better adjust to the schedule needs of students and faculty.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 845. Consumer Research – Observational and Behavioral: (1). **When Offered:** Spring
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. Lecture.

RATIONALE: The reason these courses are being taught in modules is: Several modules may be taught in parallel during the same section of semester (e.g., M-W-F 9:30-10:20 for #1, M-W-F 10:30-11:20 for #2; with both being taught in first 1/3 of semester), or they can be taught in sequence/series throughout semester (e.g., M-W-F 9:30-10:20 for first third and second third of semester). With students having internships and study abroad opportunities that can fall at inconvenient times, this flexibility in the schedule allows the program to better adjust to the schedule needs of students and faculty.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 846. Consumer Research – International and Special Populations: (1). **When Offered:** Spring
Study of consumer product research with international and special populations including children and other special populations. Lecture.

RATIONALE: The current 3-hour class (HN 841 Consumer Response Evaluation) is not sufficient for teaching all the topics necessary. The reason these courses are being taught in modules is: Several modules may be taught in parallel during the same section of semester (e.g., M-W-F 9:30-10:20 for #1, M-W-F 10:30-11:20 for #2; with both being taught in first 1/3 of semester), or they can be taught in sequence/series throughout semester (e.g., M-W-F 9:30-10:20 for first third and second third of semester). With students having internships and study abroad opportunities that can fall at inconvenient times, this flexibility in the schedule allows the program to better adjust to the schedule needs of students and faculty.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 847. Consumer Research – Attitudinal: (1). **When Offered:** Spring
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. Lecture.

RATIONALE: The current 3-hour class (HN 841 Consumer Response Evaluation) is not sufficient for teaching all the topics necessary. The reason these courses are being taught in modules is: Several modules may be taught in parallel during the same section of semester (e.g., M-W-F 9:30-10:20 for #1, M-W-F 10:30-11:20 for #2; with both being taught in first 1/3 of semester), or they can be taught in sequence/series throughout semester (e.g., M-W-F 9:30-10:20 for first third and second third of semester). With students having internships and study abroad opportunities that can fall at inconvenient times, this flexibility in the schedule allows the program to better adjust to the schedule needs of students and faculty.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 848. Consumer Research – Quantitative: (1). **When Offered:** Fall
Methods and issues associated with measuring consumer responses to products including preference testing, preference ranking, acceptance testing, hedonic scales, and consumption testing. Lecture.

RATIONALE: The current 3-hour class (HN 841 Consumer Response Evaluation) is not sufficient for teaching all the topics necessary. The reason these courses are being taught in modules is: Several modules may be taught in parallel during the same section of semester (e.g., M-W-F 9:30-10:20 for #1, M-W-F 10:30-11:20 for #2; with both being taught in first 1/3 of semester), or they can be taught in sequence/series throughout semester (e.g., M-W-F 9:30-10:20 for first third and second third of semester). With students having internships and study abroad opportunities that can fall at inconvenient times, this flexibility in the schedule allows the program to better adjust to the schedule needs of students and faculty.

IMPACT: None.

EFFECTIVE DATE: Spring 2015

HN 853 – International Research Experience: (2) On sufficient demand
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. **Pre-Requisite:** HN 701; HN 833 or HN 841; and instructor permission

RATIONALE: With industry interest in expanding sales outside of the US market, sensory & consumer researchers should have experience forming collaborations with researchers in other countries. This course aims to provide the students with a real-life international research project experience. The class will be conducted in collaboration with colleagues in different countries where students will have to

learn the cultural norms and develop research accordingly. Ideally, the research would be presented at a sensory conference or prepared in a manuscript for publication.

IMPACT: None **EFFECTIVE DATE:** Fall 2015

ARE 671. ARE Capstone: (4). **When Offered:** Fall, Spring
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.

RATIONALE: This course emphasizes the design process and simulates the work graduates from the program will be exposed to in industry. The four credit hours reflect the effort that will be required.

IMPACT: Internal to ARE/CNS

EFFECTIVE DATE: Spring 2019

NE 635. Generation IV Reactor Design: (3). **When Offered:** Spring
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:** NE 630

RATIONALE: This course has been successfully taught for many semesters as a special topics course. It has generated regular interest and is an important course for the Nuclear Engineering curriculum that is offered. It was previously taught as NE 620.

IMPACT: None

EFFECTIVE DATE: Fall 2015

AGRON 880. Plant Molecular Biology: (3). **When Offered:** Fall, even years
A study of plant genes and genome organization, plant gene expression and regulation, and functional analysis of plant genes. Three hrs. lec. a week. Pr.: BIOCH 521, PLPTH 610, or BIOL 541. Cross-listed: PLPTH 880.

RATIONALE: The plant breeding and genetics faculty in the Department of Agronomy and the Department of Plant Pathology are currently revising courses to strengthen the programs, reduce duplication, and update course content. The Department of Plant Pathology is concurrently submitting a proposal to revise their existing PLPTH 880 course. Previously, their course was not cross-listed in Agronomy. Cross-listing of PLPTH 880 with AGRON 880 will strengthen the genetics and breeding programs in the two departments.

IMPACT: None

EFFECTIVE DATE: Spring 2015

AGRON 915. Advanced Plant Genetics: (3). **When Offered:** I, Odd years.
In-depth treatment of advanced concepts in molecular, quantitative, and cytogenetics of plants. Three hrs. lec. a week. Pr.: PLPTH 680/AGRON 680. Cross-listed: PLPTH 915.

RATIONALE: The plant breeding and genetics faculty in the Department of Agronomy and the Department of Plant Pathology are currently revising courses to strengthen the programs, reduce duplication, and update course content. The Department of Plant Pathology is concurrently submitting a proposal to revise their existing PLPTH 915 course. Previously, their course was not cross-listed in Agronomy. Cross-listing of PLPTH 915 with AGRON 915 will strengthen the genetics and breeding programs in the two departments.

IMPACT: None

EFFECTIVE DATE: Spring 2015

HORT 793. Farm to Fork Produce Safety. (2). I, even years.
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. Rec. Pre-req.: A course in microbiology.

RATIONALE: This course will serve students in two graduate programs, Urban Food Systems and Food Science. This course will be co-instructed by two new faculty housed at K-State Olathe, thus this course will also serve the local student audience K-State Olathe is striving to serve.

IMPACT: This is collaboration between faculty in Horticulture and Food Science, thus the only departments directly impacted are involved.

EFFECTIVE DATE: Fall 2015

HORT 794. Urban Food Systems (2). II, even years.
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.

RATIONALE: After teaching HORT 791 Urban Agriculture twice, the instructors decided the material would be better covered in two separate courses, one focusing on production, the other focusing on all other aspects of the urban food system.

IMPACT: None

EFFECTIVE DATE: Fall 2015

HORT 795. Urban Agriculture Study Tour (1.) Fall, Spring, Summer.
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. Pr.: Instructor's Permission.

RATIONALE: There are many areas in the U.S. as well as around the world that provide phenomenal learning opportunities.

IMPACT: None

EFFECTIVE DATE: Fall 2015

PMC 620. Park Planning & Design (3), I.
Parks and protected areas play a vital role in the landscape, both for the people who use them and the natural resources they protect. The desire to maximize public access as well as protection can create conflicting demands on small to moderate sized parks. This course will explore current best practices for the social and ecological design and management of parks and protected areas. Course content will also discuss theoretical foundations of human beings' relationship to nature and landscapes.

RATIONALE: The course will fill a void in our offerings and will contribute to continued accreditation under new guidelines.

IMPACT: None

EFFECTIVE DATE: Fall 2015

ARCH 750 – Writing Intensive Architecture Seminar: (3) Fall, Spring
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). Pre-Requisite: ARCH 403

RATIONALE: To insure that students will have had the opportunity to practice their writing skills as part of their graduate education.

IMPACT: None

EFFECTIVE DATE: Fall 2015

ARCH 854 – Professional Practice: Office Practices: (1) Fall, Spring
Interdisciplinary course addresses practice-based issues concerning professional relationships in the design and delivery process, management of projects, communication practices, and fiscal concerns.

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach

provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None

EFFECTIVE DATE: Fall 2015

ARCH 855 – Professional Practice: Discipline-Specific Topics (1) Fall, Spring
Covers discipline-specific concerns, focusing on issues specific to architecture, interior architecture and product design, landscape architecture or regional and community planning.

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None

EFFECTIVE DATE: Fall 2015

IAPD 753 – Professional Practice: Professional Responsibility: (1) Fall, Spring
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.

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None

EFFECTIVE DATE: Fall 2015

IAPD 754 – Professional Practice: Office Practices: (1) Fall, Spring
Interdisciplinary course addresses practice-based issues concerning professional relationships in the design and delivery process, management of projects, communication practices, and fiscal concerns.

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None

EFFECTIVE DATE: Fall 2015

IAPD 755 – Professional Practice: Discipline-Specific Topics: (1) Fall, Spring
Covers discipline-specific concerns, focusing on issues specific to architecture, interior architecture and product design, landscape architecture or regional and community planning.

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None

EFFECTIVE DATE: Fall 2015

LAR 753 – Professional Practice: Professional Responsibility: (1) Fall, Spring
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. Pre-requisite: LAR 442.

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for

graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None

EFFECTIVE DATE: Fall 2015

LAR 754 – Professional Practice: Office Practices: (1) Fall, Spring
Interdisciplinary course addresses practice-based issues concerning professional relationships in the design and delivery process, management of projects, communication practices, and fiscal concerns. Pre-requisite: LAR 442.

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None

EFFECTIVE DATE: Fall 2015
LAR 755 – Professional Practice: Discipline-Specific Topics: (1) Fall, Spring
Covers discipline-specific concerns, focusing on issues specific to architecture, interior architecture and product design, landscape architecture or regional and community planning. Pre-requisite: LAR 442.

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None **EFFECTIVE DATE:** Fall 2015

PLAN 755 – Professional Practice: Discipline-Specific Topics: (1) Fall, Spring
Covers discipline-specific concerns, focusing on issues specific to architecture, interior architecture and product design, landscape architecture or regional and community planning. Pre-requisite: PLAN 316.

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach

provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None **EFFECTIVE DATE:** Fall 2015

Non-Expedited Course Changes

FROM:	TO:
AGRON ~~770~~. Plant Genetics. (3) ~~I.~~ Concepts and application of basic genetic principles in higher plants. ~~Probability, linkage, chromosome aberrations, aneuploidy analysis, gene transfer in wide crosses, tissue culture and crop improvement, and genetics of disease resistance.~~ Three hours rec. a week. Pr.: ASI 500. Rec. Pr.: AGRON 610 and 630.	**AGRON 680. Plant Genetics.** (3) II. Concepts and application of basic genetic principles in higher plants. Three hours rec. a week. Pr.: ASI 500 or BIOL 450. Rec. Pr.: AGRON 610 and 630. ~~Cross-listed: PLPTH 680.~~

RATIONALE: The plant breeding and genetics faculty in the Department of Agronomy and the Department of Plant Pathology are currently revising courses to strengthen the programs, reduce duplication, and update course content. This course will target undergraduates and graduate students in non-plant breeding/genetics related majors. Graduate students in plant breeding/genetics will be expected to take PLPTH915/AGRON915. The BIOL 450 alternative pre-requisite was suggested by Graduate School Associate Dean Michael Herman.

IMPACT: Both departments agree to change AGRON 770 to 680 and to cross-list the course. Plant Pathology will be proposing the addition of their 680 course next semester.

EFFECTIVE DATE: Spring 2015

FROM:	TO:
AGRON 830 - Quantitative Genetics in Relation to Plant Breeding. (3) I-odd. Application of statistical principles to biological populations in relation to gene and zygotic frequencies, mating systems, and effects of mutation, migration, and selection on equilibrium populations; partitioning of genetic variance, concept and methods of estimating heritability, theoretical basis of heterosis, diallel cross and combining ability, genotype by environment interaction, genetic advance under selection, models on phenotypic expression of various crops; genetics of autopolypoids. Three hours recitation per week. Rec. Pr.: AGRON 770, STAT 704, and STAT 705.	**DROP THIS COURSE**

RATIONALE: The plant breeding and genetics faculty in the Department of Agronomy and the Department of Plant Pathology are currently revising courses to strengthen the programs, reduce duplication, and update course content. This course has not been taught for many years.

IMPACT: None
EFFECTIVE DATE: Spring 2015

FROM:	TO:
AGRON 860 – Applied Plant Breeding. (3) II. This course considers in detail the mechanics of an applied plant breeding program for agronomic crops. Rec. Pr.: AGRON 630 or HORT 740, AGRON ~~770~~, and STAT 703.	**AGRON 860. Applied Plant Breeding.** (3) II. This course considers in detail the mechanics of an applied plant breeding program for agronomic crops. Rec. Pr.: AGRON 630 or HORT 740, AGRON 680, and STAT 703.

RATIONALE: The plant breeding and genetics faculty in the Department of Agronomy and the Department of Plant Pathology are currently revising courses to strengthen the programs, reduce duplication, and update course content. The recommended renumbering of AGRON 770 to 680 requires this change in prerequisite.

IMPACT: None
EFFECTIVE DATE: Spring 2015

FROM:	TO:
AGRON 970 – Advanced Plant Breeding ~~I~~. (3) I, Odd. ~~Role~~ of quantitative genetics in plant breeding, heritability, mating designs, selection techniques and theory, population improvement, breeding autopolyploid crops. Rec. Pr. AGRON 860 ~~and AGRON 830 or concurrent enrollment~~.	**AGRON 970. Advanced Plant Breeding.** (3) I, Odd. Application of quantitative genetics in plant breeding, heritability, mating designs, selection techniques and theory, marker assisted selection, population improvement, breeding autopolyploid crops. Rec. Pr. AGRON 860.

RATIONALE: The plant breeding and genetics faculty in the Department of Agronomy and the Department of Plant Pathology are currently revising courses to strengthen the programs, reduce duplication, and update course content. They are proposing to drop AGRON 830, so it should not be a prerequisite.

IMPACT: None
EFFECTIVE DATE: Spring 2015

FROM:	TO:
AGRON 980 – ~~Molecular Tools for Genetic Analyses.~~ (3) Fall, ~~Even years~~. ~~Role of biotechnology in plant breeding, mapping and linkage, genetic distances, marker assisted selection,~~ crop evolution and origin, germplasm conservation and utilization, ~~genotype x~~	**AGRON 980. Genomic Analysis for Crop Improvement.** (3) Fall, Odd years. 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.

~~environment interaction, stability analysis~~. Rec. Pr. AGRON 860 or ASI 500.	Rec. Pr. AGRON 860 or ASI 500. Rec. Pr. PLPTH 612.

RATIONALE: The plant breeding and genetics faculty in the Department of Agronomy and the Department of Plant Pathology are currently revising courses to strengthen the programs, reduce duplication, and update course content. Rapid changes in technology have affected the relevant content of this course. The changes also reflect modification of the course content for PLPTH 915/AGRON 915.

IMPACT: None
EFFECTIVE DATE: Spring 2015

FROM:	TO:
PLPTH 880. Plant Molecular Biology. (3 cr). Fall, even years. A study of plant genes and genome organization, plant gene expression and regulation, and functional analysis of plant genes. Three hrs. lec. a week. Pr.: BIOCH 521, PLPTH 610, or BIOL 541.	**PLPTH 880. Plant Molecular Biology.** (3 cr). Fall, even years. A study of plant genes and genome organization, plant gene expression and regulation, and functional analysis of plant genes. Three hrs. lec. a week. Pr.: BIOCH 521, PLPTH 610, or BIOL 541. Cross-listed: AGRON 880.

RATIONALE: Cross-listing of PLPTH 880 with AGRON 880 will strengthen genetics and breeding course taught between the two departments.

IMPACT: The department of Agronomy will be submitting a proposal with the cross-listing of AGRON/PLPTH 880 at the same time. There is no Impact on other departments.
EFFECTIVE DATE: Spring 2015

FROM:	TO:
PLPTH 915. ~~Chromosome and Genome Analysis.~~ (3 cr). II, Odd. ~~An advanced course in eukaryotic chromosome biology and genome analysis, especially of higher organisms (crop plants, insects, and mammals) emphasizing basic features of chromosome structure, behavior in mitosis and meiosis, structural aberrations, numerical changes (aneuploidy, polyploidy) evolution, and manipulation for crop improvement and human health.~~ Three hrs. lec. a week. Pr.: AGRON ~~770~~.	**PLPTH 915. Advanced Plant Genetics.** (3 cr). II, Odd. In-depth treatment of advanced concepts in molecular, quantitative, and cytogenetics of plants. Three hrs. lec. a week. Pr.: PLPTH 680 / AGRON 680. Cross-listed: AGRON 915

RATIONALE: A new faculty member will be teaching PLPTH 915 and the updated title and course description better reflects the course content and how it will be taught.

IMPACT: The department of Agronomy will be submitting a proposal with the cross-listing of AGRON/PLPTH 915 at the same time. There is no Impact on other departments.
EFFECTIVE DATE: Spring 2015

FROM:	TO:
HORT 640. Horticultural Problems - ~~Fundamentals of Landscape Irrigation Design.~~ ~~(2)~~	**HORT 640. Horticultural Problems.** (0-3). Fall, Spring, Summer. Problems and reports in

~~II, odd years. The goal of this course is to learn landscape irrigation design for efficient use of our water resources. This course will discuss basic hydraulics, sprinkler performance, plot plans, sprinkler layout, pipe sizing and zoning, and electrical considerations of the design process. Two hours lecture and two hours lab a week, last 11 weeks of the semester. Pre-req.: HORT 550 or two years of irrigation-related field work experience approved by the instructor.~~ K-State 8 – none.	floriculture, olericulture, ornamental horticulture, pomology, turfgrass and horticultural therapy. Note: Repeatable. K-State 8 – none.

RATIONALE: In spring 2015, HORT 555 was changed to this HORT 640 problems course to solve the problem of having a low enrollment course. However, unintentionally doing that replaced the actual HORT 640 problems course that we had on the books at that time when we actually only wanted to create a specific section of HORT 640 with the landscape irrigation title. To correct for all of these issues, we want to just have the HORT 640 problems course in mostly its original form. We will create appropriate sections of the problems course. Most problems courses are variable credit with 0-3 credits being typically appropriate. Students may take more than one problem-focused course, and therefore the course is repeatable.

IMPACT: None.
EFFECTIVE DATE: Spring 2015

FROM:	TO:
ARCH 853 – Professional Practice ~~Studies of conventional and newly developing methods of professional design practice. Instruction in the relationship of architects, landscape architects, interior architects, and other professions to users, clients.~~ Credits: (~~3~~) Prerequisite: ~~ARCH 433~~ K-State 8: Ethical Reasoning and Responsibility Global Issues and Perspectives	**ARCH 853 – Professional Practice: Professional Responsibility** 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. Credits: (1) K-State 8: Ethical Reasoning and Responsibility Global Issues and Perspectives

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula. Net credit hours remain the same in ARCH and IAPD. PLAN students would now have the option to include the courses in their curriculum as electives. The higher level courses (ARCH 853, ARCH 854, and ARCH 855) taken for graduate credit will have additional course standards/requirements beyond the lower level classes. Course syllabi with those specific course expectations will be developed prior to the course(s) offered in Fall 2015.

IMPACT: None.
EFFECTIVE DATE: Fall 2015

Non-Expedited Curriculum Changes

FROM:	**TO:**
Early Childhood Education (M.S.) The Family Studies and Human Services 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 ~~university child care centers~~ will be evaluated by the Director of Child Care Programs for consideration by each student's advisory committee.	**Early Childhood Education (M.S.)** The Family Studies and Human Services 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

3. A comprehensive examination or a written document which may take one of three forms: • Thesis - an empirical study with a comprehensive review of the literature and conforming to specifications set by the university. • An article prepared for submission to a scholarly journal (research or expository). • 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** FSHS 810 - Child Development Credits: (3) FSHS 820 - Theories of Human Development Credits: (3) FSHS 830 - Advanced Program Development Credits: (2-3) FSHS 850 - Family Studies Credits: (3) or FSHS 852 - Contemporary Family Theories Credits: (3) FSHS 888 - Research Methods in FSHS I Credits: (3) **Recommended Courses** FSHS 704 - Seminar in Family Studies and Human Services Credits: (Var.) FSHS 710 - Child Care Components and Issues Credits: (3) FSHS 728 - Assessment of Young Children Credits: (3)	Programs for consideration by each student's advisory committee. 3. A comprehensive examination or a written document which may take one of three forms: • Thesis - an empirical study with a comprehensive review of the literature and conforming to specifications set by the university. • An article prepared for submission to a scholarly journal (research or expository). • 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** FSHS 810 - Child Development Credits: (3) FSHS 815 - Infant Behavior and Development Credits: (3) FSHS 820 - Theories of Human Development Credits: (3) FSHS 830 - Advanced Program Development Credits: (2-3) FSHS 850 - Family Studies Credits: (3) or FSHS 852 - Contemporary Family Theories Credits: (3) or FSHS 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: (Var.) FSHS 710 - Child Care Components and Issues Credits: (3)

	FSHS 728 - Assessment of Young Children Credits: (3)
FSHS 740 - Play Facilitation Credits: (3) ~~FSHS 815 - Infant Behavior and Development Credits: (3)~~ FSHS 824 - Parent-Child Interaction: Theory and Research Credits: (3) FSHS 883 - Practicum in Early Childhood Education Credits: (Var.)	FSHS 730 – Early Childhood Program Administration Credits: (3) FSHS 740 - Play Facilitation Credits: (3) FSHS 824 - Parent-Child Interaction: Theory and Research Credits: (3) FSHS 883 - Practicum in Early Childhood Education Credits: (Var.) FSHS 884 - Practicum in Parent Education Credits: (Var.) FSHS 892 - Practicum in Human Development Research Credits: (Var.) FSHS 899 - MS Research in Family Studies and Human Services Credits:(6-8) FSHS 902 – Qualitative Research Methods in FSHS 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. ~~The committee will file its evaluation in the student's folder. The evaluation will be presented and discussed with the student.~~	**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	Students interested in this option with questions about program requirements or curriculum should contact:

Early Childhood Education School of Family Studies and Human Services ~~343K Justin Hall~~ Kansas State University Manhattan, KS 66506 ~~(785) 532-5510~~ deluccie@ksu.edu Students interested in this option with questions about admissions should contact: Connie J. Fechter Graduate Program Admissions Coordinator School of Family Studies and Human Services 304 Justin Hall Kansas State University Manhattan, KS 66506 (785) 532-1473 fechter@ksu.edu	Dr. Mary DeLuccie Program Chair Early Childhood Education School of Family Studies and Human Services 211 Hoeflin Stone House Kansas State University Manhattan, KS 66506 (785) 532-3535 deluccie@ksu.edu Students interested in this option with questions about admissions should contact: Connie J. Fechter Graduate Program Admissions Coordinator School of Family Studies and Human Services 304 Justin Hall Kansas State University Manhattan, KS 66506 (785) 532-1473 fechter@ksu.edu

RATIONALE: To add coursework in infant development and better meet the individual professional needs of early childhood educators by providing choices in meeting the research methods and family studies requirements of the masters degree.

IMPACT: Permission received by Dr. Ken Hughey, chair of Special Education, Counseling and Student Affairs, to list EDCEP 816 as an option to meet the research methods requirement. Email dated 4-2-14.

EFFECTIVE TERM: Spring 2015

FROM:	TO:
Graduate Certificate in Grassland Management ~~Required Core Courses (7 credit hours)~~ • AGRON 660 – Grassland Monitoring and Assessment Credits: (2) • AGRON 682 – Grassland Fire Ecology Credits: (3) • AGRON 832 – Grassland Plant Identification Credits: (2) ~~Elective Courses (minimum 5 credit hours)~~ • AGRON 662 – Rangeland Watershed Management Credits: (3) or • ATM 661 – Watershed Management Credits: (3) • AGRON 781 – Ecology of Invasive Species Credits: (3) AGRON 821 – Principles of Forage Quality Credits: (3)	**Graduate Certificate in Grassland Management** Select 12 credit hours from the following: • AGRON 660 – Grassland Monitoring and Assessment Credits: (2) • AGRON 662 – Rangeland Watershed Management Credits: (3) or ATM 661 – Watershed 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)

RATIONALE: 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 major 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. The proposed change will give more flexibility for the completion of the program.

IMPACT: None

EFFECTIVE TERM: Spring 2015

FROM:	TO:
M.S. Urban Food Systems Specialization **Thesis/Report Option** HORT 951 – Horticulture Graduate Seminar (2) Research Methods and/or Scientific Writing (3) 700 level or above Statistics (3) Thesis Research or Report (2-6) Additional Courses ~~(9-13)~~ Specialization Required Courses ~~(7)~~ ~~HORT 790 - Sustainable Agriculture~~ ~~(2)~~ HORT 791 - Urban Agriculture (~~3~~) HORT 792 – Food Production Practicum (~~2~~) **Total: 30 cr**	**M.S. Urban Food Systems Specialization** **Thesis/Report Option** HORT 951 – Horticulture Graduate Seminar (2) Research Methods and/or Scientific Writing (3) 700 level or above Statistics (3) Thesis Research or Report (2-6) Additional Courses (<u>8-12</u>) Specialization Required Courses <u>(8)</u> HORT 791 – Urban Agriculture <u>(2)</u> HORT 792 – Food Production Practicum <u>(1)</u> <u>HORT 794 – Urban Food Systems</u> <u>(2)</u> <u>HORT 796 – Professional Development in Urban Food Systems</u> <u>(0-1)</u> <u>Specialization Elective, must choose at least 3 credits from the following:</u> <u>HORT 725 – Postharvest Technology and Physiology of Horticultural Crops</u> <u>(3)</u> <u>HORT 790 – Sustainable Agriculture</u> <u>(2)</u> <u>HORT 793 – Farm to Fork Produce Safety</u> <u>(2)</u> <u>HORT 795 – Urban Agriculture Study Tour</u> <u>(1)</u> **Total: 30 cr**
Professional Option HORT 951 Horticulture Graduate Seminar (2)	**Professional Option** HORT 951 Horticulture Graduate Seminar (2)

Professional/Scientific Writing (3) 700 level or above Statistics (3) Additional Courses ~~(21)~~ To be determined with Advisory Committee Specialization Required Courses ~~(7)~~ ~~HORT 790 Sustainable Agriculture~~ ~~(2)~~ HORT 791 Urban Agriculture ~~(3)~~ HORT 792 Urban Food Production Practicum (2) Total Credit Hours Required (36)	Professional/Scientific Writing (3) 700 level or above Statistics (3) HORT 898 Master's Report (2) Additional Courses (17) To be determined with Advisory Committee Specialization Required Courses (8) HORT 791 Urban Agriculture (2) HORT 792 Urban Food Production Practicum (1) HORT 794 Urban Food Systems (2) HORT 796 Professional Development in Urban Food Systems (0-1) Specialization Elective, must choose at least 3 credits from the following: HORT 725 – Postharvest Technology and Physiology of Horticultural Crops (3) HORT 790 – Sustainable Agriculture (2) HORT 793 – Farm to Fork Produce Safety (2) HORT 795 – Urban Agriculture Study Tour (1) Total Credit Hours Required (36)

RATIONALE: After teaching HORT 791 Urban Agriculture twice, the instructors decided the material would be better covered in two separate courses, one focusing on production, the other focusing on all other aspects of the urban food system. HORT 793 Farm to Fork Food Safety is being proposed by Drs. Pliakoni and Gragg and reflects their expertise (Pliakoni in Postharvest handling in urban environments and Gragg in food safety). HORT 795 Urban Agriculture Study tours is being proposed because there are many other areas in the U.S. as well as around the world that would provide phenomenal learning opportunities. HORT 795 Urban Agriculture Study tours will be offered as a May or August Intersession course, starting in summer 2015. Adding HORT 898 Masters Report to the Professional Option is proposed because it was inadvertently left out in the initial proposal for this option.

IMPACT: None

EFFECTIVE TERM: Fall 2015

Master of Interior Architecture & Product Design, Post-Baccalaureate Track
(Courses in Bold are Graduate Level)

FROM:			**TO:**		
SUMMER SEMESTER			ENVIRONMENTAL DESIGN STUDIES PROGRAM SUMMER SEMESTER		
ENVD 299	Problems in Basic Design	8	ENVD 299	Problems in Basic Design	8
ENVD 203	Survey of the Design Professions	1	ENVD 203	Survey of the Design Professions	1
		9			9
FIRST SEMESTER			IAPD POST-BACCALAUREATE PROFESSIONAL PROGRAM FIRST SEMESTER		
IAPD 248	Fundamentals of Arch Technology	3	IAPD 248	Fundamentals of Arch Technology	3
IAPD 307	IAPD Design Studio I	5	IAPD 307	IAPD Design Studio I	5
IAPD 416	History of Furniture	3	IAPD 416	History of Furniture	3
IAPD 430	Visual Communication	2	IAPD 430	Visual Communication	2
ARCH 350	History of the Designed Environ III	3	ARCH 350	History of the Designed Environ III	3
		16			16
SECOND SEMESTER			SECOND SEMESTER		
IAPD 320	IAPD Design Studio II	5	IAPD 320	IAPD Design Studio II	5
IAPD 407	Design Workshop I	3	IAPD 407	Design Workshop I	3
IAPD 412	Design Workshop I Studio	1	IAPD 412	Design Workshop I Studio	1
IAPD 456	Theory of Product Design	2	IAPD 456	Theory of Product Design	2
ARCH 347	Structural Systems in Architecture I	4	ARCH 347	Structural Systems in Architecture I	4
ARCH 433	Building Construction Syst in Arch I	3	ARCH 433	Building Construction Syst in Arch I	3
		18			18
~~SUMMER SEMESTER~~					
~~**IAPD 802**~~	~~**Design Workshop II**~~	~~**3**~~			
~~**IAPD 803**~~	~~**Design Workshop II Studio**~~	~~**1**~~			
		~~4~~			

THIRD SEMESTER			THIRD SEMESTER		
IAPD 409	Materials and Finishes	3	IAPD 409	Materials and Finishes	3
IAPD 410	Interior Arch Digital Applications	3	IAPD 410	Interior Arch Digital Applications	3
ARCH 413	Environmental Systems in Arch I	4	ARCH 413	Environmental Systems in Arch I	4
IAPD 435	IAPD Design Studio III	5	IAPD 435	IAPD Design Studio III	5
ARCH 448	Structural Systems in Architecture II	4	ARCH 448	Structural Systems in Architecture II	4
		19			19
FOURTH SEMESTER			FOURTH SEMESTER		
IAPD 440	IAPD Design Studio IV	5	IAPD 440	IAPD Design Studio IV	5
IAPD 625	Lighting in IAPD	3	IAPD 625	Lighting in IAPD	3
IAPD 628	Building Construction Systems IA	3	IAPD 628	Building Construction Systems IA	3
~~**IAPD 853**~~	~~**Professional Practice**~~	~~**3**~~	ARCH 514	Environmental Systems in Arch II	3
ARCH 514	Environmental Systems in Arch II	3			
		~~17~~			14
SUMMER SEMESTER			SUMMER SEMESTER		
IAPD 801	**IAPD Design Studio V**	**5**	**IAPD 801**	**IAPD Design Studio V**	**5**
~~IAPD 406~~	~~Problems in IAPD~~	~~2~~	**IAPD 802**	**Design Workshop II**	**3**
~~OR IAPD 664~~	~~Interior Architecture Summer Internship~~	~~5~~	**IAPD 803**	**Design Workshop II Studio**	**1**
~~IAPD 665~~	~~Interior Architecture Summer Internship Report~~	~~2~~			9
		~~7~~			
FIFTH SEMESTER			FIFTH SEMESTER		
IAPD 810	**IAPD Capstone Design Studio**	**5**	**IAPD 810**	**IAPD Capstone Design Studio**	**5**
IAPD 811	**Design Research**	**2**	**IAPD 811**	**Design Research**	**2**
IAPD 813	**Furniture Design Workshop Studio**	**1**	**IAPD 813**	**Furniture Design Workshop Studio**	**1**
IAPD 814	**Furniture Design Workshop**	**3**	**IAPD 814**	**Furniture Design Workshop**	**3**

IAPD 815	**Advanced Studio Programming**	**2**	**IAPD 815**	**Advanced Studio Programming**	**2**
	~~General Elective~~	~~3~~	IAPD 753	Professional Practice: Professional Responsibility	1
			IAPD 754	Professional Practice: Office Practices	1
			IAPD 755	Professional Practice: Discipline-Specific Topics	1
		16			16
SIXTH SEMESTER			SIXTH SEMESTER		
IAPD 822 or IAPD 823 or IAPD 824	**Advanced Product Design Studio** **Advanced IA Design Studio** **Advanced Furn Studio & Workshop**	**6** **6** **6**	**IAPD 822 or IAPD 823 or IAPD 824**	**Advanced Product Design Studio** **Advanced IA Design Studio** **Advanced Furn Studio & Workshop**	**6** **6** **6**
~~IAPD 391~~	~~Topics in Contemporary Design Sem~~	~~3~~	**IAPD 891**	**Contemporary Design Seminar**	**3**
	~~General Elective~~	~~3~~			9
		~~12~~			
Undergraduate Hours		~~87~~	Undergraduate Hours		79
Graduate Hours		31	Graduate Hours		31
Total (MIAPD) Degree Requirement		~~118~~	Total (MIAPD PB) Degree Requirement		110
A comprehensive three-year-plus curriculum leading to a CIDA- and NASAD-accredited Master of Interior Architecture & Product Design degree program for students with a bachelor's degree in another field. 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.			A comprehensive three-year-plus curriculum leading to a CIDA- and NASAD-accredited Master of Interior Architecture & Product Design degree program for students with a bachelor's degree in another field. 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. Courses listed in **bold** type represent those hours within the graduate program.		

RATIONALE: Changes to the Post-Baccalaureate MIAPD curriculum are a result of:

1) Removing the internship summer semester option.
2) Removing undergraduate general electives requirements.
3) Combining the second and third summer semester requirements into one summer semester to be taken after the completion of the fourth semester.
4) Moving the professional practice requirement.

IMPACT: None **EFFECTIVE TERM:** Fall 2015

Master of Landscape Architecture Program-Non-Baccalaureate
(Courses in Bold are Graduate Level)

FROM:			**TO:**		
FIRST Semester			FIRST Semester		
COMM 105	Public Speaking 1A	2	COMM 105	Public Speaking 1A	2
ENVD 201	Environmental Design Studio I	4	ENVD 201	Environmental Design Studio I	4
ENVD 203	Survey of Design Professions	1	ENVD 203	Survey of Design Professions	1
ENVD 250	History of the Designed Environment I	3	ENVD 250	History of the Designed Environment I	3
MATH 100	College Algebra	3	MATH 100	College Algebra	3
	*General Elective	3		*General Elective	3
		16			16
SECOND Semester			SECOND Semester		
ENGL 100	Expository Writing I	3	ENGL 100	Expository Writing I	3
ENVD 202	Environmental Design Studio II	4	ENVD 202	Environmental Design Studio II	4
ENVD 251	History of the Designed Environment II	3	ENVD 251	History of the Designed Environment II	3
PHYS 115	Descriptive Physics	3	PHYS 115	Descriptive Physics	3
		15			15
THIRD Semester			THIRD Semester		
LAR 220	Site Design Studio I	4	LAR 220	Site Design Studio I	4
LAR 310	Design Graphics & Visual Thinking	2	LAR 310	Design Graphics & Visual Thinking I	2
LAR 350	Landscape Architecture Plant Materials	3	LAR 350	Landscape Architecture Plant Materials	3
LAR 420	Natural Systems & Site Analysis	4	LAR 420	Natural Systems & Site Analysis	4
LAR 433	History & Theory of Landscape Arch.	3	LAR 433	History & Theory of Landscape Arch.	3
LAR 510	LA Tech Module I	1	LAR 510	LA Tech Module I	1
		17			17
FOURTH Semester			FOURTH Semester		
LAR 248	Landscape Arch Materials & Methods	3	LAR 248	Landscape Arch Materials & Methods	3

LAR 320	Site Design Studio II	5	LAR 320	Site Design Studio II	5
LAR 322	Environmental Issues & Ethics	3	LAR 322	Environmental Issues & Ethics	3
LAR 520	LA Tech Module II	1	LAR 520	LA Tech Module II	1
	Science Course with Lab	4		Science Course with Lab	4
		16			16
FIFTH Semester			FIFTH Semester		
ENGL 200	Expository Writing II	3	ENGL 200	Expository Writing II	3
LAR 410	Planting Design Studio	5	LAR 410	Planting Design Studio	5
LAR 438	Design Implementation I	4	LAR 438	Design Implementation I	4
LAR 530	LA Tech Module III	2	LAR 530	LA Tech Module III	2
PLAN 315	Introduction to City Planning	3	PLAN 315	Introduction to City Planning	3
		17			17
SIX Semester			SIX Semester		
LAR 010	LA Field Trip	0	LAR 010	LA Field Trip	0
LAR 439	Design Implementation II	4	LAR 439	Design Implementation II	4
LAR 442	Site Planning and Design Studio	5	LAR 442	Site Planning and Design Studio	5
LAR 501	LA Seminar I	2	LAR 501	LA Seminar I	2
LAR 540	LA Tech Module IV	1	LAR 540	LA Tech Module IV	1
	*General Elective	6		*General Elective	6
		18			18
SUMMER Study			SUMMER Study		
LAR 646	**Community Planning and Design**	**5**	**LAR 646**	**Community Planning and Design**	**5**
LAR 650	**Landscape Architecture Seminar I**	**2**	**LAR 650**	**Landscape Architecture Seminar I**	**2**
		7			7
SEVENTH Semester			SEVENTH Semester		
LAR 444	Career Planning Seminar	1	LAR 444	Career Planning Seminar	1
LAR 550	LA Tech Module V	2	LAR 550	LA Tech Module V	2

LAR 648	**LA Specialization Studio**	**5**	**LAR 648**	**LA Specialization Studio**	**5**
LAR 725	**LA Research Methods**	**3**	**LAR 725**	**LA Research Methods**	**3**
LAR 750	**LA Seminar III**	**2**	**LAR 750**	**LA Seminar III**	**2**
			LAR 754	Professional Practice: Office Practices	1
		~~13~~			14
EIGHTH Semester			EIGHTH Semester		
LAR 703	LA Off Campus Studio	5	LAR 703	LA Off Campus Studio	5
	Professional Electives	9		Professional Electives	9
LAR 897	**Proposal Writing**	**2**	**LAR 897**	**Proposal Writing**	**2**
		14-16			14-16
NINTH Semester			NINTH Semester		
LAR 645	Professional Internship Report	1	LAR 645	Professional Internship Report	1
LAR 704	**Environmental Land Plan & Design**	**5**	**LAR 704**	**Environmental Land Plan & Design**	**5** **3**
LAR 700	**Project Programming**	**3**	**LAR 700**	**Project Programming**	
or LAR 899	**Research in LA**	**3**	**or LAR 899**	**Research in LA**	**3**
			LAR 753	Professional Practices: Professional Responsibilities	1
	Professional Elective	**3**		**Professional Elective**	**3**
	*General Elective	3		*General Elective	3
		~~15~~			16
TENTH Semester			TENTH Semester		
LAR 560	LA Tech Module VI	1	LAR 560	LA Tech Module VI	1
LAR 705	**Master's Project**	**3**	**LAR 705**	**Master's Project**	**3**
LAR 898	**Master's Report**	**2**	**LAR 898**	**Master's Report**	**2**
or LAR 899	**Research in LA**	**3**	**or LAR 899**	**Research in LA**	**3**
~~**LAR 745**~~	~~**Professional Practice**~~	~~**3**~~			
	*General Elective	3		*General Elective	3

	~~10-12~~		7-9
Undergraduate Hours	~~124~~	Undergraduate Hours	126
Graduate Hours	~~36~~	Graduate Hours	33
Total (MLA) Degree Requirement	~~160~~	Total (MLA) Degree Requirement	159
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. *A minimum of fifteen (15) 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 three (3) total hours of recreation credits toward graduation. **Eighth semester: Two distinct study opportunities are offered during this semester, 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 eighth semester, a summer internship is required before graduation. + If a student elects the thesis option, LAR 897-Proposal Writing will be taken during the eighth semester for 2 credit hours. This course is completed by advance arrangement. LAR 897 students work independently to develop their thesis proposal with their major professor's supervision. LAR 899-Research in Landscape Architecture will be taken in the ninth semester in place of LAR 700 and in the tenth semester in place of LAR 705 and LAR 898.		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. *A minimum of fifteen (15) 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 three (3) total hours of recreation credits toward graduation. **Eighth semester: Two distinct study opportunities are offered during this semester, 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 eighth semester, a summer internship is required before graduation. + If a student elects the thesis option, LAR 897-Proposal Writing will be taken during the eighth semester for 2 credit hours. This course is completed by advance arrangement. LAR 897 students work independently to develop their thesis proposal with their major professor's supervision. LAR 899-Research in Landscape Architecture will be taken in the ninth semester in place of LAR 700 and in the tenth semester in place of LAR 705 and LAR 898.	

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula.

IMPACT: None **EFFECTIVE TERM:** Fall 2015

Master of Landscape Architecture Program-Post-Baccalaureate
(Courses in Bold are Graduate Level)

FROM:			**TO:**		
FIRST Semester			FIRST Semester		
LAR 220	Site Design Studio I	4	LAR 220	Site Design Studio I	4
LAR 310	Design Graphics & Visual Thinking	2	LAR 310	Design Graphics & Visual Thinking	2
LAR 420	Natural Systems & Site Analysis	4	LAR 420	Natural Systems & Site Analysis	4
LAR 433	History & Theory of Landscape Arch	3	LAR 433	History & Theory of Landscape Arch	3
LAR 510	LA Tech Module I	1	LAR 510	LA Tech Module I	1
		14			14
SECOND Semester			SECOND Semester		
LAR 248	Landscape Arch Materials & Methods	3	LAR 248	Landscape Arch Materials & Methods	3
LAR 322	Environmental Issues & Ethics	3	LAR 322	Environmental Issues & Ethics	3
LAR 442	Site Planning and Design Studio	5	LAR 442	Site Planning and Design Studio	5
LAR 501	Landscape Architecture Seminar I	2	LAR 501	Landscape Architecture Seminar I	2
LAR 520	LA Tech Module II	1	LAR 520	LA Tech Module II	1
LAR 010	Landscape Architecture Field Trip	0	LAR 010	Landscape Architecture Field Trip	0
		14			14
SUMMER Study			SUMMER Study		
LAR 646	**Community Planning and Design**	**5**	**LAR 646**	**Community Planning and Design**	**5**
LAR 650	**Landscape Architecture Seminar I**	**2**	**LAR 650**	**Landscape Architecture Seminar I**	**2**
		7			7
THIRD Semester			THIRD Semester		
LAR 410	Planting Design Studio	5	LAR 410	Planting Design Studio	5
LAR 438	Design Implementation I	4	LAR 438	Design Implementation I	4
LAR 350	Landscape Arch. Plant Material	3	LAR 350	Landscape Arch. Plant Material	3
LAR 530	LA Tech Module III	2	LAR 530	LA Tech Module III	2

			LAR 754	Professional Practice: Office Practices	1
LAR 725	**LA Research Methods**	**3**	**LAR 725**	**LA Research Methods**	**3**
		17			18
FOURTH Semester			FOURTH Semester		
LAR 439	Design Implementation II	4	LAR 439	Design Implementation II	4
LAR 704	**Environmental Land Plan & Design**	**5**	**LAR 704**	**Environmental Land Plan & Design**	**5**
LAR 540	LA Tech Module IV	1	LAR 540	LA Tech Module IV	1
	Professional Elective	**3**		**Professional Elective**	**3**
+LAR 897	**Proposal Writing**	**2**	**+LAR 897**	**Proposal Writing**	**2**
		13-15			13-15
FIFTH Semester			FIFTH Semester		
LAR 648	**LA Specialization Studio**	**5**	**LAR 648**	**LA Specialization Studio**	**5**
LAR 750	**LA Seminar III**	**2**	**LAR 750**	**LA Seminar III**	**2**
LAR 700	**Project Programming**	**3**	**LAR 700**	**Project Programming**	**3**
+LAR 899	**Research in LA**	**3**	**+LAR 899**	**Research in LA**	**3**
			LAR 753	Professional Practice: Professional Responsibilities	1
LAR 550	LA Tech Module V	2	LAR 550	LA Tech Module V	2
		~~12~~			13
SIXTH Semester			SIXTH Semester		
LAR 560	LA Tech Module VI	1	LAR 560	LA Tech Module VI	1
LAR 705	**Master's Project**	**3**	**LAR 705**	**Master's Project**	**3**
LAR 898	**Master's Report**	**2**	**LAR 898**	**Master's Report**	**2**
or LAR 899	**Research in LA**	**3**	**or LAR 899**	**Research in LA**	**3**
~~**LAR 745**~~	~~**Professional Practice**~~	~~**3**~~			
		~~7-9~~			4-6
Undergraduate Hours		~~50~~	Undergraduate Hours		52

Graduate Hours	~~36~~	Graduate Hours	33
Total (MLA) Degree Requirement	~~86~~	Total (MLA) Degree Requirement	85
All students will complete either a Master's Report or a Master's Thesis. + If a student elects the thesis option, LAR 897 Proposal Writing will be taken during the fourth semester for 2 credit hours. LAR 899 Research in Landscape Architecture will be taken in both the fifth semester in place of LAR 700 and in the sixth semester in place of LAR 705 and LAR 898. Courses listed in bold type represent those hours required within the graduate program. Total credit hours required for graduate school program of study=~~36~~.		All students will complete either a Master's Report or a Master's Thesis. + If a student elects the thesis option, LAR 897 Proposal Writing will be taken during the fourth semester for 2 credit hours. LAR 899 Research in Landscape Architecture will be taken in both the fifth semester in place of LAR 700 and in the sixth semester in place of LAR 705 and LAR 898. Courses listed in bold type represent those hours required within the graduate program. Total credit hours required for graduate school program of study=35.	

RATIONALE: The change from a single three credit hour professional practice course, taken jointly by students in three separate degree programs (ARCH, IAPD and LAR), to a modular 1 credit hour approach provides greater flexibility in how the course(s) can be placed in the different curricula.

IMPACT: None

EFFECTIVE TERM: Fall 2015