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K-State Salina Dean’s Office Courses

General

Internship

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Other

Arts, Sciences, and Business

Business courses

Communications courses

English courses

Language courses

Mathematics courses

Philosophy courses

Science courses

Social sciences and humanities courses

Statistics courses

Aviation

Aviation Maintenance courses

Aviation Technology courses

Professional pilot courses

Engineering Technology

Computer systems technology courses

Construction engineering technology courses

Electronic and computer engineering technology courses

Mechanical engineering technology courses

Other courses

Graduate Program

Professional Master of Technology (MPMT)

Graduate Level Courses
Accreditation and certification

The aircraft maintenance program is certified as an “Aviation Maintenance Technician School No. BZ9T052R” by the Federal Aviation Administration. The professional pilot program is certified as an approved “Pilot School Number KKCS017” by the Federal Aviation Administration. The baccalaureate degree program in professional pilot is accredited by the Aviation Accreditation Board International, 3410 Skyway Drive, Auburn, AL 36830. 334-844-2431, http://www.aabi.aero.

Kansas State University is fully accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools; 30 N. LaSalle St., Suite 2400, Chicago, IL 60602, 1-800-621-7440. Credit earned at K-State is transferable to other institutions.

Prerequisite courses
Before attempting a course originating at K-State Salina, a grade of C or better must be earned in the prerequisite courses.

Minors
Students at K-State Salina are eligible for any of the minors offered by Kansas State University. Students completing all requirements for a minor will receive official recognition on their academic records.

The college offers all courses required in the business minor, which is available to all students seeking or having earned a non-business K-State bachelor or graduate degree. See Business Minor (RBUSI) for more information.

The Aviation Department offers a minor in aviation safety, which is available to students seeking or having earned a K-State bachelor or graduate degree. The aviation safety minor includes coursework that emphasizes procedures and practices essential to the safety culture expected in the aviation industry. See Aviation Safety Minor (RAVSAF) for complete details.

Reserve Officer Training Corps (ROTC)
Students at K-State Salina may participate in Air Force ROTC or Army ROTC to become officers in the U.S. Air Force or U.S. Army. Complete details for the Air Force ROTC program may be found at:

http://www.k-state.edu/usaf
e-mail: afrotc@k-state.edu

Army ROTC information is available at:
http://www.k-state.edu/armyrotc
e-mail: armyrotc@k-state.edu
Academic and Student Services

Academic Advising
Kansas State University is committed to providing effective advising services to students as an essential component of their educational experience. Academic Advisors assist students with academic planning, course sequencing, review of curriculum requirements, academic policies/procedures, and major exploration.

Each student at K-State Salina is assigned an academic advisor. Students are responsible for initiating advising contact and preparing for advising sessions. Advisors can help connect students with campus resources in support of their academic and career goals.

K-State Salina Library
The library, located in the Technology Center, meets standards set for the college libraries by the American Library Association and Engineering Technology Accreditation Commission of ABET. The library contains more than 20,000 volumes and provides access to nearly 90 online databases, as well as a collection of up-to-date technical information and reference materials (paper and electronic) covering technological subjects. The library also has computer workstations containing all software found in the college’s computer labs.

Office of Student Life
The office of Student Life promotes the educational experience by enhancing the opportunities, safety, and growth of the campus community. Student Life provides and supports campus services, programs, and activities in an effort to strengthen the quality of life within a supportive atmosphere. Student Life also encourages and motivates lifelong healthy choices through the college experience. Student Life encompasses the following areas: Residence Life, Recreational Services, Counseling Services, Student Governing Association, Programming Board, student clubs/organizations.

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.

Student Support Services
K-State Salina also has a Student Support Services program located in the Welcome Center. Student Support Services is a part of TRiO, a federally funded program to help fulfill the potential of students regardless of gender, race, income level, marital status, or disabilities. SSS provides personal, academic, and professional assistance to eligible participants. SSS services include: counseling/mentoring, tutoring, advocacy, referral services, financial literacy and study skills workshops, and cultural enrichment activities. Student Support Services also has two computer lab locations on campus and assists in the facilitation of the K-State Salina Writing Center.

Writing Center
The K-State Salina Writing Center provides one-on-one tutoring services for students across disciplines, free of charge. Trained peer tutors are available to consult over writing assignments, proposals, and professional resumes. Tutors can discuss all stages of the writing process from topic development to final editing. The Writing Center’s primary objective is to help students develop their college-level writing abilities. Students are encouraged to sign up for appointments in advance to guarantee that a tutor will be available at their convenience. For additional information, visit http://www.salina.k-state.edu/writingcenter or stop by Technology Center Room 102.
K-State 8 General Education Program

IMPORTANT NOTES: Students who first enroll in Summer 2011 or later must meet the requirements of the K-State 8 General Education Program.

Students who began their programs of study prior to the Summer 2011 term under the University General Education (UGE) program may complete their degrees with UGE requirements or may choose to move to the K-State 8. Students should check with their academic advisors to determine which choice would be better. To switch, students must consult with their academic advisor.

Students who are readmitted in Summer 2011 and later will be designated as being in the K-State 8 program by the Office of Admissions.

Objective of the K-State 8
The K-State 8 General Education Program encourages students to be intellectual explorers. Students and advisors will plan programs of study to promote exposure to a breadth of learning that includes the eight areas below. The emphasis and the amount of study in each area will vary for each student, depending upon his/her choice of major and other interests.

The K-State 8 Areas:
- Aesthetic Interpretation
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility
- Global Issues and Perspectives
- Historical Perspectives
- Human Diversity within the U.S.
- Natural and Physical Sciences
- Social Sciences

Overview of K-State 8 requirements
The intent of The K-State 8 is for students to explore the perspectives of disciplines that may be quite different from those of their own majors. For that reason, a minimum of four different course prefixes (e.g., AGEC, MATH, FSHS) must be represented to fulfill K-State 8 requirements.

Each student must successfully complete credit-bearing courses to cover all of the K-State 8 areas. Some of the K-State 8 areas may be covered in the student’s major.

Departments have decided which courses to designate for one or two K-State 8 areas. K-State 8 designations are noted both in the Undergraduate Catalog and in iSIS.

When a course is tagged for two K-State 8 areas, the student may count that course toward both areas. However, students are strongly encouraged to enroll in a variety of courses and experiences that offers them a genuine breadth of perspective.

K-State 8 policy for changing majors
Changing majors will not affect students’ general education requirements in the K-State 8.

K-State 8 policy for double majors and dual degrees
A student must meet K-State 8 requirements for only one degree/major.
Transfer students
Transfer students are required to cover all eight (8) of the K-State 8 areas and should check with their academic advisors to determine how best to apply transfer credits to the K-State 8.

More information about The K-State 8 is available at: http://www.k-state.edu/kstate8.
**University Honors Program**

The Kansas State University Honors Program is intended to recognize high achievement of outstanding students who go beyond the curriculum requirements for a given degree program to meet the challenges of completing advanced study, scholarship, leadership, and citizenship activities. The Honors Program requires the completion of a minimum of 15 credit hours.

Admission to the University Honors Program requires the submission of an application, the details of which can be found at [http://www.k-state.edu/ksuhonors/application](http://www.k-state.edu/ksuhonors/application).

I. **University Level** (7 credit hours)

- RETREAT for new students prior to fall semester (optional)
- COT 020 Students enroll in program each semester (0 credit hour)
- COT 189 Introduction to University Honors Program (1 credit hour)

Other Requirements (6 credit hours)

- University honors courses generated by the University Honors Program Director each semester. These courses can be honors sections of required courses or elective seminars (most are 3 credit hours).
- K-State Salina students may utilize the “contract for applying hours to honors program” form to incorporate honors elements into a regular, non-honors course or activity. In order to ensure appropriate rigor, the specific activities and goals must be created in consultation with the University Honors Program Director, the College Honors Program Coordinator, and the instructor teaching the requested course.
- Alternative opportunities (e.g., study abroad) to generate university level honor credit hours must be approved by both the Director of the University Honors Program and the college coordinator (or appropriate college representative). Under no circumstances will students be allowed to arrange for credit after the experience is completed.

II. **K-State Salina Requirements** (8 credit hours or equivalent required)

Required experiences for all K-State Salina University Honors Program Students:

A. **COT 299 Conducting Honors Research** (1 credit hour)

*Recommended enrollment during Sophomore/2nd year*

This seminar experience is designed to help students learn more about possible options for Honors Projects and academia. When designed with career plans in mind, this experience can also be an excellent opportunity to prepare students for graduate or professional school.

B. **COT 299 Honors Project** (3 credit hours)

Capstone research or creative project - including presentation of findings to faculty and/or students. Requires supervision by a faculty mentor.

Additional optional experiences that can be used to meet UHP College requirements:

C. *Professional Development Units (PDU) ..................................................2-4 PDUs*

The activities shown in the following list are only intended as examples by which professional development units may be earned. Final approval of an activity and the PDUs that can be earned for that activity are solely at the discretion of the UHP Director and K-State Salina Honors Program Coordinator. Note that no one activity can be repeated for PDUs.

- International study abroad or national student exchange (3).
- Faculty-led study tour (1).
- Summer professional internship (2).
- Community service including activities (1 to 2).
• Submission of a design or written paper or poster for regional and/or national student competition (2). Personally presenting the paper or poster at a national meeting, add (1).
• Student organization leadership position (local chapter president or equivalent) (1).
• K-State Salina Student Ambassador (1).
• Application for nationally competitive scholarship awards (Rhodes, Marshall, Truman, Goldwater, Udall, or equivalent) (2).
• Graduate coursework (1 PDU for each credit hour of 700 level or higher taken for graduate credit).
• Completion of an “Honors Experience” within a regular course (Students may contract with the instructor of any KSU undergraduate course to complete an additional “Honors Experience” within the course beyond the regular course requirements).

* Requires a UHP plan, approved by UHP Director and CHE Honors Program Coordinator, submitted prior to the activity and a follow-up evaluation/self-reflection to be counted as an honors activity.
University Minors offered at K-State Salina

Aviation Safety Minor (RAVSAF)
See the Aviation section for information about the Aviation Safety Minor (RAVSAF).

Business Minor (RBUSI)
15 hours required

K-State Salina offers all courses required in the business minor (awarded by the College of Business Administration), which is available to all students seeking or having earned a non-business K-State bachelor or graduate degree. Students must achieve a cumulative 2.50 grade point average in the five courses that comprise the business minor. At least three of the five courses must be completed at K-State, and transfer courses must be from accredited business colleges. Students should work with their advisor to complete the minor application. Courses required for the business minor include:

<table>
<thead>
<tr>
<th>Required Courses (15 credit hours)</th>
<th>BUS 251 Financial Accounting</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BUS 252 Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>FINAN 450 Principles of Finance</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MANGT 420 Management Concepts</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MKTG 400 Introduction to Marketing</td>
<td>3</td>
</tr>
</tbody>
</table>
University Program Offerings Available at K-State Salina
Mindy Markham, Coordinator for Affiliated Academic Programs

Family Studies and Human Services (BFHS)
Bachelor of Science
120 hours required for graduation.

Assistant Professors: Behan, Markham, and Newsom.

Mindy Markham, Coordinator
785-826-2929
mmarkham@k-state.edu
http://www.salina.ksu.edu/fshs

The K-State School of Family Studies and Human Services (FSHS) offers their FSHS bachelor’s degree program on the K-State Salina campus.

The family studies and human services degree program focuses on the processes underlying human development in a family context across the life cycle. Students learn to implement and assess programs and services designed to strengthen and enhance individual and family well-being. Graduates are employed in various social service arenas - for example, youth programs, family and community service programs, residential programs, the judicial system, Cooperative Extension, higher education, elder care facilities, and public health programs.

General requirements (40-43 credit hours)

<table>
<thead>
<tr>
<th>Communications (8-9 credit hours)</th>
</tr>
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<tbody>
<tr>
<td>COMM 105</td>
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<td>or</td>
</tr>
<tr>
<td>COMM 106</td>
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<tr>
<td>ENGL 100</td>
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<tr>
<td>ENGL 200</td>
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<table>
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<tr>
<th>Social science requirements (12 credit hours)</th>
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<tbody>
<tr>
<td>ANTH 200</td>
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<tr>
<td>ECON 110</td>
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<tr>
<td>or</td>
</tr>
<tr>
<td>ECON 120</td>
</tr>
<tr>
<td>PSYCH 110</td>
</tr>
<tr>
<td>SOCIO 211</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Humanities electives (6 credit hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COT 150</td>
</tr>
<tr>
<td>ENGL 251</td>
</tr>
<tr>
<td>ENGL 325</td>
</tr>
<tr>
<td>HIST 320</td>
</tr>
<tr>
<td>PHILO 100</td>
</tr>
<tr>
<td>PHILO 105</td>
</tr>
<tr>
<td>PHILO 130</td>
</tr>
<tr>
<td>SPAN 110</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Natural and Physical Sciences (7-8 credit hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One course must be taken in physical science and one in life science. One course must include a laboratory.</td>
</tr>
<tr>
<td>Life Sciences</td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>BIOL 198 Principles of Biology</td>
</tr>
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</tbody>
</table>

Quantitative Studies (6-7 credit hours)

| MATH 100 College Algebra      | 3  |
| or                            |    |
| MATH 205 General Calculus and Linear Algebra | 3  |
| or                            |    |
| MATH 220 Analytic Geometry and Calculus I | 4  |
| STAT 325 Introduction to Statistics | 3  |

Integrative Human Ecology Course (1 credit hour)

| GNHE 210 Foundations in Human Ecology | 1  |

Professional Studies (63 credit hours)

NOTE: Each of the professional studies courses requires a grade of C or higher.

Professional FSHS Courses (36 credit hours)

| FSHS 010 Orientation to FSHS  | 0  |
| FSHS 105 Introduction to Personal and Family Finance | 3  |
| or                            |    |
| FSHS 400 Family and Consumer Economics | 3  |
| FSHS 110 Introduction to Human Development. | 3  |
| FSHS 301 The Helping Relationship | 3  |
| FSHS 302 Introduction to Human Sexuality | 3  |
| FSHS 310 Early Childhood       | 3  |
| FSHS 350 Family Relationships and Gender Roles | 3  |
| FSHS 506 Middle Childhood and Adolescence | 3  |
| FSHS 510 Human Development and Aging | 3  |
| FSHS 550 The Family            | 3  |
| FSHS 552 Families and Diversity | 3  |
| FSHS 670 Working with Parents  | 3  |
| HN 132 Basic Nutrition         | 3  |

Diversity elective (3 credit hours):

| ENGL 450 Literature and Society | 3  |
| SPAN 110 Conversational Spanish for the Workplace | 3  |

Professional Electives (24 credit hours)

Select 12 credit hours in courses numbered 100 or higher from the following areas:

American Ethnic Studies
Anthropology
Family Studies and Human Services
Gerontology
Leadership Studies
Political Science
Psychology
Social Work
Sociology
Women’s Studies

*And 12 credit hours from one of the two options below*

**Option 1**
- FSHS 590 Capstone Experience in Family Studies and Human Services 3

Select 9 credit hours in courses numbered 300 or higher from one of Professional Electives list above.

**OR**

**Option 2**
- FSHS 579 Orientation to FSHS Internship 1
- FSHS 580 FSHS Internship 8
- FSHS 585 Professional Seminar in FSHS 3

**Unrestricted electives (14-17 credit hours)**
Personal Financial Planning (BPFP)
Bachelor of Science
120 hours required for graduation.

Instructors: Belin and Martens.

Roxanne Martens, Coordinator
785-826-2619
rmartens@k-state.edu
http://www.salina.k-state.edu/fshs/pfp

The K-State School of Family Studies and Human Services (FSHS) offers their FSHS bachelor’s degree program, Personal Financial Planning, on the K-State Salina campus.

This program combines course work in personal finance, family relationships and decision making, consumer rights, insurance, investments, retirement and estate planning, economics, and accounting. Emphasis is placed on understanding financial products and how they work, as well as the role of family in financial decisions. The program offers financial planning courses that satisfy CFP® Board’s education requirement for the CFP®/CERTIFIED FINANCIAL PLANNER® certification.

Kansas State University does not certify individuals to use the CFP® and CERTIFIED FINANCIAL PLANNER®, and CFP® (with flame logo)® certification marks. CFP® certification is solely granted by the Certified Financial Planner Board of Standards to individuals who, in addition to completing an education requirement such as this CFP Board-registered program, have met ethics, experience, and examination requirements.

Admission to the personal financial planning program requires completion of FSHS 105 with a grade of B or better.

General requirements (43-46 credit hours)

Communications (8-9 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 105</td>
<td>Public Speaking IA</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMM 106</td>
<td>Public Speaking I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
</tbody>
</table>

Social science requirements (9 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>PSYCH 110</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOCIO 211</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
</tbody>
</table>

Humanities electives (6 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COT 150</td>
<td>The Humanities Through the Arts</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 251</td>
<td>Introduction to Literature</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 325</td>
<td>Literature and Technology</td>
<td>3</td>
</tr>
<tr>
<td>HIST 320</td>
<td>History of Technology</td>
<td>3</td>
</tr>
<tr>
<td>PHILO 100</td>
<td>Introduction to Philosophical Problems</td>
<td>3</td>
</tr>
<tr>
<td>PHILO 105</td>
<td>Introduction to Critical Thinking</td>
<td>3</td>
</tr>
<tr>
<td>PHILO 130</td>
<td>Introduction to Moral Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>SPAN 110</td>
<td>Conversational Spanish for the Workplace</td>
<td>3</td>
</tr>
</tbody>
</table>

Natural and Physical Sciences (7-8 credit hours)

One course must be taken in physical science and one in life science. One course must include a laboratory.
<table>
<thead>
<tr>
<th><strong>Life Sciences</strong></th>
<th><strong>Physical Sciences</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 198</td>
<td>CHM 110 General Chemistry 3</td>
</tr>
<tr>
<td></td>
<td>CHM 111 General Chemistry Laboratory 1</td>
</tr>
<tr>
<td></td>
<td>GEOL 100 Earth in Action 3</td>
</tr>
<tr>
<td></td>
<td>GEOL 103 Geology Laboratory 1</td>
</tr>
<tr>
<td></td>
<td>PHYS 113 General Physics I 4</td>
</tr>
</tbody>
</table>

**Quantitative Studies (9-10 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMST 108</td>
<td>PC Desktop Software</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>MATH 205 General Calculus and Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>MATH 220 Analytic Geometry and Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>STAT 325</td>
<td>Introduction to Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

**Integrative Human Ecology Courses (4 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSHS 350</td>
<td>Family Relationships and Gender Roles</td>
<td>3</td>
</tr>
<tr>
<td>GNHE 210</td>
<td>Foundations of Human Ecology</td>
<td>1</td>
</tr>
</tbody>
</table>

**Professional Studies (62 credit hours)**

*NOTE: Each of the professional studies courses requires a grade of C or higher.*

**Professional FSHS Courses (38 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSHS 100</td>
<td>Family Financial Planning as a Career</td>
<td>1*</td>
</tr>
<tr>
<td>FSHS 105</td>
<td>Introduction to Personal and Family Finance</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 110</td>
<td>Introduction to Human Development</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 301</td>
<td>The Helping Relationship</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 400</td>
<td>Family and Consumer Economics</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 405</td>
<td>Advanced Personal and Family Finance</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 595</td>
<td>Professional Seminar in Family Financial Planning</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 756</td>
<td>Financial Counseling</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 760</td>
<td>Families, Employment Benefits, and Retirement Planning</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 762</td>
<td>Investing for the Family’s Future</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 764</td>
<td>Estate Planning for Families</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 766</td>
<td>Insurance Planning for Families</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 772</td>
<td>Personal Income Taxation</td>
<td>3</td>
</tr>
</tbody>
</table>

*FSHS 100 must be taken twice.

**Other supporting courses (24 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 251</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS 252</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ECON 120</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 530</td>
<td>Money and Banking</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 450</td>
<td>Principles of Finance</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 390</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 400</td>
<td>Introduction to Marketing</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 542</td>
<td>Professional Selling</td>
<td>3</td>
</tr>
</tbody>
</table>

**Unrestricted Electives (12-15 credit hours)**
Social Work (BSOCWK-BS)
Bachelor of Science
120 hours required for graduation.

Associate Professor: Norlin. Assistant Professors: Davis and Pilgrim.

David Norlin, Coordinator
785-826-2944
ddnorlin@k-state.edu
http://www.sal.ksu.edu/socialwork


Social work is concerned with the interaction between people and their social environments. Social workers help people deal with other people, cope with the many social and environmental forces that affect and control daily life, and help solve problems that inhibit growth and development of individuals, families, groups, organizations and communities.

The undergraduate social work program is accredited by the Council on Social Work Education to educate generalist social work practitioners. The social work major is required for students who intend to pursue a career in social work in Kansas and in many other states. The major teaches methods, knowledge, and ethics that are essential for work in health, mental health, aging, child welfare, and other areas of social welfare and human services.

The bachelor’s degree in social work is recognized as a beginning-level professional degree. Students graduating from the social work program are eligible for licensure as bachelor social workers in Kansas and other states. No other bachelor’s degree is recognized for such eligibility. Students who complete the accredited social work major are eligible for advanced standing in Masters of Social Work (MSW) degree programs throughout the United States.

Students undergo a formal review process prior to entering the social work practice sequence in their junior year. In order to enter the practice sequence, students must have a 2.3 overall GPA and a 2.75 GPA in the core social work courses and meet the overall performance standards of the program.

General requirements (52-53 credit hours)

| Communications (8-9 credit hours) |
|COMM 105 | Public Speaking IA | 2 |
or |
|COMM 106 | Public Speaking I | 3 |
|ENGL 100 | Expository Writing I | 3 |
|ENGL 200 | Expository Writing II | 3 |

| Humanities electives (12 credit hours) |
|Philosophy (3 credit hours) |
|PHILO 105 | Introduction to Critical Thinking | 3 |
|PHILO 390 | Business Ethics | 3 |

| Western Heritage (3 credit hours) |
|HIST 320 | History of Technology | 3 |

| Literary or Rhetorical Arts (3 credit hours) |
|ENGL 251 | Introduction to Literature | 3 |
|ENGL 325 | Literature and Technology | 3 |

| Fine Arts (3 credit hours) |
|COT 150 | The Humanities Through the Arts | 3 |
Natural Science (14 credit hours)

**Life Sciences (4 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
</tbody>
</table>

**Physical science (4 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 110</td>
<td>General Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHM 111</td>
<td>General Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>GEO 100</td>
<td>Earth in Action</td>
<td>3</td>
</tr>
<tr>
<td>GEO 103</td>
<td>Geology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td>4</td>
</tr>
</tbody>
</table>

**Additional Life or Physical Sciences (3 credit hours)**

Either Life or Physical Science (3 credit hours)

1 course with a prerequisite in the same department

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 397</td>
<td>Topics in Biology: Ecology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Quantitative and abstract formal reasoning (3 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
</tbody>
</table>

**Tool and related courses (15 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 200</td>
<td>Introduction to Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 120</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>POLSC 110</td>
<td>Introduction to Political Science</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLSC 115</td>
<td>US Politics</td>
<td>3</td>
</tr>
<tr>
<td>PSYCH 110</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOCIO 211</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Professional Studies (50 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCWK 100</td>
<td>Social Work: The Helping Profession</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 200</td>
<td>Basic Skills for Working with People</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 315</td>
<td>Human Behavior in the Social Environment I</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 330</td>
<td>Social Work Research Methods and Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 510</td>
<td>Social Welfare as a Social Institution</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 525</td>
<td>Human Behavior in the Social Environment II</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 530</td>
<td>Social Work Research Methods and Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 550</td>
<td>Field Practicum Preparation</td>
<td>2</td>
</tr>
<tr>
<td>SOCWK 560</td>
<td>Social Work Practice I</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 561</td>
<td>Social Work Practice II</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 562</td>
<td>Field Experience</td>
<td>10</td>
</tr>
<tr>
<td>SOCWK 564</td>
<td>Social Work Professional Seminar</td>
<td>2</td>
</tr>
<tr>
<td>SOCWK 565</td>
<td>Social Policy</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 568</td>
<td>Social Work Practice III</td>
<td>3</td>
</tr>
<tr>
<td>SOCWK 570</td>
<td>Social Work with Groups</td>
<td>3</td>
</tr>
</tbody>
</table>

**Unrestrictive Electives (17-18 credit hours)**
K-State Salina Program Offerings

Arts, Sciences, and Business

Don Von Bergen, Department Head

Professors: Ackerman, Ahlvers, Brockway, Gazek, Heublein, Homolka, Oh, and Zajac; Associate Professors: Collins and Stephens; Assistant Professors: DeGreeff and Joseph; Instructors: Hartman, Knopp, and Matthews; Emeriti Professors: Bingham, Creech, and Riblett; Emeriti Assistant Professors: Barnes and Mosier.

785-826-2692
www.salina.k-state.edu/academics/asb

The Arts, Sciences, and Business department provides general studies courses for all programs on the K-State Salina campus. The department offers degree programs in Technology Management and Applied Business, as well the courses leading to a Business Minor that is available to all students seeking or having earned a non-business K-State bachelor or graduate degree.

Applied Business (AABA)
Associate of Science
63 hours required for graduation

This associate degree enables the graduate to succeed in an entry-level business position or continue with a bachelor’s degree in one of many different business fields; including finance, marketing, accounting, and management.

Communications (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
or
COMM 311 Business and Professional Speaking 3

Quantitative (12 credit hours)
CMST 108 PC Desktop Software 3
or
CIS 101 Introduction to Personal Computing 1
CIS 102 Spreadsheet Applications 1
CIS 103 Database Applications 1
MATH 100 College Algebra 3
MATH 205 General Calculus and Linear Algebra 3
Computer elective 3

Economics (6 credit hours)
ECON 110 Principles of Macroeconomics 3
ECON 120 Principles of Microeconomics 3

Social science electives (6 credit hours)
GEOG All courses except those that count as humanities or natural science electives are acceptable
POLSC All courses
PSYCH All courses
SOCIO All courses
Humanities electives (6 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 301</td>
<td>Appreciation of Architecture</td>
</tr>
<tr>
<td>ART</td>
<td>All courses</td>
</tr>
<tr>
<td>COT 150</td>
<td>The Humanities Through the Arts</td>
</tr>
<tr>
<td>ENGL</td>
<td>All literature courses</td>
</tr>
<tr>
<td>HIST</td>
<td>All courses</td>
</tr>
<tr>
<td>PHILO</td>
<td>All courses</td>
</tr>
</tbody>
</table>

Natural science electives (7 credit hours)

One lab course required. Choose two courses from the following list:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL</td>
<td>All courses</td>
</tr>
<tr>
<td>CHM</td>
<td>All courses</td>
</tr>
<tr>
<td>GEOL</td>
<td>All courses</td>
</tr>
<tr>
<td>GEOG 221</td>
<td>Environmental Geography I</td>
</tr>
<tr>
<td>PHYS</td>
<td>All courses</td>
</tr>
</tbody>
</table>

Business core courses (15 credit hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 110</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>BUS 251</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUS 252</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCTG 231</td>
<td>Accounting for Business Operations</td>
<td>3</td>
</tr>
<tr>
<td>and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCTG 241</td>
<td>Accounting for Investing and Financing</td>
<td>3</td>
</tr>
<tr>
<td>BUS 315</td>
<td>Supervisory Management</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 366</td>
<td>Information Technology for Business</td>
<td>3</td>
</tr>
</tbody>
</table>

Technology Management (BTCMG)

Bachelor of Science
124 hours required for graduation

Technology management combines a marketable skill learned at the university level with the management education necessary to allow for rapid advancement in the industry. Technology management students take courses in management, accounting, and marketing; as well as other critical elements of business. The “technology concentration” consists of university-level education in nearly any skill area except business.

I. Area of technology concentration (39–43 credit hours)

This block of courses must demonstrate a breadth and depth of coursework in one specific area of concentration. Technical concentration areas include technical disciplines, natural science, veterinary science, engineering, criminal justice, EMS, health, fire science, fine arts, agriculture, and architecture. Courses accepted for transfer to K-State must be academic college-level courses.

II. Arts and sciences (54-58 credit hours)

Communications (14-15 credit hours)

Written

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

Oral

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 105</td>
<td>Public Speaking IA</td>
<td>2</td>
</tr>
</tbody>
</table>

or
COMM 106  Public Speaking I  3  
COMM 311  Business and Professional Speaking  3  

**Quantitative (15-16 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 Calculus  4  
STAT 325  Introduction to Statistics  3  
Computer elective  3  

**Natural sciences electives (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 sciences electives  6  

**Humanities electives (6 credit hours)**

**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.

**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 four courses from the following:*
- BUS 320  Total Quality Management for Technology  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  Personnel and Human Resources Management  3  
- MET 410  Managerial and Project Economics  3  
- MKTG 400  Introduction to Marketing  3  
- MKTG 542  Professional Selling and Sales Management  3
Aviation

Bernard King, Interim Department Head

Professors: Barnhart, Gross, King, Shappee, and Splichal; Associate Professors: Alexander, Brockway, Most, and Smith; Assistant Professor: Karcz; Instructors: Beckman, Hiechel, Hinchee, Irvin, and Ley; Emeritus Professor: Barnard; Emeritus Assistant Professor: Garrison.

785-826-2679
www.salina.k-state.edu/aviation

The Aviation Department offers a comprehensive range of aviation study opportunities offering bachelor degree options in Airport Management, Aviation Maintenance, Avionics, Helicopter Pilot, Professional Pilot, and Unmanned Aircraft Systems; as well as certificates in Airframe and Powerplant, Airport Management, Avionics, Composite Repair, and Unmanned Aircraft Systems, in addition to an aviation safety minor.

Aviation Safety Minor (RAVSAF)
15 hours required

The Aviation Safety minor is designed to provide students with a knowledge of practices and procedures used in establishing and maintaining an effective safety program and to promote a safety culture. Students completing all requirements for the Aviation Safety minor will receive official recognition in their academic records.

The Aviation Safety minor is available to students seeking and having earned any K-State bachelor or graduate degree. Students must have a minimum of a 2.50 K-State GPA to qualify for entry into the minor program. Fifteen hours of designated course work with a grade of C or better for these courses are needed to complete the minor.

Required Courses (6 credit hours)
AVT 340 Human Factors in Aviation 3
AVT 450 Aviation Safety Management 3

Elective Courses (9 credit hours)
AVT 250 Safety and Security of Airport Ground Operations 3
AVT 420 Aviation Accident Investigation 3
AVT 451 System Safety 3
PPIL 387 Crew Resource Management I 3

Airframe and Powerplant Certificate (CAPC)
68 hours required for completion

The Airframe & Powerplant certificate program prepares students for evaluation by the Federal Aviation Administration to earn the mechanic certificate with airframe and powerplant ratings. Students who successfully complete the program will be awarded a certificate of completion.

Upon passing the FAA written, oral, and practical exams; graduates will be certified to practice as aviation maintenance technicians. Airframe & Powerplant mechanics inspect, repair, modify, and maintain aircraft for manufacturers, commercial airlines, businesses, corporations, and general aviation operators.

Freshman
Fall semester (15 credit hours)
AVM 111 Basic Aircraft Electricity 4
AVM 121 Aircraft Drawings 1
AVM 131 Aircraft Standards 4
AVM 141 Aircraft Science 3
AVM 151 Aviation Maintenance Fundamentals 3

Spring semester (18 credit hours)
AVM 112 Aircraft Welding 2
AVM 132 Aircraft Fluid Power 3
AVM 142 Airframe Systems 4
AVM 152 Airframe Structures and Repair 5
AVM 162 Airframe Electrical Systems 4

**Sophomore**

**Fall semester (18 credit hours)**
AVM 231 Aircraft Finish and Fabrication 3
AVM 241 Navigational Aids and Communication Systems 3
AVM 261 Aircraft Inspection and Assembly 5
AVM 321 Powerplant Fundamentals 4
AVM 351 Powerplant Ignition and Electrical Systems 3

**Spring semester (17 credit hours)**
AVM 312 Aircraft Propellers 2
AVM 322 Powerplant Operation and Troubleshooting 3
AVM 332 Gas Turbine Powerplant 5
AVM 342 Powerplant Induction and Fuel Systems 4
AVM 352 Powerplant Overhaul 3

**Airport Management Certificate (CAMC)**
16 hours required for completion

This certificate prepares students with foundational knowledge necessary for a job or career in airport management.

The Airport Management Certificate (AMC) prepares students to assume an entry-level management position in airport management; provides an understanding of the complexities and structure of the FAA’s National Plan of Integrated Airport Systems and the critical role airports play in economic development; and prepares students to pass the certified manager (CM) exam administered by the American Association of Airport Executives (AAAE). Eighty percent of students will pass the AAAE CM test with a grade of 80% or better on the first attempt.

Students shall demonstrate satisfactory subject matter mastery by earning a grade of “B” or better in each course within the certificate program.

**Requirements (16 credit hours)**
AVT 250 Safety and Security of Airport Ground Operations 3
AVT 360 Airport Law 3
AVT 440 Air Carrier Operations 3
AVT 446 Corporate and Business Aviation Management 3
AVT 461 Airport Planning and Management I 3
AVT 464 Airport Certified Manager 1

**Avionics Maintenance Technology Certificate (CAVMTC)**
26 hours required for completion

This certificate program provides the education and practical experience needed for careers in the rapidly growing avionics segment of the aviation maintenance industry. Topic coverage includes systems found in advanced aircraft, such as glass cockpits and other advanced avionics systems. Those completing the program will find applications for these skills in aircraft design, operation, maintenance, inspection, repair, and alteration.

This program meets the standards set by the National Center for Aircraft Technician Training (NCATT). This certificate prepares students to seek the industry’s Aviation Electronics Technician (AET) certificate.

**Required Core Courses (20 credit hours)**
AVM 111  Basic Aircraft Electricity*  4
AVM 162  Airframe Electrical Systems*  4
AVM 241  Navigational Aids and Communication Systems*  3
AVT 315  Advanced Avionics  3
AVT 317  Composites I  3
AVT 327  Avionics Repair  3
**Elective Courses (6 credit hours)**
AVT 316  AET and FCC Training  1
AVT 330  Avionics Troubleshooting  4
AVT 428  Avionics Installation  3
AVT 429  Avionics Maintenance  3
AVT 430  Advance Avionics Installation  4
*Students with an FAA Airframe (A) Certificate may test out of these courses.

**Composite Repair Certificate (CCOMRC)**
10 hours required for completion

This certificate provides the education and practical experience needed for placement in the rapidly growing composite repair field. In addition, the certificate provides current aviation maintenance workers an avenue through which they may expand their knowledge of and experience with modern composite repair materials and techniques.

**Requirements (10 credit hours):**
- AVT 317  Composites I  3
- AVT 400  Composites II  4
- AVT 417  Composites III  3

**Unmanned Aircraft Systems Operations Certificate (CUASOC)**
9 hours required for completion

This certificate program provides students with solid foundational knowledge in the emerging and rapidly growing field of Unmanned Aircraft Systems (UAS). The UAS Certificate prepares students to demonstrate the skills necessary to safely integrate the operation of UAS into the national and international airspace systems, understand the complexities of UAS integration into the airspace system, and realize the hazards to air navigation if accomplished improperly.

Students shall demonstrate satisfactory subject matter mastery by earning a grade of “B” or better in each course within the certificate program.

In the final course (UAS Mission Planning and Operations) of the certificate program, each student is required to pass a final comprehensive practical and written examination during which the student demonstrates, in an actual or electronically simulated environment, the procedures necessary to plan, execute (to include launch and recovery), and complete a successful mission that uses a UAS with integrated payload.

Prerequisites for courses in this certificate necessitate basic airman certification and training by the FAA or its International Civil Aviation Organization (ICAO) member equivalent agency. Students enrolled in BATN-US Bachelor Option are not eligible for the certificate. Note, too, that completion of the necessary coursework satisfies requirements for an academic certificate and does not qualify the recipient for operation of unmanned aircraft in the National Airspace (NAS). The authority to sanction operation of any aircraft in the NAS is congressionally delegated to the Federal Aviation Administration and not within the purview of any other entity.

**Requirements (9 credit hours)**
- AVT 270  Introduction to Unmanned Aircraft Systems  3
- AVT 370  UAS Design  3
- AVT 460  UAS Mission Planning and Operations  3
Aeronautical Technology (BATN)
Bachelor of Science

The Bachelor of Science degree program in Aeronautical Technology focuses on a curriculum core and technically specific curriculum of theory, development, and application in the areas of options.

Airport Management (BATN-AP)
124 hours required for graduation

This option of study prepares students for rewarding careers in airport management. Coursework will provide a foundation of study in aircraft flight to provide foundational knowledge for further study in this career field. Coursework will continue with study of airport environmental regulations, airport law, and aviation/airport funding structures. Students will graduate with the Certified Manager designation from the American Association of Airport Executives (AAAE).

**Freshman**

**Fall semester (14 credit hours)**
- AVT 100 Introduction to Aviation 3
- AVT 120 Aeronautical Program Flight Familiarization 1
- or
- PPIL 113 Private Pilot Flight Lab 1
- ENGL 100 Expository Writing I 3
- MATH 100 College Algebra 3
- PPIL 111 Private Pilot 4

**Spring semester (16 credit hours)**
- AVT 242 Aviation Meteorology 4
- COMM 106 Public Speaking I 3
- MATH 150 Plane Trigonometry 3
- PPIL 112 Professional Instrument Pilot 3
  - Computer Elective 3

**Sophomore**

**Fall semester (16 credit hours)**
- BUS 110 Introduction to Business 3
- ECON 110 Principles of Macroeconomics 3
- ENGL 200 Expository Writing II 3
- PHYS 113 General Physics I 4
- PSYCH 110 General Psychology 3

**Spring semester (15 credit hours)**
- AVT 200 Introduction to Airport Management 3
- ECON 120 Principles of Microeconomics 3
- ENGL 302 Technical Writing 3
- MATH 205 General Calculus and Linear Algebra 3
  - Natural Science Elective 3

**Junior**

**Fall semester (14 credit hours)**
- AVT 360 Airport Law 3
- AVT 361 Airport Environmental Studies 3
  - Aviation Elective 2
  - Business Elective 3
  - Humanities/Social Science Elective 3
### Spring semester (15 credit hours)
- AVT 250 Safety and Security of Airport Ground Operations 3
- AVT 340 Human Factors in Aviation 3
- AVT 446 Corporate and Business Aviation Management 3
- AVT 461 Airport Planning and Management I 3
- BUS 315 Supervisory Management 3

### Senior

#### Fall semester (18 credit hours)
- AVT 450 Aviation Safety Management 3
- AVT 462 Airport Planning and Management II 3
- COT 495 Industrial Internship 3
- PHILO 390 Business Ethics 3
- STAT 325 Introduction to Statistics 3
  - Aviation Elective* 3

#### Spring semester (16 credit hours)
- AVT 440 Air Carrier Operations 3
- AVT 464 Airport Certified Manager 1
- AVT 560 Airport Master Planning and Design 3
- MKTG 400 Introduction to Marketing 3
  - Aviation Elective* 3
  - Humanities/Social Science/Business/Management Elective 3

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

### Aviation Maintenance Management (BATN-AM)
126 hours required for graduation

The Bachelor of Science option in aviation maintenance management is designed for the maintenance technician with supervisory or management goals such as shop foreman, lead technician, director of maintenance and other leadership positions.

There are multiple opportunities for advanced education and training through aviation electives and advanced maintenance courses addressing the non-destructive testing of aviation parts and aircraft, and the use of advanced composites in the larger transport category, corporate, and military aircraft.

### Freshman

#### Fall semester (17 credit hours)
- AVM 111 Basic Aircraft Electricity 4
- AVM 131 Aircraft Standards 4
- AVM 151 Aviation Fundamentals 3
- ENGL 100 Expository Writing I 3
- MATH 100 College Algebra 3

#### Spring 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 semester (15 credit hours)
- AVM 121 Aircraft Drawings 1
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVM 231</td>
<td>Aircraft Finish and Fabrication</td>
<td>3</td>
</tr>
<tr>
<td>AVM 321</td>
<td>Powerplant Fundamentals</td>
<td>4</td>
</tr>
<tr>
<td>AVM 351</td>
<td>Powerplant Ignition and Electrical Systems</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td>4</td>
</tr>
</tbody>
</table>

**Spring semester (17 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVM 152</td>
<td>Airframe Structures and Repair</td>
<td>5</td>
</tr>
<tr>
<td>AVM 162</td>
<td>Airframe Electrical Systems</td>
<td>4</td>
</tr>
<tr>
<td>AVM 312</td>
<td>Aircraft Propellers</td>
<td>2</td>
</tr>
<tr>
<td>COMM 106</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Computer Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Junior**

**Fall semester (17 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVM 241</td>
<td>Navigational Aids and Communication Systems</td>
<td>3</td>
</tr>
<tr>
<td>AVM 261</td>
<td>Aircraft Inspection and Assembly</td>
<td>5</td>
</tr>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 205</td>
<td>General Calculus and Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Natural Science Elective</td>
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</tbody>
</table>

**Spring semester (18 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVM 322</td>
<td>Powerplant Operations and Troubleshooting</td>
<td>3</td>
</tr>
<tr>
<td>AVM 332</td>
<td>Gas Turbine Powerplant</td>
<td>5</td>
</tr>
<tr>
<td>AVM 342</td>
<td>Powerplant Induction and Fuel Systems</td>
<td>4</td>
</tr>
<tr>
<td>AVM 352</td>
<td>Powerplant Overhaul</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Humanities/Business/Social Science Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Senior**

**Fall semester (15 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVT 410</td>
<td>Aviation Maintenance Management</td>
<td>3</td>
</tr>
<tr>
<td>BUS 315</td>
<td>Supervisory Management</td>
<td>3</td>
</tr>
<tr>
<td>COMM 311</td>
<td>Business and Professional Speaking</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aviation Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aviation Elective*</td>
<td>3</td>
</tr>
</tbody>
</table>

**Spring semester (12 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 302</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aviation Elective*</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Humanities/Business/Social Science Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Humanities/Social Science Elective*</td>
<td>3</td>
</tr>
</tbody>
</table>

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

**Avionics Systems and Management option (BATN-AV)**

124 hours required for graduation

This option of study provides students with a foundation for the study of electronics and continues by providing a depth of knowledge and experience necessary to work in the field of aircraft electronics. This includes modern electronic aircraft navigation and communications equipment and the associated installation, troubleshooting, and repair of this equipment. Students will be equipped to work as an aircraft avionics technician and will acquire the necessary communication skills for managerial responsibilities.

**Freshman**

**Fall semester (14 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVM 131</td>
<td>Aircraft Standards</td>
<td>4</td>
</tr>
</tbody>
</table>
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 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 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 428  Avionics Installation  3
AVT 429  Avionics Maintenance  3
Aviation Elective  4
Aviation/Electronics Elective*  3
*Marked electives must be upper-level courses, 300 and above.

**Helicopter Pilot (BATN-HP)**
120 hours required for graduation

This option of study is designed to enable students to achieve their Federal Aviation Administration (FAA) Helicopter Pilot Certificates along with their bachelor’s degree, in a safe and controlled environment.

**Freshman**

**Fall Semester (14 credit hours)**
- AVT 100 Introduction to Aviation 3
- ENGL 100 Expository Writing I 3
- MATH 100 College Algebra 3
- PPIL 111 Private Pilot Ground School 4
- PPIL 115 Private Pilot Helicopter Flight Lab 1

**Spring Semester (14 credit hours)**
- AVT 242 Aviation Meteorology 4
- COMM 106 Public Speaking I 3
- MATH 150 Plane Trigonometry 3
- PPIL 112 Professional Instrument Pilot 3
- PPIL 116 Instrument Pilot Helicopter Flight Lab 1

**Sophomore**

**Fall Semester (17 credit hours)**
- ENGL 200 Expository Writing II 3
- MATH 205 General Calculus and Linear Algebra 3
- PPIL 210 Aviation Safety 3
- PPIL 218 Commercial Pilot Helicopter Ground School 3
- PPIL 222 Commercial Pilot Helicopter Flight Lab I 2
- PSYCH 110 General Psychology 3

**Spring Semester (15 credit hours)**
- AVT 340 Human Factors in Aviation 3
- AVT 386 Aerodynamics 3
- ENGL 302 Technical Writing 3
- PHYS 113 General Physics I 4
- PPIL 223 Commercial Pilot Helicopter Flight Lab II 2

**Junior**

**Fall Semester (16 credit hours)**
- BUS 315 Supervisory Management 3
- ECON 110 Principles of Macroeconomics 3
- or
- ECON 120 Principles of Microeconomics 3
- PPIL 312 Certified Flight Instructor Ground School 6
- PPIL 352 Flight Instructor Helicopter Flight Lab 1
- Computer Elective 3

**Spring Semester (15 credit hours)**
- PHILO 390 Business Ethics 3
- PPIL 365 Environmental Helicopter Operations 3
- Aviation Elective 3
### Humanities/Social Science Elective 3
### Natural Science Elective 3

#### Senior

**Fall Semester (14 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVT 445</td>
<td>Aviation Law</td>
<td>3</td>
</tr>
<tr>
<td>PPIL 482</td>
<td>Certified Instrument Flight Instructor Ground School</td>
<td>1</td>
</tr>
<tr>
<td>PPIL 484</td>
<td>Certified Instrument Flight Instructor Helicopter Flight Lab</td>
<td>1</td>
</tr>
<tr>
<td>STAT 325</td>
<td>Introduction to Statistics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>*Aviation Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Humanities/Social Science Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Spring Semester (15 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVT 446</td>
<td>Corporate and Business Aviation Management</td>
<td>3</td>
</tr>
<tr>
<td>PPIL 494</td>
<td>Helicopter Operations</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>*Aviation Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Humanities/Social Science/Business Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

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

**Culminating Experience (choose one of the following):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVT 497</td>
<td>Senior Project</td>
<td>3</td>
</tr>
<tr>
<td>COT 495</td>
<td>Industrial Internship</td>
<td>3</td>
</tr>
</tbody>
</table>

### Professional Pilot (BATN-PP)

124 hours required for graduation

Students may pursue studies in the professional pilot option to obtain the Bachelor of Science degree in aeronautical technology.

The Jeppesen–Sanderson integrated flight training program is utilized to obtain private, instrument, commercial, certified flight instructor, and multi-engine ratings.

The student will receive the instrument flight instructor certificate in addition to advanced classes rooted in aviation applications. A multi-engine certificate opportunity and turbine-engine transition course are also available in this option with training available in the Beechcraft C-90 King Air.

The flight training program is FAR 141 approved. The approval allows students to meet the commercial instrument minimum-flight-hour requirement in 190 hours instead of 250 hours.

Flight training is conducted in Cessna 172s, Beechcraft Bonanzas, Beechcraft Barons, and a Beechcraft C-90 King Air. Both standard and full graphics simulators are used for additional training benefit.

The lab times reflected in the pilot courses are minimum times. Significant time commitment is necessary for labs and flight training. This program requires additional costs above the standard tuition, books, and supplies. Students must possess a current medical certificate issued by an aviation medical examiner prior to starting flight training.

### Freshman

**Fall semester (17 credit hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVT 100</td>
<td>Introduction to Aviation</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>PPIL 111</td>
<td>Private Pilot</td>
<td>4</td>
</tr>
<tr>
<td>PPIL 113</td>
<td>Private Pilot Flight Lab</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Natural Science Elective</td>
<td>3</td>
</tr>
</tbody>
</table>
### Spring semester (17 credit hours)
- AVT 242  Aviation Meteorology  4
- 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
- PSYCH 110  General Psychology  3

### Sophomore

#### Fall semester (16 credit hours)
- ENGL 200  Expository Writing II  3
- MATH 205  General Calculus and Linear Algebra  3
- PHYS 113  General Physics I  4
- PPIL 211  Professional Commercial Pilot  3
- PPIL 212  Professional Commercial Pilot Flight Lab I  2
- PPIL 216  Altitude Chamber  1

### Spring semester (17 credit hours)
- AVT 340  Human Factors in Aviation  3
- AVT 386  Aerodynamics  3
- ECON 110  Principles of Macroeconomics  3
- ENGL 302  Technical Writing  3
- PPIL 210  Aviation Safety  3
- PPIL 213  Professional Commercial Pilot Flight Lab II  2

### Junior

#### Fall semester (15 credit hours)
- PPIL 312  Certified Flight Instructor Ground School  6
- PPIL 325  Advanced Aircraft Systems  3
  - Computer Elective  3
  - Humanities/Social Science Elective  3

#### Spring semester (16 credit hours)
- BUS 315  Supervisory Management  3
- ECON 120  Principles of Microeconomics  3
- PPIL 262  Multi-Engine Ground School  1
- PPIL 263  Multi-Engine Flight Lab  1
- PPIL 314  Certified Flight Instructor Flight Lab  2
  - Aviation Elective  3
  - Humanities/Social Science Elective  3

### Senior

#### Fall semester (14 credit hours)
- MKTG 400  Introduction to Marketing  3
- PPIL 387  Crew Resource Management I  3
- PPIL 482  CFI Instrument Ground School  1
- PPIL 483  CFI Instrument Flight Lab  1
- STAT 325  Introduction to Statistics  3
  - Aviation Elective*  3

#### Spring semester (12 credit hours)
- AVT 440  Air Carrier Operations  3
- AVT 445  Aviation Law  3
  - Humanities/Social Science/Business Elective  3

* Culminating Experience (choose one of the following):
AVT 497 Senior Project 3  
COT 495 Industrial Internship 3  
PPIL 416 Crew Resource Management II 3  

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

**Unmanned Aircraft Systems (BATN-US)**  
127 hours required for graduation

This option of study prepares students for careers in the field of unmanned aircraft systems (UAS) or remotely piloted aircraft. This is a rapidly growing area of aviation and students will be prepared to safely deploy UAS vehicles in response to emerging challenges and opportunities. Coursework includes foundational courses in aviation flight and maintenance necessary for UAS operation and specific courses designed to enable commercially available payload to platform integration and to enable students to think critically in a rapidly developing technical field. Students will be prepared for technical and/or entry-level managerial positions and will be required to successfully defend a portfolio of accumulated learning prior to graduation.

### 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  Semiconductors 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/Social 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.
Engineering Technology
Mark Jackson, Department Head

Professors: Dandu, Fitzsimmons, Harding, Jackson, and Kinsler; Associate Professors: Bower, Genereux, Khan, Mertz, Morse, and Flett; Instructors: Westerman and Williamson; Emeriti Professors: Delker, Farmer, Hassan, Keating, and Powell; Emeriti Associate Professors: Anderson, Francisco, and Wilson; Emeritus Assistant Professor: Simmonds.

785-826-2046
www.salina.k-state.edu/academics/engtech

Engineering Technology (AETA) Associate of Technology

The associate of technology degree options in Engineering Technology emphasize the application of scientific and engineering principles. These options allow students to specialize in computer systems technology, digital media technology, electronic and computer engineering technology, mechanical engineering technology, and web development technology. Each program option gives students a strong foundation in mathematics, communications, and computer applications, plus option-specific technical courses and electives prepare graduates for many diverse occupations in business and industry. The significant amount of laboratory work assures that students will be immediately productive upon graduation.

Computer Systems Technology option (AETA-CP)
66 hours required for graduation

The computer systems technology curriculum places strong emphasis on the areas of programming, networking, computer hardware, and commercial software. The curriculum’s technical elective block provides the opportunity to select courses in a wide range of computer technology topics. The curriculum emphasizes program design skills to develop fundamental problem solving in multiple computer programming languages. Practical computer applications are developed using structured design and programming methodologies. Networking and related classes emphasize application and implementation of current technology. Class assignments and a significant amount of laboratory work prepare students for real-life projects.

**Major requirements (39 credit hours)**

**Core courses (24 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMST 102</td>
<td>Introduction to Computer Technology</td>
<td>3</td>
</tr>
<tr>
<td>CMST 103</td>
<td>Introduction to Program Design</td>
<td>3</td>
</tr>
<tr>
<td>CMST 130</td>
<td>Introduction to PC Administration</td>
<td>3</td>
</tr>
<tr>
<td>CMST 135</td>
<td>Web Page Development I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 180</td>
<td>Introduction to Database Systems</td>
<td>3</td>
</tr>
<tr>
<td>CMST 247</td>
<td>Java Programming I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 250</td>
<td>Networking I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 334</td>
<td>Computer Technology Project Development</td>
<td>3</td>
</tr>
<tr>
<td>ETA 020</td>
<td>Engineering Technology Seminar</td>
<td>0</td>
</tr>
</tbody>
</table>

**Programming language electives (6 credit hours)**

Choose two courses from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMST 310</td>
<td>Visual Basic Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMST 317</td>
<td>C# Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMST 341</td>
<td>C++ Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMST 347</td>
<td>Java Programming II</td>
<td>3</td>
</tr>
</tbody>
</table>

Other programming electives may be used if approved by the AETA-CP program coordinator.

**Computer systems technology electives (9 credit hours)**

Choose three courses from:
CMST 270  Introduction to Unix  3  
CMST 310  Visual Basic Programming  3  
CMST 315  Networking II  3  
CMST 317  C# Programming  3  
CMST 323  Game Programming  3  
CMST 341  C++ Programming  3  
CMST 344  Internetworking  3  
CMST 347  Java Programming II  3  
CMST 350  Unix Administration  3  
CMST 355  Network Programming  3  
CMST 362  Introduction to Business Programming  3  
CMST 370  Applied Data Structures  3  
CMST 410  Operating Systems  3  
CMST 412  Software Architecture & Design  3  
CMST 420  Advanced Database Systems  3  
CMST 445  Network Security  3  
CMST 470  Applied Algorithm Design  3  
COT 495  Industrial Internship  max. 3  
ECET 350  Microprocessor Fundamentals  4  

Other electives may be used if approved by the AETA-CP program coordinator.

Other requirements (27 credit hours)

COMM 105  Public Speaking IA  2  
ENGL 100  Expository Writing I  3  
ENGL 302  Technical Writing  3  
Humanities/Social Science/Business elective  3  
Humanities/Social Science/Business elective  3  
Humanities/Social Science/Business elective  3  
Humanities/Social Science elective  3  
*Mathematics requirement  3  
Science elective with lab  4  

*Choose from MATH 100, MATH 150, MATH 205 or MATH 220.

Digital Media Technology option (AETA-DM)
66 hours required for graduation

The digital media technology curriculum prepares students to become effective users of digital media technology for communicating with a 21st century global audience. It includes courses in visual literacy, computer graphics software applications, multimedia technologies such as digital video and audio, digital photography, computer programming, hardware administration in which you assemble computers and install software, and networking technology.

Major requirements (42 credit hours)
Core courses (33 credit hours)

CMST 102  Introduction to Computer Technology  3  
CMST 103  Introduction to Program Design  3  
CMST 115  Graphics Software Applications  3  
CMST 135  Web Page Development I  3  
CMST 137  Fundamentals of Visual Literacy  3  
CMST 146  Digital Photography  3  
CMST 216  Digital Media I  3  
CMST 250  Networking I  3  
CMST 256  Digital Media II  3  
CMST 326  Page Layout & Type  3  
CMST 336  Digital Media Project  3  

Computer systems technology electives (9 credit hours)

Choose three courses from:

- CMST 155 Web Page Development II 3
- CMST 247 Java Programming I 3
- CMST 270 Introduction to Unix 3
- CMST 310 Visual Basic Programming 3
- CMST 315 Networking II 3
- CMST 317 C# Programming 3
- CMST 323 Game Programming 3
- CMST 335 Web Programming 3
- CMST 341 C++ Programming 3
- CMST 344 Internetworking 3
- CMST 347 Java Programming II 3
- CMST 350 Unix Administration 3
- CMST 355 Network Programming 3
- CMST 362 Introduction to Business Programming 3
- CMST 370 Applied Data Structures 3
- CMST 410 Operating Systems 3
- CMST 412 Software Architecture & Design 3
- CMST 420 Advanced Database Systems 3
- CMST 445 Network Security 3
- CMST 470 Applied Algorithm Design 3
- COT 495 Industrial Internship max. 3
- ECET 350 Microprocessor Fundamentals 4

Other electives may be used if approved by the AETA-DM program coordinator.

Other requirements (24 credit hours)

- COMM 105 Public Speaking 1A 2
- COT 150 Humanities through the Arts 3
- ENGL 100 Expository Writing 3
- ENGL 302 Technical Writing 3
- Business Elective 3
- Humanities/Social Science Elective 3
- *Mathematics requirement 3
- Science elective with lab 4

*Choose from MATH 100, MATH 150, MATH 205 or MATH 220.

Electronic and Computer Engineering Technology option (AETA-EC)

68 hours required for graduation

The electronic and computer engineering technology curriculum emphasizes the theory and application of electronic circuits, instrumentation, and systems. Numerous laboratory experiences reinforce the concepts taught in the classroom. Course work in this curriculum includes a strong foundation in basic circuit theory, semiconductor applications, digital systems, microprocessor programming and interfacing, plus essential concepts in mathematics, science, and interpersonal communications.

Electronic and computer engineering technicians work in all areas of the electronics industry, including industrial control electronics, communications, and digital systems. These individuals work closely with electronic engineering technologists, electrical engineers, computer scientists, and other professionals in the design, development, marketing, and maintenance of electronic products and systems.

Freshman
### Fall semester (16 credit hours)
- COMM 105 Public Speaking IA: 2
- ECET 100 Basic Electronics: 4
- ECET 250 Digital Logic: 4
- ENGL 100 Expository Writing I: 3
- ETA 020 Engineering Technology Seminar: 0
- MATH 100 College Algebra: 3

### Spring semester (16 credit hours)
- CHM 110 General Chemistry: 3
- CHM 111 General Chemistry Laboratory: 1
- CMST 103 Introduction to Program Design: 3
- ECET 101 Direct Current Circuits: 3
- ECET 110 Semiconductor Electronics: 4
- MATH 151 Applied Plane Trigonometry: 2

### Sophomore
#### Fall semester (18 credit hours)
- ECET 201 Alternating Current Circuits: 4
- ECET 210 Linear Circuit Applications: 4
- ECET 240 Electronic Manufacturing: 3
- ENGL 302 Technical Writing: 3
- MATH 220 Analytic Geometry and Calculus I: 4

#### Spring semester (18 credit hours)
- CMST 250 Computer Networking I: 3
- ECET 335 Industrial Control Topics: 1
- ECET 350 Microprocessor Fundamentals: 4
- MET 382 Industrial Instrumentation and Controls: 3
- PHYS 113 General Physics I: 4
- Humanities/social science elective: 3

### Mechanical Engineering Technology option (AETA-MT)
68 hours required for graduation

The mechanical engineering technology program prepares graduates for applied mechanical and manufacturing engineering-related careers with a hands-on, practical approach. The program emphasizes understanding how engineering principles are applied in practice, rather than purely the mathematical methods used.

The mechanical engineering technology program is built upon a strong foundation of science, mathematics, and applied technical courses designed to meet the diverse needs of the industrial workforce. Mechanical engineering technology concepts are used in all types of industry and are directly applied to product design and manufacturing. Courses in technical graphics with CAD, manufacturing processes, materials, material strength and testing, computer numerical control, automated manufacturing systems, machine design, quality control, and economics provide the student with a broad range of expertise for a career in mechanical engineering technology.

Graduates of the mechanical engineering technology program work within engineering teams in applied design, project management, product development, testing, manufacturing, plant operations, maintenance, or technical sales. Associate degree graduates accept jobs as engineering technicians, engineering aides, plant operation and maintenance staff, layout staff, production assistants, and technical sales staff.

### Freshman
#### Fall semester (17 credit hours)
- CMST 110 Introduction to Visual Basic: 3
- ENGL 100 Expository Writing I: 3
- ETA 020 Engineering Technology Seminar: 0
MATH 100  College Algebra  3  
MATH 151  Applied Plane Trigonometry  2  
MET 111  Technical Graphics  3  
MET 121  Manufacturing Methods  3  

Spring semester (18 credit hours)  
CHM 110  General Chemistry  3  
CHM 111  General Chemistry Lab  1  
COMM 105  Public Speaking IA  2  
MET 117  Mechanical Detailing  3  
MET 125  Computer-Numerical-Controlled Machine Processes  2  
PHYS 113  General Physics I  4  
Humans/social science elective  3  

Sophomore  
Fall semester (17 credit hours)  
ECET 100  Basic Electronics  4  
MATH 220  Analytic Geometry and Calculus I  4  
MET 211  Statics  3  
MET 231  Physical Materials and Metallurgy  3  
MET 252  Fluid Power Technology  3  

Spring semester (16 credit hours)  
ENGL 302  Technical Writing  3  
MET 230  Automated Manufacturing Systems I  3  
MET 245  Material Strength and Testing  3  
MET 246  Dynamics of Machines  3  
MET 264  Machine Design Technology I  4  

Web Development Technology option (AETA-WD)  
66 hours required for graduation  
The web development technology program builds a foundation in computer science and applies these concepts to the world of e-commerce and website development. All students take introductory classes in operating systems and program design. The program also includes courses in programming and network administration.  
Students interested in programming-oriented careers will find the curriculum challenging and rewarding. Students obtain experience with client-side programming, server-side programming, video and audio streaming, as well as database integration and other ways to make the web an effective tool for business. Students also learn project management and the use of timetables and other organizational techniques. Software tools including Flash, DreamWeaver, and Javascript are utilized, but the main curriculum emphasis is on programming solutions to actual problems.  

Major requirements (39 credit hours)  
Core courses (33 credit hours)  
CMST 102  Introduction to Computer Technology  3  
CMST 103  Introduction to Program Design  3  
CMST 130  Introduction to PC Administration  3  
CMST 135  Web Page Development I  3  
CMST 137  Fundamentals of Visual Literacy  3  
CMST 155  Web Page Development II  3  
CMST 180  Introduction to Database Systems  3  
CMST 247  Java Programming I  3  
CMST 250  Networking I  3  
CMST 332  Web Development Project  3  

Programming language electives (6 credit hours)
Choose two courses from:
- CMST 310 Visual Basic Programming 3
- CMST 317 C# Programming 3
- CMST 341 C++ Programming 3
- CMST 347 Java Programming II 3

Other programming electives may be used if approved by the AETA-WD program coordinator.

Other Requirements (27 credit hours)
- BUS 110 Introduction to Business 3
- COMM 105 Public Speaking IA 2
- ECON 110 Principles of Macroeconomics 3
- ENGL 100 Expository Writing I 3
- ENGL 302 Technical Writing 3

Humanities/social science elective 3
Humanities/social science/business elective 3
*Mathematics requirement 3
Science elective with lab 4

*Choose from MATH 100, MATH 150, MATH 205 or MATH 220.

Engineering Technology (BETB)
Bachelor of Science

The Bachelor of Science degree program in engineering technology extends beyond the scope of the associate degree program to include additional emphasis on the theory, development, and application in the areas of computers, digital media, electronics, and mechanical systems. The four degree options in the program allow students to specialize in computer systems technology, digital media technology, electronic and computer engineering technology, and mechanical engineering technology. Each program option adds depth to students’ understanding of mathematics, science, and communications. Students also develop their abilities to work as team members in industry-related design projects. Graduates work in many business and industrial settings. Career opportunities include product design and development, industrial automation, manufacturing systems, technical sales, and project management.

Computer Systems Technology option (BETB-CP)
124 hours required for graduation
(66 hours associate degree + 58 additional hours)

Students may continue their studies in computer systems technology beyond the associate degree level to obtain the Bachelor of Science degree. The baccalaureate degree typically requires two years of study beyond the associate degree.

Coursework in the junior and senior years of the baccalaureate degree program provides additional depth of understanding of programming languages and applications, database systems, computer networking, and operating systems. Individual and group project assignments allow students to develop their technical expertise, as well as their appreciation for the ethical and responsible application of computer technology. Additional mathematics, science, and elective courses provide a strong background with which graduates are prepared for many diverse occupations in business and industry.

Major requirements (63 credit hours)
Core courses (39 credit hours)
- CMST 102 Introduction to Computer Technology 3
CMST 103  Introduction to Program Design  3
CMST 130  Introduction to PC Administration  3
CMST 135  Web Page Development I  3
CMST 180  Introduction to Database Systems  3
CMST 247  Java Programming I  3
CMST 250  Networking I  3
CMST 334  Computer Technology Project Development  3
CMST 335  Web Programming  3
CMST 370  Applied Data Structures  3
CMST 420  Advanced Database Systems  3
CMST 460  Systems Analysis and Design  3
CMST 462  Computer Tech. Senior Project  3
ETA 020  Engineering Technology Seminar  0

**Programming language electives (6 credit hours)**

*Choose two courses from:

- CMST 310  Visual Basic Programming  3
- CMST 317  C# Programming  3
- CMST 341  C++ Programming  3
- CMST 347  Java Programming II  3

*Other programming electives may be used if approved by the BETB-CP program coordinator.*

**Computer systems technology electives (9 credit hours)**

*Choose three courses from:

- CMST 155  Web Page Development II  3
- CMST 270  Introduction to Unix  3
- CMST 310  Visual Basic Programming  3
- CMST 315  Networking II  3
- CMST 317  C# Programming  3
- CMST 323  Game Programming  3
- CMST 341  C++ Programming  3
- CMST 344  Internetworking  3
- CMST 347  Java Programming II  3
- CMST 350  Unix Administration  3
- CMST 355  Network Programming  3
- CMST 362  Introduction to Business Programming  3
- CMST 410  Operating Systems  3
- CMST 412  Software Architecture & Design  3
- CMST 445  Network Security  3
- CMST 470  Applied Algorithm Design  3
- COT 495  Industrial Internship  max. 3
- ECET 350  Microprocessor Fundamentals  4

*Other electives may be used if approved by the BETB-CP program coordinator.*

**Advanced computer technology electives (9 credit hours)**

*Choose one of the following tracks:

**Programming Track** *(choose any three courses):*

- CMST 355  Network Programming  3
- CMST 410  Operating Systems  3
- CMST 412  Software Architecture & Design  3
- CMST 470  Applied Algorithm Design  3

**Networking Track** *(choose any three courses):*

- CMST 344  Internetworking  3
- CMST 350  Unix Administration  3
- CMST 355  Network Programming  3
- CMST 410  Operating Systems  3
Math requirements (9 credit hours)
Choose three of these four options:
MATH 100  College Algebra  3
MATH 150  Plane Trigonometry  3
or
MATH 151  Applied Plane Trigonometry  2
MATH 205  General Calculus and Linear Algebra  3
or
MATH 220  Analytic Geometry & Calculus I  4
MATH 221  Analytic Geometry and Calculus II  4

Other requirements (52 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
PHILO 105  Introduction to Critical Thinking  3
PHILO 390  Business Ethics  3
STAT 325  Introduction to Statistics  3
Business elective  3
Business elective*  3
Humanities/Social Science elective  3
Humanities/Social Science elective*  3
Humanities/Social Science/Business elective  3
Humanities/Social Science/Business elective  3
Humanities/Social Science/Business elective  3
Humanities/Social Science/Business elective*  3
Science elective with lab  4
Science elective with lab  4

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

Digital Media Technology option (BETB-DM)
121 hours required for graduation
(66 hours associate degree + 55 additional hours)

Students in the digital media technology program option study becoming effective users of digital media technology for communicating with a global audience. Subjects studied include video, audio, photography, computer graphics and animation. Add in a healthy dose of computer technologies such as Web development, computer programming, mobile application development and networking technologies, and it makes a unique blend of skills for launching an exciting and lucrative career.

Many degree programs provide the opportunity to study visual communications with computer graphics or to study computer programming, but few offer the opportunity to study both of these areas. That is what makes K-State Salina’s digital media option unique. For example, digital media students who combine an interest in designing computer graphics with an interest in computer programming will propel themselves into an elite segment of the work force. There not enough people who understand both visual design and computer programming to keep up with market demand. Those who master both skill sets can find themselves working in cutting edge industries including entertainment, education, sales and new media companies.

Opportunities in digital media technology are continually growing. Jobs that currently use digital media technology include technical writer, Web page designer, computer graphics designer, librarian, news reporter, art director, animation effects programmer, electronic sound effects producer, computer game developer, photographer,
Many people in these fields are self-employed consultants and entrepreneurs while others work for a wide range of businesses and industries.

**Major requirements (63 credit hours)**

**Core courses (51 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMST 102</td>
<td>Introduction to Computer Technology</td>
<td>3</td>
</tr>
<tr>
<td>CMST 103</td>
<td>Introduction to Program Design</td>
<td>3</td>
</tr>
<tr>
<td>CMST 115</td>
<td>Graphics Software Applications</td>
<td>3</td>
</tr>
<tr>
<td>CMST 135</td>
<td>Web Page Development I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 137</td>
<td>Fundamentals of Visual Literacy</td>
<td>3</td>
</tr>
<tr>
<td>CMST 146</td>
<td>Digital Photography</td>
<td>3</td>
</tr>
<tr>
<td>CMST 180</td>
<td>Introduction to Database Systems</td>
<td>3</td>
</tr>
<tr>
<td>CMST 216</td>
<td>Digital Media I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 247</td>
<td>Java Programming I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 250</td>
<td>Networking I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 256</td>
<td>Digital Media II</td>
<td>3</td>
</tr>
<tr>
<td>CMST 323</td>
<td>Game Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMST 326</td>
<td>Page Layout and Type</td>
<td>3</td>
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<tr>
<td>CMST 336</td>
<td>Digital Media Project</td>
<td>3</td>
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<tr>
<td>CMST 356</td>
<td>Motion Graphics Technology</td>
<td>3</td>
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<tr>
<td>CMST 406</td>
<td>Social Media Technology</td>
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<td>CMST 456</td>
<td>Digital Media Senior Project</td>
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<tr>
<td>ETA 020</td>
<td>Engineering Technology Seminar</td>
<td>0</td>
</tr>
</tbody>
</table>

**Computer systems technology electives (12 credit hours, 9 credits upper level)**

Choose four additional computer system technology classes:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMST 155</td>
<td>Web Page Development II</td>
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<tr>
<td>CMST 270</td>
<td>Introduction to Unix</td>
<td>3</td>
</tr>
<tr>
<td>CMST 310</td>
<td>Visual Basic Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMST 315</td>
<td>Networking II</td>
<td>3</td>
</tr>
<tr>
<td>CMST 317</td>
<td>C# Programming</td>
<td>3</td>
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<tr>
<td>CMST 323</td>
<td>Game Programming</td>
<td>3</td>
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<tr>
<td>CMST 335</td>
<td>Web Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMST 341</td>
<td>C++ Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMST 344</td>
<td>Internetworking</td>
<td>3</td>
</tr>
<tr>
<td>CMST 347</td>
<td>Java Programming II</td>
<td>3</td>
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<td>CMST 350</td>
<td>Unix Administration</td>
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<td>CMST 355</td>
<td>Network Programming</td>
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<tr>
<td>CMST 362</td>
<td>Introduction to Business Programming</td>
<td>3</td>
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<tr>
<td>CMST 370</td>
<td>Applied Data Structures</td>
<td>3</td>
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<tr>
<td>CMST 410</td>
<td>Operating Systems</td>
<td>3</td>
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<tr>
<td>CMST 412</td>
<td>Software Architecture and Design</td>
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<tr>
<td>CMST 420</td>
<td>Advanced Database Systems</td>
<td>3</td>
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<tr>
<td>CMST 445</td>
<td>Network Security</td>
<td>3</td>
</tr>
<tr>
<td>CMST 470</td>
<td>Applied Algorithm Design</td>
<td>3</td>
</tr>
</tbody>
</table>

**Math requirements (9 credit hours)**

Choose from:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 150</td>
<td>Plane Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>MATH 151</td>
<td>Applied Plane Trigonometry</td>
</tr>
<tr>
<td>MATH 205</td>
<td>General Calculus and Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Analytic Geometry and Calculus II</td>
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</tr>
</tbody>
</table>
STAT 325  Introduction to Statistics  3

**Other requirements (30 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>COMM 105</td>
<td>Public Speaking IA</td>
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<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>PSYCH 110</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics</td>
<td>4</td>
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<tr>
<td>MKTG 400</td>
<td>Introduction to Marketing</td>
<td>3</td>
</tr>
<tr>
<td>PHILO 105</td>
<td>Introduction to Critical Thinking</td>
<td>3</td>
</tr>
<tr>
<td>PHILO 390</td>
<td>Business Ethics</td>
<td>3</td>
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</tbody>
</table>

**Other electives (10 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Science Elective</td>
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<tr>
<td>Business Elective</td>
<td></td>
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</tr>
<tr>
<td>Humanities/Social Science Elective</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Unrestricted Electives (9 credit hours)**

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

**Electronic and Computer Engineering Technology option (BETB-EC)**

128 hours required for graduation  
(68 hours associate degree + 60 additional hours)

Students may continue their studies in electronic and computer engineering technology beyond the associate degree level to obtain the Bachelor of Science degree. The baccalaureate degree typically requires two years of study beyond the associate degree.

Coursework in the junior and senior years of the baccalaureate degree program provides additional depth of understanding of circuit analysis techniques, digital systems, data communications, and industrial electronics. Individual and group project assignments are emphasized. Additional mathematics, science, and elective courses provide a strong background with which graduates are prepared for the technical professions of tomorrow.

Graduates work as electronic and computer engineering technologists in many industrial settings. Career activities include product design and development, industrial automation, technical sales, and project management.

The bachelor’s degree program in electronic and computer engineering technology is accredited by the Engineering Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050; Baltimore, Md., 21202-4012. 410-347-7700. www.abet.org.

**Freshman**

**Fall semester (16 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 105</td>
<td>Public Speaking IA</td>
<td>2</td>
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<tr>
<td>ECET 100</td>
<td>Basic Electronics</td>
<td>4</td>
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<tr>
<td>ECET 250</td>
<td>Digital Logic</td>
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<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
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<tr>
<td>ETA 020</td>
<td>Engineering Technology Seminar</td>
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<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
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</table>

**Spring semester (16 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>CHM 110</td>
<td>General Chemistry</td>
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</tr>
<tr>
<td>CHM 111</td>
<td>General Chemistry Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>
CMST 103  Introduction to Program Design  3
ECET 101  Direct Current Circuits  3
ECET 110  Semiconductor Electronics  4
MATH 151  Applied Plane Trigonometry  2

**Sophomore**

**Fall semester (18 credit hours)**
- ECET 201  Alternating Current Circuits  4
- ECET 210  Linear Circuit Applications  4
- ECET 240  Electronic Manufacturing  3
- ENGL 302  Technical Writing  3
- MATH 220  Analytic Geometry and Calculus I  4

**Spring semester (18 credit hours)**
- CMST 250  Computer Networking I  3
- ECET 335  Industrial Control Topics  1
- ECET 350  Microprocessor Fundamentals  4
- MET 382  Industrial Instrumentation and Controls  3
- PHYS 113  General Physics I  4
  - Humanities/social science elective  3

**Junior**

**Fall semester (14 credit hours)**
- CMST 302  Applications in C Programming for Engineering Technology  3
- ECET 304  Electric Power and Devices  3
- ECET 352  Digital Circuits and Systems  4
- MATH 221  Analytic Geometry and Calculus II  4

**Spring semester (17 credit hours)**
- BUS 315  Supervisory Management  3
- ECET 320  Electronic Communication Systems  4
- ENGL 200  Expository Writing II  3
  - Humanities/social science elective  3
  - Science elective with lab  4

**Senior**

**Fall semester (14 credit hours)**
- ECET 430  Network Analysis  3
- ECET 450  Telecommunications Systems  4
- ECET 480  Electronic Design I  1
  - Humanities/social science elective  3
  - Technical elective  3

**Spring semester (15 credit hours)**
- ECET 420  Communication Circuits Design  4
- ECET 481  Electronic Design II  2
  - Humanities/social science elective*  3
  - Humanities/social science elective  3
  - Technical elective  3

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

**Mechanical Engineering Technology option (BETB-MT)**
127 hours required for graduation
(68 hours associate degree + 59 additional hours)
Students may continue with the mechanical engineering technology program toward a Bachelor of Science degree in mechanical engineering technology. The bachelor’s degree typically requires two years of study beyond the associate degree.

Graduates of the bachelor’s degree program fill a wide variety of industrial positions and are employed by local and national companies in engineering-related design, production, maintenance, supervisory, and sales positions.

The courses in the upper-level portion of the curriculum provide greater rigor and depth in mechanical theory and applications. Additional study of science, mathematics, communications, social sciences, humanities, business, and industrial operations provides complementary breadth of knowledge beyond the student’s major concentration.

The bachelor’s degree program in mechanical engineering technology is accredited by the Engineering Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050; Baltimore, MD; 21202-4012. Phone: 410-347-7700. www.abet.org.

### Freshman

**Fall semester (17 credit hours)**
- CMST 110 Introduction to Visual Basic 3
- ENGL 100 Expository Writing I 3
- ETA 020 Engineering Technology Seminar 0
- MATH 100 College Algebra 3
- MATH 151 Applied Plane Trigonometry 2
- MET 111 Technical Graphics 3
- MET 121 Manufacturing Methods 3

**Spring semester (18 credit hours)**
- CHM 110 General Chemistry 3
- CHM 111 General Chemistry Lab 1
- COMM 105 Public Speaking IA 2
- MET 117 Mechanical Detailing 3
- MET 125 Computer-Numerical-Controlled Machine Processes 2
- PHYS 113 General Physics I Humanities/social science elective 3

### Sophomore

**Fall semester (17 credit hours)**
- ECET 100 Basic Electronics 4
- MATH 220 Analytic Geometry and Calculus I 4
- MET 211 Statics 3
- MET 231 Physical Materials and Metallurgy 3
- MET 252 Fluid Power Technology 3

**Spring semester (16 credit hours)**
- ENGL 302 Technical Writing 3
- MET 230 Automated Manufacturing Systems I 3
- MET 245 Material Strength and Testing 3
- MET 246 Dynamics of Machines 3
- MET 264 Machine Design Technology I 4

### Junior

**Fall semester (16 credit hours)**
- ECET 304 Electrical Power and Devices 3
- MATH 221 Analytic Geometry and Calculus II 4
- MET 314 Finite Element Analysis and Design Modeling 3
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>MET 365</td>
<td>Machine Design Technology II</td>
<td>3</td>
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<tr>
<td></td>
<td>Computer elective**</td>
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</table>

**Spring semester (15 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>MET 346</td>
<td>Elements of Mechanisms</td>
<td>3</td>
</tr>
<tr>
<td>MET 353</td>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>MET 382</td>
<td>Industrial Instrumentation and Controls</td>
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</tr>
<tr>
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<td>Technical Elective*</td>
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**Senior**

**Fall semester (14 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>MET 462</td>
<td>Senior Design Project I</td>
<td>1</td>
</tr>
<tr>
<td>MET 481</td>
<td>Automated Manufacturing Systems II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Humanities/social science elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Humanities/social science elective*</td>
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**Spring semester (14 credit hours)**

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>MET 464</td>
<td>Senior Design Project II</td>
<td>2</td>
</tr>
<tr>
<td>MET 471</td>
<td>Thermodynamics and Heat Transfer</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Business elective</td>
<td>3</td>
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<tr>
<td></td>
<td>Humanities/social science elective*</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Technical elective*</td>
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* Marked electives must be upper-level courses, 300 and above.

** Suggested Computer Elective (Choose One):

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CMST 302</td>
<td>Applications in C Programming for Engineering Technology</td>
<td>3</td>
</tr>
<tr>
<td>CMST 310</td>
<td>Visual Basic Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMST 341</td>
<td>C++ Programming</td>
<td>3</td>
</tr>
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</table>
Undergraduate Level Courses

Family Studies and Human Services

FSHS 010. Orientation to FSHS. (0) Fall, Spring. A general introduction for new majors in Family Studies and Human Services on the school’s academic programs, advising procedures, and career opportunities.

FSHS 100. Family Financial Planning as a Career. (1) As needed. This course is an introduction to career opportunities in the field of financial planning for families with an emphasis on academic preparation, acquisition of professional credentials, and career opportunities. A survey of the history, scope, and trends of the financial planning industry will be explored. Note: May be repeated up to two credits.


K-State 8:
- Empirical and Quantitative Reasoning
- Social Sciences.

◆ FSHS 110. Introduction to Human Development. (3) Fall, Spring. A study of life span human development through an individual's awareness and understanding of his or her own physical, social, and psychological growth and relationships with family, peers, and others.

K-State 8:
- Human Diversity within the U.S.
- Social Sciences.

FSHS 300. Problems in Family Studies and Human Services. (Var.) Fall, Spring. Independent or small group study. Pr.: Consent of instructor.

FSHS 301. The Helping Relationship. (3) Fall. Characteristics of the helping relationship; consideration of personal qualities necessary for recognizing needs of individuals and families; identification of effective procedures for referral to appropriate professions and agencies. Pr.: FSHS 110 or PSYCH 110; FSHS, GNHE, and FCSED majors only.

K-State 8:
- Human Diversity within the U.S.
- Social Sciences.

FSHS 302. Introduction to Human Sexuality. (3) Fall Spring. Study of the role and meaning of sexuality in human relationships across the life course.

K-State 8:
- Social Sciences.

FSHS 310. Early Childhood. (3). Spring. Principles of growth and development of children from conception across the early childhood years, including familial, societal, and other ecological factors affecting young children’s development. Pr.: FSHS 110 or PSYCH 110.

K-State 8:
- Global Issues and Perspectives
- Social Sciences.

◆ FSHS 350. Family Relationships and Gender Roles. (3) Fall, Spring. Effects of family interaction upon individual development and gender roles; consideration of premartial, marital, and parent-child relationships. Pr.: FSHS 110 or PSYCH 110 or SOCIO 211.

K-State 8:
- Social Sciences.
FSHS 400. Family and Consumer Economics. (3) Fall. Issues and problems confronting consumers. Emphasis on current economic issues and their potential for impacting families and society. Pr.: ECON 110 or concurrent enrollment.
K-State 8:
- Empirical and Quantitative Reasoning
- Social Sciences

FSHS 405. Advanced Personal and Family Finance. (3) Spring. In-depth applications of personal and family money management principles with emphasis on credit, savings, insurance, and budgeting. Pr.: FSHS 105 with grade of “B” or better and CIS 102 or CMST 108.
K-State 8:
- Empirical and Quantitative Reasoning
- Social Sciences

FSHS 506. Middle Childhood and Adolescence. (3) Spring. Principles of growth and development during middle childhood and adolescence, including familial, societal, and other ecological factors affecting development of youth. Pr.: FSHS 110 or PSYCH 110 and FSHS majors only.
K-State 8:
- Social Sciences.

FSHS 510. Human Development and Aging. (3) Fall. Survey of issues, research, and problems in aging and human development throughout adulthood, with particular emphasis upon the later years. Pr.: FSHS 110 or PSYCH 280.
K-State 8:
- Human Diversity within the U.S.
- Social Sciences.

FSHS 550. The Family. (3) Fall, Spring. Consideration of the family throughout the family life cycle; developmental tasks at each stage. Use and impact of family support services. Pr.: Nine hours in FSHS or other social science and junior standing.
K-State 8:
- Social Sciences.

FSHS 552. Families and Diversity. (3) Spring. Selected topics for understanding families in multiple contexts. Implications for professionals working with individuals and families. Pr.: FSHS majors, junior or senior standing, 15 FSHS credits, FSHS 550. Coreq.: FSHS 550.
K-State 8:
- Human Diversity within the U.S.
- Social Sciences.

FSHS 579. Orientation/FSHS Internship. (1) Fall. Consideration and application of professional knowledge and skills necessary for selection and placement in a social agency for a supervised experience in direct service to clients. Pr.: FSHS 110 and 350 with a grade of B or better; senior standing; and minimum GPA of 2.50; FSHS majors only.

FSHS 580. FSHS Internship. (8) Spring. A block field placement in local agencies. Faculty-supervised experience in direct service to clients: individuals, groups, and communities. Weekly seminar during placement emphasizes theory underlying the practice. Pr.: FSHS 110, 350, and 579 with grades of B or better; senior standing; and minimum GPA of 2.50; FSHS majors only.
K-State 8:
- Ethical Reasoning and Responsibility
- Social Sciences.

FSHS 585. Professional Seminar in FSHS. (3) Spring. Capstone course for students completing the internship. Consideration of professional roles and responsibilities of human service providers, ethics, career
development, and characteristics of client populations. Focus on skills required in the delivery of human services with diverse groups. Pr.: FSHS 579, Senior standing and FSHS majors only. Coreq.: Concurrent enrollment in FSHS 580.

K-State 8:
- Ethical Reasoning and Responsibility
- Social Sciences.

FSHS 590. Capstone Experience in Family Studies and Human Services. (3) Spring. Capstone course for students NOT completing the internship. Consideration of professional roles and responsibilities of human service providers, ethics, career development, and characteristics of client populations. Focus on skills required in the delivery of human services with diverse groups. Pr.: Senior standing, FSHS majors only.

K-State 8:
- Social Sciences
- Ethical Reasoning and Responsibility

FSHS 595. Professional Seminar in Family Financial Planning. (3) Spring. Examination of professional issues in family financial planning, including ethical considerations, regulation and certification requirements, communication skills, and professional responsibility. Development of skills needed for family financial planners working with families in meeting their financial needs. Pr.: FSHS 405, FSHS 760, FSHS 762, FSHS 766. Coreq.: FSHS 764, FSHS 772.

K-State 8:
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility


K-State 8:
- Human Diversity within the U.S.
- Social Sciences.

FSHS 756. Financial Counseling. (3) Spring. Theory and research regarding the interactive process between the client and the practitioner, including communication techniques, motivation and esteem building, the counseling environment, ethics, and methods of data intake, verification, and analysis. Other topics include legal issues, compensation, uses of technology to identify resources, information management, and current or emerging issues.

FSHS 760. Families, Employment Benefits, and Retirement Planning. (3) Fall. Study of micro and macro considerations for retirement planning. Survey of various types of retirement plans, ethical considerations in providing retirement planning services, assessing and forecasting financial needs in retirement, and integration of retirement plans with government benefits.

FSHS 762. Investing for the Family’s Future. (3) Fall. An in-depth study of investment options for clients, this course will include common stocks, fixed income securities, convertible securities, and related choices. Relationships between investment options and employee/employer benefit plan choice will be studied. Current and emerging issues, and ethics will be an integral part of the course.

FSHS 764. Estate Planning for Families. (3) Fall. Introduction to fundamentals of the estate planning process. Includes property transfer, tax consequences, probate avoidance, powers of appointment, and various tools/techniques used in implementing an effective estate plan.

FSHS 766. Insurance Planning for Families. (3) Spring. An in-depth study of risk management concepts, tools, and strategies for individuals and families, including: life insurance; property and casualty insurance; liability insurance; accident, disability, health, and long-term care insurance; and government-subsidized programs. Current and emerging issues, as well as ethical considerations, relative to risk management will be discussed. Case studies will provide experience in selecting insurance products suitable for individuals and families.
FSHS 772. Personal Income Taxation. (3) Spring. This course provides in-depth information of income tax practices and procedures including tax regulations, tax return preparation, the tax audit process, the appeals process, preparation for an administrative or judicial forum, and ethical considerations of taxation. New and emerging issues related to taxation will be covered. Family/individual case studies provide practice in applying and analyzing tax information and recommending appropriate tax strategies.

♦ GNHE 210 Foundations of Human Ecology. (1) Fall, Spring. Human ecological theory, disciplines and professions represented in the College of Human Ecology, the history of human ecology and family and consumer sciences, career paths, and contemporary issues in the field. Learning activities include case studies; critical thinking and evaluation; analysis of history, trends and issues; and career planning. Note: Suggested enrollment during first year in General Human Ecology or other Human Ecology degree program.

♦ HN 132 Basic Nutrition. (3) Fall, Spring. Concepts of human nutrition applied to personal food choices and health.

K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Sciences

Social Work

ANTH 200. Introduction to Cultural Anthropology. (3) Fall, Spring. Introduction to ethnology and ethnography; analysis and comparison of technological, social, and religious characteristics of cultural systems. Note: Not available for credit to students who have credit in ANTH 204.

K-State 8:
- Global Issues and Perspectives
- Social Sciences

SOCWK 100. Social Work: The Helping Profession. (3) Fall, Spring. An introduction to the profession of social work and the various fields of social service by observing, experiencing, and analyzing social work and its place in society. An opportunity for the student to test social work as a possible career choice.

K-State 8:
- Historical Perspectives
- Social Sciences

SOCWK 200. Basic Skills for Working with People. (3) Fall, Spring. Course develops basic skill components for the helping professions. Students learn fundamentals of interpersonal communication.

K-State 8:
- Ethical Reasoning and Responsibility

SOCWK 310. Topics in Social Work. (1-3) Fall, Spring. Supervised independent study projects.

SOCWK 315. Human Behavior in the Social Environment I. (3) Fall, Spring. An introduction to the relationship among biological, social, psychological, and cultural systems as they affect or are affected by human behavior as it relates to social world models of practice. Emphasis on social systems understanding of human development. Pr.: Two courses in the social sciences and sophomore standing.

K-State 8:
- Human Diversity within the U.S.
- Social Sciences

SOCWK 330. Social Work Research Methods and Analysis I. (3) Spring. First of two research courses. Emphasis on social work research methodology and statistical analysis of small sample data sets. Content examines the ethics and processes of research. Pr.: SOCWK 100 and MATH 100; Social work majors only.

K-State 8:
- Empirical and Quantitative Reasoning
SOCWK 510. Social Welfare as a Social Institution. (3) Fall, Spring. The development and present status of social welfare in meeting changing human needs and the requirements in other parts of our social system; the analysis of present-day philosophy and the functions of social welfare. Pr.: One course in each of the following areas: sociology, economics, and political science.

K-State 8:
- Historical Perspectives
- Human Diversity within the U.S.

SOCWK 525. Human Behavior and the Social Environment II. (3) Fall Spring. Continuation of SOCWK 315, with a focus on large systems (organizations and communities). Social systems and ecological perspectives as a framework for understanding macrosystems. Structure and function of large systems and their impact on people. Institutional racism and other forms of institutional discrimination, and the importance of recognizing the functions and the effects of racial, ethnic, and other forms of community diversity. Pr.: SOCWK 315. Coreq.: SOCWK 560.

K-State 8:
- Ethical Reasoning and Responsibility
- Social Sciences

SOCWK 530. Social Work Research Methods and Analysis II. (3) Fall. Second of two research methods courses. Emphasis on designing and conducting social work research projects appropriate for baccalaureate social work practice. Attention given to research strategies for the evaluation of social work practice. Pr.: SOCWK 330; Social work majors only.

K-State 8:
- Empirical and Quantitative Reasoning

SOCWK 550. Field Practicum Preparation. (2) Fall, Spring. Social work majors take this course in the semester before enrollment in SOCWK 562 Field Experience, in preparation for the field practice experience. Students explore various fields of practice and social work settings and work with the instructor to plan their practicum for the following semester. Pr.: senior standing; instructor consent; social work majors only.

SOCWK 560. Social Work Practice I. (3) Fall, Spring. Continued development of social work practice skills. The social systems perspective is used to guide the development of a problem-solving methodology with attention to information gathering, assessment, and problem identification. Values clarification and self awareness are emphasized and the skills needed for intervention, termination, and evaluation are introduced. Pr.: SOCWK 100, 200, 315, 510; junior standing; instructor consent; social work majors only.

SOCWK 561. Social Work Practice II. (3) Fall, Spring. Continuation of SOCWK 560 with emphasis on skill development in intervention techniques, and practice evaluation from a social systems perspective. A variety of intervention strategies and techniques is presented with emphasis on the development of a social work frame of reference. Pr.: SOCWK 560; senior standing; instructor consent; social work majors only.

SOCWK 562. Field Experience. (10) Spring, Summer. Supervised field experience in community agencies and programs as a practical application of social work knowledge and skills gained from major course work. Emphasis on direct work with clients, whether individuals, groups, or communities. Seminars make use of student’s experiences to analyze social work theory and practice. Pr.: SOCWK 550, 561; senior standing; instructor consent; social work majors only.

SOCWK 564. Social Work Professional Seminar. (2) Spring, Summer. A review of various theories in the behavioral sciences which influence the practice of social work. Primary focus of the course is on the use of these theories in implementing change in various client systems. Coreq.: SOCWK 562; social work majors only.

SOCWK 565. Social Policy. (3) Fall, Spring. Examination of policies and programs developed to cope with various social problems. Emphasis will be placed on analysis of existing programs and policies and the formulation of alternative policies. Attention will be given to policy change through organizational and legislative action. Pr.:
SOCWK 510; one course in each of the following areas: sociology, economics, and political science; and one course in social science research methods.

K-State 8:
- Ethical Reasoning and Responsibility
- Social Sciences

SOCWK 568. Social Work Practice III. (3) Fall, Spring. Continuation of social work practice sequence with focus on skills development for macro-level social work practice. Community and organization intervention strategies are presented with emphasis on the development of a social work frame of reference. Coreq.: SOCWK 561. Pr.: SOCWK 560; senior standing; social work majors only.

SOCWK 570. Social Work with Groups. (3) Fall, Spring. Taken concurrently with SOCWK 561. Course provides the theoretical framework for effective generalist social work practice with groups, facilitates the development of group leaders who possess an understanding of group dynamics and effective leadership skills through group discussion, experiential exercises and leadership experiences. Coreq.: SOCWK 561. Pr.: SOCWK 560; social work majors only.

K-State Salina Dean’s Office Courses

General

◆ COT 150. The Humanities Through the Arts. (3) Spring. A general introduction to the humanities, focusing on what they are and their basic importance. Painting, sculpture, architecture, literature, drama, music, dance, film, and photography will be explored. Emphasis will be on participation, involvement, guest speakers, tours, and appreciation. K-State 8:
- Aesthetic Interpretation
- Historical Perspectives

COT 299. Problems in Arts, Sciences, and Business. (Var.) Fall, Spring, Summer. Opportunity for advanced independent study in specific subject areas in Department of Arts, Sciences, and Business. Pr.: Consent of instructor.
K-State 8:
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility

COT 499. Advanced Problems in Arts, Sciences, and Business. (Var.) Fall, Spring. Summer. Opportunity for advanced independent study in specific subject areas in Department of Arts, Sciences, and Business. Pr.: Consent of instructor.

Internship

COT 495. Industrial Internship. (Var.) Fall, Spring, Summer. Experiential learning program in an off-campus setting. Written documentation and oral presentation of project goals, experiences, and accomplishments. Pr.: Approval of faculty internship advisor and sponsoring company.
K-State 8:
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility

University Honors Program

COT 020. University Honors Program. (0) Fall, Spring. This course is for record keeping purposes to allow the University Honors Program and K-State Salina to monitor and track students who are a part of the Honors Program.

COT 189. Introduction to University Honors Program. (1) Fall, Spring. An overview of the University Honors Program including directions, goals, and student requirements for completion of the program. Pr.: Acceptance into the College Honors Program.
K-State 8:
Ethical Reasoning and Responsibility

Other

EDCPE 111. The University Experience. (1-3) Fall, Spring. Introduction to the university experience through participation in weekly small group meetings and informational lectures. Study of such topics as academic skills, including communication and critical thinking, academic and career planning and goal setting, and social issues that challenge many college students. Pr.: New students or instructor consent.
K-State 8:
Ethical Reasoning and Responsibility

Arts, Sciences, and Business

Business courses

BUS 110. Introduction to Business. (3) Fall, Spring. This course surveys the objectives, decisions, and activities within a business organization. Topics include a study of management responsibilities and controls, organizational structures, and marketing activities.
K-State 8:
Social Sciences

BUS 251. Financial Accounting. (3) Fall, Spring, Summer. Study of business topics such as alternative forms of business organizations; typical business practices; legal instruments such as notes, bonds, and stocks; and financial statements and analysis. The main objective is to develop the ability to provide information to stockholders, creditors, and others who are outside an organization.
K-State 8:
Empirical and Quantitative Reasoning
Ethical Reasoning and Responsibility

BUS 252. Managerial Accounting. (3) Fall, Spring, Summer. This course outlines the use of internal accounting data by managers in directing the affairs of business and non-business organizations. Pr.: BUS 251.
K-State 8:
Empirical and Quantitative Reasoning

BUS 315. Supervisory Management. (3) Fall, Spring, Summer. An analysis of the responsibilities and work environment of a supervisor, with an examination of skills, practices, and concepts helpful in developing effective relations with people in today’s changing environment. The course includes an international emphasis using South Asia as a case study. Pr.: ENGL 100; and COMM 105 or 106.
K-State 8:
Ethical Reasoning and Responsibility
Global Issues and Perspectives

BUS 410. Managerial and Project Economics. (3) Fall. Economic analysis of problems as applied to managerial decision making. Students consider the economic viability of solutions in engineering and a variety of other kinds of projects common in technology-oriented businesses. Pr.: MATH 100. Same as MET 410.
K-State 8:
Social Sciences

FINAN 450. Principles of Finance. (3) Fall, Spring. Study of the basic principles of finance, including discounted cash flow analysis, risk-return tradeoff, asset pricing models, and financial and real asset valuation. Applications of these concepts to the firm’s investment and financing decisions and performance analysis will be discussed. Pr.: ECON 120, STAT 350, and ACCTG 231.
K-State 8:
Empirical and Quantitative Reasoning
MANGT 366. Information Technology for Business. (3) Fall, Spring. A comprehensive view of the role of information technology in satisfying organizations' information requirements. Problems and techniques concerning the management of responsive information systems with special attention to managers' use of systems outputs. Cases and hands-on exercises emphasizing the use of information systems in decision making, information gathering and organizing, use of modeling techniques, and presentation of information. Pr.: GENBA 166 or CIS 101, 102, and 103. 
K-State 8:
• Empirical and Quantitative Reasoning

MANGT 390. Business Law I. (3) Fall, Spring. A study of law as it relates to business, including court procedures and systems, contracts, torts, agency and employment law, and business crimes. Pr.: Junior standing. 
K-State 8:
• Ethical Reasoning and Responsibility
• Social Sciences

MANGT 420. Management Concepts. (3) Fall, Spring. Managing organizations through fundamental processes of developing plans, structuring work relationships, coordinating effort and activities, directing and motivating subordinates, and controlling. Also includes managerial roles and responsibilities, effective decision making, productivity improvement, and models and theories of human behavior. 
K-State 8:
• Historical Perspectives
• Social Sciences

MANGT 421. Introduction to Operations Management. (3) Fall. Description and analysis of problems related to the output of goods and services, operations planning and control, and systems management. Pr.: STAT 325 or STAT 350. 
K-State 8:
• Empirical and Quantitative Reasoning

MANGT 530. Industrial and Labor Relations. (3) Spring. Basic course in industrial and labor relations. Broad coverage of the institution of collective bargaining and its environment, the goals and operation of labor unions, the impact of unions on management, and labor relations law. Pr.: Junior standing. 
K-State 8:
• Historical Perspectives
• Social Sciences

MANGT 531. Human Resources Management. (3) Spring. This course provides an overview of the human resource systems and processes needed to achieve organizational effectiveness and strategic success. All key functional areas including human resource planning, staffing, performance management, employee development, and compensation are addressed. Pr.: MANGT 420. 
K-State 8:
• Human Diversity within the U.S.
• Social Sciences

◊ MKTG 400. Introduction to Marketing. (3) Fall, Spring. A general study of marketing principles which lead to the development of marketing strategy. A review of environmental influences and key analytical tools used in formulating marketing plans. Product or service design, distribution, pricing, and promotional programs. Pr.: ECON 110 or 120. 
K-State 8:
• Social Sciences

MKTG 542. Professional Selling. (3) Spring. Focuses on interpersonal communications between buyers and sellers, both oral and written. The mechanics and intricacies of personal sales presentations, which will be developed through practice. Pr.: MKTG 400. 
K-State 8:
Communications courses
COMM 105. Public Speaking IA. (2) Fall, Spring. Alternate to COMM 106. Principles and practice of message preparation, audience analysis, presentational skills, and speech criticism. Primarily granted for students whose curricula require a 2-credit hour course. Credit not granted for both COMM 105 and 106.

COMM 106. Public Speaking I. (3) Fall, Spring, Summer. Principles and practice of message preparation, audience analysis, presentational skills, and speech criticism permitting greater practice in oral presentation. Credit not granted for both COMM 105 and 106.

COMM 311. Business and Professional Speaking. (3) Fall, Spring. Principles and practice of speaking in an organizational setting. Areas of emphasis will be oral reports, interviewing, interpersonal communication, and working in groups. Pr.: COMM 105 or 106.
K-State 8:
• Aesthetic Interpretation
• Ethical Reasoning and Responsibility

English courses
ENGL 080. Developmental English. (3) Fall, Spring. Basics of standard edited (written) English with emphasis on grammar, usage, and sentence structure. This course does not fulfill requirements for the associate degree. Three hours rec. a week.

ENGL 100. Expository Writing I. (3) Fall, Spring, Summer. Introduction to expressive and informative writing. Frequent discussions, workshops, and conferences. Offers extensive practice in the process of writing: getting ideas, drafting, analyzing drafts, revising, and editing.

ENGL 200. Expository Writing II. (3) Fall, Spring, Summer. Introduction to writing persuasively and in response to literature. As with ENGL 100, uses discussion, workshops, and conferences, and emphasizes the writing process. Pr.: ENGL 100 or ENGL 110 and sophomore standing.

ENGL 251. Introduction to Literature. (3) Fall, Spring. Study of fiction, poetry, drama, and non-fiction.
K-State 8:
• Aesthetic Interpretation

ENGL 302. Technical Writing. (3) Fall, Spring, Summer. This writing course will provide students from a number of business, technology and aviation disciplines with intensive practice writing the kinds of documents that are common in their future professional lives. Three hours lec. a week. Pr.: ENGL 100 and sophomore standing.
K-State 8:
• Aesthetic Interpretation
• Empirical and Quantitative Reasoning

ENGL 325. Literature and Technology. (3) Students will read literature in a variety of literary, civic, and professional genres about technology and its effect on society; through writing, understand technology in terms of humanistic themes. Three hours lec. a week. Pr.: ENGL 100.
K-State 8:
• Aesthetic Interpretation
• Historical Perspectives

ENGL 420. Topics in Film. (3) Spring. Selected studies in film analysis. May be repeated once with change of topic. Pr.: ENGL 200 or 210.
K-State 8:
• Aesthetic Interpretation
ENGL 450. Literature and Society. (3) Fall, Spring. Literature in relation to social and cultural patterns and influences. Repeatable once. Pr.: ENGL 200 or 210.
K-State 8:
• Aesthetic Interpretation

Language courses
SPAN 110. Conversational Spanish for the Workplace. (3) Spring. Introduction to the basic Spanish conversational skills focusing on everyday language used in the workplace with an emphasis on technical terms and concepts, supplemented with grammar and writing.
K-State 8:
• Aesthetic Interpretation
• Human Diversity within the U.S.

Mathematics courses
MATH 010. Intermediate Algebra. (3) Fall, Spring. Preparatory course for MATH 100. Includes arithmetic (signed numbers, polynomials, algebraic fractions, exponents, and roots), solutions to equations (linear, quadratic, polynomial, root, and fractional), graphs (linear, quadratic, polynomial, root, and fractional), graphs (linear and quadratic), and geometry (area, perimeter, and the Pythagorean Theorem). Pr.: Two units of mathematics in grades 9–12 and a College Algebra PROB ≥ C of 43 or more on the ACT assessment by K-State; or a score of at least 7 on the mathematics placement test.

MATH 011. Intermediate Algebra Review. (2) Fall, Spring. Supplemental algebra lab that is required to be taken in conjunction with MATH 010. The student will receive 2 hours credit, which will not count towards graduation. Two hours rec. a week.

MATH 020. College Algebra Review. (2) Fall, Spring. Summer. Supplemental algebra lab to be taken in conjunction with MATH 100 for students who need additional instruction in algebra. The student will receive 2 hours credit, which will not count toward graduation. Students are placed in this course on the basis of their score on the placement exam. Two hours rec. a week.

MATH 100. College Algebra. (3) Fall, Spring. Summer. Fundamental concepts of algebra; algebraic equations and inequalities; functions and graphs; zeros of polynomial functions; exponential and logarithmic functions; systems of equations and inequalities. Pr.: B or better in MATH 010; or two years of high school algebra and a score of 25 or more on Enhanced ACT mathematics; or a score of at least 18 on the mathematics placement exam.
K-State 8:
• Empirical and Quantitative Reasoning

MATH 150. Plane Trigonometry. (3) Fall, Spring, Summer. Trigonometry and inverse trigonometric functions, trigonometric identities and equations; applications involving right triangles and applications illustrating the laws of sines and cosines. Pr.: C or better in MATH 100; or two years of high school algebra and a score of 25 or more on Enhanced ACT mathematics; or a score of at least 20 on the mathematics placement exam.

MATH 151. Applied Plane Trigonometry. (2) Fall, Spring. Trigonometry and inverse trigonometric functions, trigonometric identities and equations; applications involving right triangles and applications illustrating the laws of sines and cosines. Emphasis is placed on applications to engineering technology, tool and machine design. Pr.: Students are placed in this course on the basis of their score on the K-State Salina math placement exam or ACT score. Two hours rec. a week.
K-State 8:
• Empirical and Quantitative Reasoning

MATH 205. General Calculus and Linear Algebra. (3) Spring. Introduction to calculus and linear algebra concepts that are particularly useful to the study of economics and business administration with special emphasis on
working problems. Pr.: MATH 100 with C or better grade (College Algebra in the preceding semester is recommended).

K-State 8:
- Empirical and Quantitative Reasoning

**MATH 215. Calculus I.** (5) Summer. Course content includes a brief review of pre-calculus materials of algebra and trigonometry, functions, limits, differentiation, applications of differentiation, integration, and applications of the definite integral. Theory is presented in a style tailored for first-semester students of mathematics. Five hours rec. a week. Pr.: MATH 100; MATH 150 or 151.

K-State 8:
- Empirical and Quantitative Reasoning

**MATH 216. Calculus II.** (5) Summer. An extension of MATH 215, Calculus I, to include integration, differentiation, and applications of transcendent functions. Five hours rec. a week. Pr.: MATH 220 or MATH 215.

K-State 8:
- Empirical and Quantitative Reasoning

**MATH 220. Analytic Geometry and Calculus I.** (4) Fall, Spring, Summer. Analytic geometry, differential and integral calculus of algebraic and trigonometric functions. Pr.: B or better in MATH 100 and C or better in MATH 150; or three years of college preparatory mathematics including trigonometry and Calculus I PROB ≥ C of 55 or more on the ACT assessment; or a score of at least 26 on the mathematics placement exam.

K-State 8:
- Empirical and Quantitative Reasoning

**MATH 221. Analytic Geometry and Calculus II.** (4) Fall. Continuation of MATH 220 to include transcendental functions, techniques of integration, and infinite series. Pr.: C or better in MATH 220.

K-State 8:
- Empirical and Quantitative Reasoning

**Philosophy courses**

♣ **PHILO 100. Introduction to Philosophical Problems.** (3) Spring. An introduction to some of the main problems of philosophy, such as the nature of morality, knowledge, mind and body, political authority, and the existence of God.

K-State 8:
- Ethical Reasoning and Responsibility

♣ **PHILO 105. Introduction to Critical Thinking.** (3) Fall, Spring. A basic introduction to both deductive and inductive reasoning. Emphasis is placed on constructing, analyzing, and evaluating arguments.

K-State 8:
- Empirical and Quantitative Reasoning

♣ **PHILO 130. Introduction to Moral Philosophy.** (3) Fall, Spring, Summer. Philosophical issues arising in and about morality, such as the nature of moral judgments, moral knowledge, moral justification, and the relation of morality to religion. Topics might be approached by a study of contemporary moral problems, by reading of classical texts, or by both methods.

K-State 8:
- Ethical Reasoning and Responsibility

♣ **PHILO 390. Business Ethics.** (3) Fall, Spring. An examination of the principles of ethics as applied to situations and practices in modern American business.

K-State 8:
- Ethical Reasoning and Responsibility
Science courses

♦BIOL 198. Principles of Biology. (4) Fall, Spring, Summer. An introductory course for majors and non-majors focusing on plants, animals, and microbes. Specific areas covered include biological molecules, cells, genetics, energy flow, physiology, ecology, and evolution. Studio format incorporating lec., lab, and rec. elements in two two-hour sessions per week. 
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

BIOL 397. Topics in Biology. (1-6) Fall, Spring, Summer. Special course offering in an area of faculty expertise and/or supervised independent study projects.

♦CHM 110. General Chemistry. (3) Fall, Spring, Summer. Principles, laws, and theories of chemistry; important metallic and nonmetallic substances. (An optional laboratory course, CHM 111, is available for an additional hour of credit.) Three hours lec. a week. Pr.: MATH 010 or at least one year of high school algebra. 
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

♦CHM 111. General Chemistry Laboratory. (1) Fall, Spring, Summer. An optional laboratory course to supplement the material of CHM 110. Three hours lab a week. Coreq.: CHM 110. 
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

♦CHM 210. Chemistry I. (4) Fall, Spring, Summer. First course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. Concurrent enrollment in CHM 210 lab is required. Three hours lec. and three hours lab a week. Pr.: One year of high school chemistry and MATH 100 (or two years of high school algebra). 
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

♦GEOL 100. Earth In Action. (3) Fall, Spring. The earth's physical, structural, and dynamic features; the most common minerals and rocks; processes affecting the earth. Three hours rec. a week. 
K-State 8:
• Historical Perspectives
• Natural and Physical Sciences

♦GEOL 103. Geology Laboratory. (1) Fall, Spring. Field and laboratory investigation of minerals, rocks, and fossils; use of maps; environmental studies; erosion, transportation, sedimentation. Two hours lab a week. Coreq.: GEOL 100, 105, or 125. 
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

♦PHYS 101. The Physical World I. (3) Fall, Spring, Summer. The courses The Physical World I and II are designed to present an overview of the physical sciences for students who have little or no previous physical science. The Physical World I is principally classical physics with some discussions of modern physics. The observations and phenomena are simple and basic. Three hours lec. a week. Not available for credit to students who have credit in PHYS 106. 
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences
PHYS 103. The Physical World I Laboratory. (1) Summer. Two hours lab a week. Coreq.: PHYS 101.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

PHYS 113. General Physics I. (4) Fall, Spring, Summer. A basic development of the principles of mechanics, heat, fluids, oscillations, waves, and sound. Emphasis is on conceptual development and numerical problem solving. Two hours lec., one hour rec., one hour quiz, and two hours lab a week. Pr.: MATH 150 or one-half units of high school algebra and one unit high school trigonometry.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

PHYS 114. General Physics II. (4) Fall, Spring, Summer. The continued treatment of the fundamentals of electricity and magnetism, light and optics, atomic and nuclear physics. These concepts are used to understand D.C. and A.C. circuits, motors, and generators. Emphasis is placed on conceptual development and problem solving. Two hours lec., one hour rec., one hour quiz, and two hours lab a week. Pr.: PHYS 113.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

Social sciences and humanities courses
AMETH 160. American Ethnic Studies. (3) Spring. This course introduces students to the major concepts related to ethnicity and to some of the major American ethnic groups.
K-State 8:
• Historical Perspectives
• Human Diversity within the U.S.

◆ ECON 110. Principles of Macroeconomics. (3). Fall, Spring, Summer. Basic facts, principles, and problems of economics; determination of the level of employment, output, and the price level; the monetary and banking system; problems and policies of economic instability, inflation, and growth; principles of economic development; other economic systems. Pr.: Probability of a grade of C or higher (PROB≥C) of at least 40 percent according to the economics component of the ACT Student Profile, a score of 18 or higher on the Math Placement Exam, or a grade of B or higher in MATH 010.
K-State 8:
• Global Issues and Perspectives
• Social Sciences

◆ ECON 120. Principles of Microeconomics. (3) Fall, Spring, Summer. Basic facts, principles, and problems of economics including study of the determination of prices; the determination of wages, rent, interest, and profit; theory of the firm; monopoly and government regulation; international economic relations. Pr.: Probability of a grade of C or higher (PROB≥C) of at least 40 percent according to the economics component of the ACT Student Profile, a score of 18 or higher on the Math Placement Exam, or a grade of B or higher in MATH 010.
K-State 8:
• Social Sciences

ECON 530. Money and Banking. (3) Fall. Nature, principles, and functions of money; development and operation of financial institutions in the American monetary system, with emphasis on processes, problems, and policies of commercial banks in the United States. Pr.: ECON 110.
K-State 8:
• Empirical and Quantitative Reasoning
• Social Sciences
HIST 320. History of Technology. (3) Fall. This course focuses on the development of technology from ancient times to modern day, with emphasis on technology and its impact on American society from colonial times to present. Students will prepare a portfolio project that will feature a research or service learning component. Pr.: ENGL 100.
K-State 8:
• Historical Perspectives

POLSC 355. Contemporary Issues. (3) Fall, Spring. Study and analysis of selected political topics of immediate relevancy and concern. May be repeated once.
K-State 8:
• Human Diversity within the U.S.
• Social Sciences

PSYCH 110. General Psychology. (3) Fall, Spring, Summer. An introductory survey of the general content areas of psychology, including methods, data, and principles.
K-State 8:
• Empirical and Quantitative Reasoning
• Social Sciences

PSYCH 290. Innovative Studies in Psychology. (1-6) Fall, Spring. Topics selected in consultation with the instructor. To be used for interdisciplinary and innovative approaches to psychological topics. Pr.: Consent of instructor.
K-State 8:
• Social Sciences

PSYCH 505. Abnormal Psychology. (3) Fall. An introductory study of behavior pathologies, with emphasis on their etiology and treatment. Note: 500-level psychology courses cannot be taken for graduate credit by students in psychology graduate programs. Pr.: Junior standing, PSYCH 110.
K-State 8:
• Empirical and Quantitative Reasoning
• Social Sciences

SOCIO 211. Introduction to Sociology. (3) Fall, Spring, Summer. Development, structure, and functioning of human groups; social and cultural patterns; and the principal social processes.
K-State 8:
• Human Diversity within the U.S.
• Social Sciences

SOCIO 640. Sociology of the Family. (3) Spring. Origin and development of marriage customs and systems of family organization, the preparation for family life under present conditions. Pr.: SOCIO 211.
K-State 8:
• Human Diversity within the U.S.
• Social Sciences

Statistics courses
STAT 325. Introduction to Statistics. (3) Fall, Spring, Summer. A project-oriented first course in probability and statistics with emphasis on computer analysis of data. Examples selected primarily from social sciences, natural sciences, education, popular culture. Descriptive statistics, probability, sampling, tests of hypothesis and confidence intervals for means and proportions, design and analysis of simple comparative studies, chi-square test for association, correlation and linear regression. Pr.: Math 100. Cannot be taken for credit if credit has been received for STAT 340, 350, or comparable courses.
K-State 8:
• Empirical and Quantitative Reasoning
Aviation

Aviation Maintenance courses
AVM 111. Basic Aircraft Electricity. (4) Fall. Basic concepts of DC/AC circuits, with basic laws relating to the following: Voltage, current, resistance, continuity, and leakage; relationship of voltage, current, and resistance in electrical circuits; reading and interpretation of electrical circuit diagrams; electrical devices, and inspection and servicing of batteries. Introduction to digital numbering systems and digital logic functions. Three hours lec. and one hour lab a week.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

AVM 112. Aircraft Welding. (2) Spring. Theory and skill development in aircraft welding processes. Exercises in gas welding processes as applied to ferrous and nonferrous materials. Oxygen/acetylene, inert gas, and resistance welding processes are to be studied. One hour rec. and three hours lab a week.
K-State 8:
• Natural and Physical Science

AVM 121. Aircraft Drawings. (1) Fall. The course is designed to teach the student how to recognize and identify each kind of line as it appears in aircraft drawings and to interpret the meaning of the lines as they relate to surfaces and details in drawings. Three hours lab a week.
K-State 8:
• Aesthetic Interpretation
• Empirical and Quantitative Reasoning

AVM 131. Aircraft Standards. (4) Fall. A survey of the organization of the Federal Aviation Administration. Emphasis will be placed on regulations, standards, specifications, procedures and the practice of using charts, graphs and drawings. Also included are the introduction to air transport maintenance procedures, weight and balance procedures, aircraft ground operations and the introduction to flight training to include several flights. Flight lab fees required. Two hours lec. and six hours lab a week.
K-State 8:
• Empirical and Quantitative Reasoning
• Ethical Reasoning and Responsibility

AVM 132. Aircraft Fluid Power. (3) Spring. A study of basic fluid mechanics as it applies to practical applications in aircraft systems. Compressible and incompressible fluid systems will be studied. Two hours lec. and three hours lab a week.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

AVM 141. Aircraft Science. (3) Fall. This is a study of applied mathematics and basic physics. Section one: mathematics will provide the learner with the tools needed to perform the calculations normally confronted by the aviation maintenance technician. Section two: the study of basic science will enable the student to better understand the operation of aircraft and the many complex systems needed to sustain safe flight. Three hours rec. a week.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

AVM 142. Airframe Systems. (4) Spring. A study of the airframe systems and components to include: pressurization, heating, and cooling, and structural device. Two hours lec. and six hours lab a week.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science
AVM 151. Aviation Maintenance Fundamentals. (3) Fall. This course is designed to permit the student to learn and practice those skills and techniques essential to the career development of the aviation maintenance technician. The subjects included are: shop safety, aircraft general familiarization, fluid lines and fittings, hand tools and measuring devices, aircraft hardware, cleaning and corrosion control, aircraft metals, inspection fundamentals, ground operation and servicing, and support equipment. One hour rec. and six hours lab a week.  
K-State 8:  
- Empirical and Quantitative Reasoning  
- Ethical Reasoning and Responsibility

AVM 152. Airframe Structures and Repair. (5) Spring. A study of materials commonly used in airframe structures and the associated study of making structural repairs according to recommended procedures. Skills in sheet metal are stressed. Three hours rec. and six hours lab a week.  
K-State 8:  
- Empirical and Quantitative Reasoning  
- Natural and Physical Science

AVM 162. Airframe Electrical Systems. (4) Spring. An advanced study of DC/AC circuits law relating to circuit analysis and a detailed study of measuring instruments. Advanced 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. Two hours lec. and six hours lab a week. Pr.: AVM 111 or ECET 100.  
K-State 8:  
- Empirical and Quantitative Reasoning  
- Natural and Physical Science

AVM 231. Aircraft Finish and Fabrication. (3) Fall. This course is designed to acquaint the student with the wood and fabric coverings and procedures used on aircraft, and methods used in preparation for and application of paint finishes to aircraft surfaces. One hour rec. and six hours lab a week.  
K-State 8:  
- Empirical and Quantitative Reasoning  
- Natural and Physical Science

AVM 241. Navigational Aids and Communication Systems. (3) Fall. A survey study of the aids to navigation and communications used in light and intermediate class aircraft. Operation and installation of the various types of equipment will be stressed. Two hours lec. and three hours lab a week. Pr.: AVM 111 or ECET 100.  
K-State 8:  
- Empirical and Quantitative Reasoning  
- Natural and Physical Science

AVM 242. Navigational Aids and Communication Systems for Avionics. (3) Fall. A survey study of the aids to navigation and communications used in light and intermediate class aircraft. Operation and installation of the various types of equipment is stressed. Two hours lec. and three hours lab a week. Pr.: AVM 111 or ECET 100.  
K-State 8:  
- Empirical and Quantitative Reasoning  
- Natural and Physical Science

AVM 261. Aircraft Inspection and Assembly. (5) Fall. A study of assembly and manufacturing procedures and inspection of aircraft components. This course also covers in detail annual and 100-hour inspections. Three hours rec. and six hours lab a week. Pr.: AVM 121, 131.  
K-State 8:  
- Empirical and Quantitative Reasoning  
- Ethical Reasoning and Responsibility
AVM 290. **Problems in Aviation.** (Var) Fall, Spring, Summer. Advanced study in a specific area chosen by the instructor. Pr.: Consent of instructor.

AVM 312. **Aircraft Propellers.** (2) Spring. A study of the use, maintenance, and inspection of propellers and their related control systems. One hour rec. and three hours lab a week.
K-State 8:
- Empirical and Quantitative Reasoning

AVM 321. **Powerplant Fundamentals.** (4) Fall. A study of the principles of operation, design features, and operating characteristics of reciprocating aircraft engines. Includes overhaul inspection procedures on current horizontal opposed and radial engines. Three hours rec. and three hours lab a week. Pr.: AVM 131.
K-State 8:
- Ethical Reasoning and Responsibility
- Natural and Physical Science

AVM 322. **Powerplant Operation and Troubleshooting.** (3) Spring. Experience in installation, operation, and removal of aircraft engines. Engine analysis and diagnosis of malfunctions, including methods of remedy, are performed on airworthy engines. One hour rec. and six hours lab a week. Pr.: AVM 321.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

AVM 332. **Gas Turbine Powerplant.** (5) Spring. Advanced study of the fundamentals of gas turbine powerplants including operation, studies of supporting systems and inspection methods are fundamental to this course. Two hours rec. and nine hours lab a week. Pr.: AVM 321.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

AVM 342. **Powerplant Induction and Fuel Systems.** (4) Spring. A study of aircraft induction and fuel metering systems including fuels, carburetors, fuel injection systems, superchargers, and other induction system components used to ensure a dependable and accurate fuel supply at any flight configuration and attitude. Two hours rec. and six hours lab a week. Coreq: AVM 321.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

AVM 351. **Powerplant Ignition and Electrical Systems.** (3) Fall. A study of battery, magneto high and low tension ignition systems, including turbine igniters for today’s aircraft. Also a study of powerplant starting and charging systems and related components. Emphasis will be placed on troubleshooting, repair, and timing of aircraft ignition systems. Two hours rec. and three hours lab a week. Pr.: AVM 111.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

AVM 352. **Powerplant Overhaul.** (3) Spring. Practical experience in overhauling reciprocating engines. Engines are assembled and operationally checked in lab. One hour lec. and six hours lab a week. Pr.: AVM 321.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Science

AVM 390. **Problems in Aviation.** (Var.) Fall, Spring, Summer. To provide the student the opportunity for advanced study in a specific topic area or to apply aviation education to the improvement of skills previously learned. Topics are selected jointly by the student and the instructor. Pr.: Consent of instructor.
Aviation Technology courses

AVT 100. Introduction to Aviation. (3) Fall, Spring. This course will examine the history of aviation and a look at the future. Students discuss the attributes of an aviation professional, careers, career planning, and pilot certification. Students will consider historical events and their relationship to current aviation aspects. The interdependency and synergy in the development of military aircraft, the space program, as well as the growth of commercial and general aviation is discussed. Students use the Internet for various research projects concerning the past, present, and future of aviation.
K-State 8:
• Historical Perspectives
• Human Diversity within the U.S.

AVT 120. Aeronautical Programs Flight Familiarization. (1) Fall. An introduction to the fundamentals of flight in various types and categories of aircraft. A familiarization of piloting skills and knowledge, a demonstration of aircraft capabilities, and the National Airspace System. Coreq.: PPIL 111.

AVT 200. Introduction to Airport Management. (3) Spring. Introduction to the Airport Management curriculum and program requirements. Introduction to the American Association of Airport Executives’ Certified Member program, utilizing their Body of Knowledge modules.

AVT 240. Introduction to Air Traffic Control. (3) Spring. An introductory air traffic control (ATC) course that focuses on Terminal, Enroute, and FSS ATC procedures. The course examines the role of an air traffic controller at the various operational positions throughout the ATC system. The course gives an overview of the current U.S. National Airspace System as it relates to ATC procedures. In addition, the course looks at the use of future technologies and how they enhance the ATC system. Off-campus trips contribute to experiential learning. Two hours lec. and two hours lab a week. Pr.: PPIL 111.
K-State 8:
• Empirical and Quantitative Reasoning
• Ethical Reasoning and Responsibility

AVT 242. Aviation Meteorology. (4) Fall, Spring. Basic aviation-related meteorology concepts through the study of atmospheric elements and how they generally affect the weather: Introduction to the subject, water in the atmosphere, variables which cause local weather changes, specific aviation-associated hazards, understanding meteorological reports and forecasts, meteorological techniques used in predicting weather patterns.
K-State 8:
• Global Issues and Perspectives
• Natural and Physical Sciences

AVT 243. Aircraft Electrical, Navigational, and Communication Systems. (3) Provides students the basic knowledge of aircraft electrical systems, including navigation, communications, instruments, and power systems. Pr.: AVM 111.
K-State 8:
• Empirical and Quantitative Reasoning

AVT 250. Safety and Security of Airport Ground Operations. (3) Spring. This course discusses General Aviation airport ground operations, particularly from the mechanic, pilot, and ramp worker perspective. Focus will be on increasing awareness of airport operations. Attention will be given to improving airport safety by creating an enhanced awareness of rules, policies, procedures, and potential hazards that affect all individuals working in and around the airport ground operations environment. Some topics included are: aircraft marshaling procedures, airfield security issues, ground vehicle operations, and security and accident/incident response reporting.
K-State 8:
• Historical Perspectives
• Human Diversity within the U.S.
AVT 270. Introduction to Unmanned Aircraft Systems. (3) Spring. Introduction to the history of Unmanned Aircraft Systems and survey of current UAS platforms, terminology, challenges to airspace integration and operational theory.  
K-State 8:  
• Ethical Reasoning and Responsibility  
• Historical Perspectives

AVT 300. UAS Powerplant Fundamentals. (3) Fall. A study of the principles of operation, design features, and operating characteristics of various powerplants used in unmanned aircraft vehicles. Includes inspection procedures and operational theory of current electric, piston, hybrid, and turbine propulsion systems. Two hours lec. and three hours lab a week. 
K-State 8:  
• Ethical Reasoning and Responsibility  
• Natural and Physical Science

AVT 315. Advanced Avionics. (3) Fall. Covers the latest developments and trends in navigation and communication systems. Topics include Future Aviation Navigation Systems (FANS), fiber optics, enhanced vision, ADS-B, the FAA’s NextGen, as well as other advancements in avionics. Coreq.: AVM 241 or AVM 242.  
K-State 8:  
• Empirical and Quantitative Reasoning

AVT 316. AET and FCC Training. (1) Fall, Spring. A self-paced lab that allows students to study for their Aviation Electronics Technician certificate and their Federal Communication Commission license in Elements 1, 3 and 8. This is a credit/no-credit course and does not affect the student’s GPA. Two hours lab a week.

AVT 317. Composites I. (3) Fall. Introduction to composite materials used in aircraft production, detailed description of different composite materials, the procedures for installing an antenna to bonded aircraft structures. K-State 8:  
• Empirical and Quantitative Reasoning

AVT 318. Composites I Laboratory. (1) Fall. An optional laboratory course introducing the use of equipment and materials utilized in the advanced composites industry. Two hours lab a week. Coreq.: AVT 317.

AVT 327. Avionics Repair. (3) Fall. An in depth overview of aircraft wiring. Procedures in terminating, repairing, testing and troubleshooting of aircraft wiring, as well as aging wiring inspections. One hour lec. and six hours lab a week.  
K-State 8:  
• Empirical and Quantitative Reasoning

AVT 330. Avionics Troubleshooting. (4) Spring, in even years. An in-depth troubleshooting project, requiring critical thinking to analyze the problem and provide the correct repairs. One hour lec. and six hours lab a week. Pr.: AVT 327.

AVT 340. Human Factors in Aviation. (3) Fall, Spring. Explores the physical environment and physiology limitations imposed on the aviation professional. Health, fatigue, human behavior and errors, communication, teambuilding, leadership, situation awareness, crew resource management, judgment, and aeronautical decision making are studied to achieve safe and efficient operation. Pr.: PPIL 111 or AVT 100, or Jr. standing. 
K-State 8:  
• Natural and Physical Sciences  
• Social Sciences

AVT 360. Airport Law. (3) Fall. A study of how the U.S. regulatory and legal systems work in relation to airport management. This course emphasizes contract law related to the Federal Aviation Administration Airport covenants and restrictions, Federal Aviation Regulation compliance and airport operator liability. Pr.: Junior standing. 
K-State 8:
• Ethical Reasoning and Responsibility

AVT 361. Airport Environmental Studies. (3) Fall. Introduction to responsibilities, liabilities and public relations when dealing with environmental issues in day-to-day airport operations. Includes strategies for addressing airport and aircraft noise, wildlife hazard mitigation, compatible land use, wetlands, historical properties and impacts of construction. Federal regulations and enforcement are studied with emphasis on the Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, Pollution Prevention Act, and National Historic Preservation Act as they apply to airports. Pr.: MATH 100, ENGL 302.

K-State 8:
• Ethical Reasoning and Responsibility

AVT 370. UAS Design. (3) Fall. Topics include: Unmanned Aircraft System platform, payload and component design and interfacing, system and vehicle maintenance, and systems integration. Studio format incorporating lecture and lab elements. Pr.: PPIL 113 and AVT 270.

K-State 8:
• Empirical and Quantitative Reasoning
• Ethical Reasoning and Responsibility

AVT 386. Aerodynamics. (3) Spring. This course covers incompressible flow theory and wing theory well as calculations of stall speed, drag, and basic performance criteria. This course also examines configuration changes, high and low speed conditions, and special flight operations. Stability and control, weight and balance, and operational data are also examined. Aerodynamic performance of aircraft powered by reciprocating, turboprop, and jet turbine engines are considered. The student will be introduced to aircraft design and high-speed aerodynamics. Pr.: MATH 100; and PPIL 111 or AVM 141.

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

AVT 389. Problems in Aviation. (1 – 18) Fall, Spring, Summer. Provides the student an opportunity to apply their aviation education to the improvement of skills previously learned as designated by the instructor.

AVT 400. Composites II. (4) Spring. A continuation of AVT 317 Composites I, with an emphasis on repair procedures for composites. Involves hands-on repair projects that develop repair techniques, such as vacuum bagging and hot bonding. Pr.: AVT 317.

K-State 8:
• Empirical and Quantitative Reasoning

AVT 405. Non-Destructive Testing. (3) Fall. Introduction to nondestructive testing and inspection methods in use in the aviation industry. Covers the following types of inspection methods: Visual, x-ray (radiographic), magnetic particle, ultrasonic, and 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

AVT 410. Aviation Maintenance Management. (3) Fall. Provides an understanding of general aviation and commercial aviation maintenance programs. Includes regulations, maintenance levels, technical publications, quality assurance, inspections, human factors, and unions. Provides an understanding of the difficulties of managing a line operation. Case studies of maintenance scenarios are used.

K-State 8:
• Ethical Reasoning and Responsibility
• Global Issues and Perspectives

K-State 8:
• Empirical and Quantitative Reasoning

AVT 420. Aviation Accident Investigation. (3) Spring, in even years. This course is designed to provide a general understanding of the methods and procedures used in aviation accident investigation. Students in this course will learn methods used to gather and analyze facts of accidents as well as determine probable cause and contributing factors. Procedures and techniques used to determine accident causes will also be analyzed. Historical accident reports from National Transportation Safety Board (NTSB) and other organizations will be examined. Pr.: AVT 340 and junior standing.

K-State 8:
• Empirical and Quantitative Reasoning

AVT 428. Avionics Installation. (3) Spring, in odd years. Provides practical knowledge of avionics suite installation, to include Garmin. Students gain experience in installing, wiring, continuity checks, operational checks, and troubleshooting. One hour lec. and six hours lab a week. Pr.: AVT 327.

K-State 8:
• Empirical and Quantitative Reasoning

AVT 429. Avionics Maintenance. (3) Spring, in even years. Provides the basic knowledge to repair and install avionics including practical experience in troubleshooting and using maintenance test equipment. One hour lec. and six hours lab a week. Pr.: AVM 241 or AVM 242.

K-State 8:
• Empirical and Quantitative Reasoning

AVT 430. Advanced Avionics Installation. (4) Fall, in odd years. Students gain practical knowledge of the Garmin G1000/900X, including installation, wiring, continuity checks, operational checks, software loading, and troubleshooting. One hour lec. and six hours lab a week. Pr.: AVT 327.

K-State 8:
• Empirical and Quantitative Reasoning

AVT 435. Air Transportation. (3) Summer. This interactive course examines the development of the United States air transportation system, current issues, and the competitive strategies of past and present airline executives; examines the many attributes of starting and operating a successful airline in a competitive market; and explores the role of airport operations and the commercial and corporate aircraft that challenge the air transportation system. Pr.: Junior standing.

AVT 440. Air Carrier Operations. (3) Spring. A study of Federal Aviation Regulations that influence air carrier and commercial operators. Students will gain an appreciation of the variety of regulatory issues involved in air carrier operations such as certification, training, and operational safety and security requirements. Students will also gather the background information necessary to correlate and apply relevant regulations to daily aviation operations. The course focuses on FAR Part 61, 91, 119, 121, and 135. Pr.: AVT 100 or PPIL 111, and junior standing.

AVT 442. Advanced Air Traffic Control. (3) Spring. An in-depth study of tower, TRACON, and enroute procedures. Also examines the FAA’s future air navigation system concept. Pr.: AVT 240, PPIL 112.

K-State 8:
• Ethical Reasoning and Responsibility

AVT 445. Aviation Law. (3) Spring. A study of how the U.S. regulatory and legal systems work in relation to aviation activities. It is designed to help those in the aviation industry understand their rights, liabilities, and responsibilities and avoid common legal pitfalls. Emphasis will also be placed on aircraft ownership, registration, and insurance. Pr.: Junior standing.

K-State 8:
• Ethical Reasoning and Responsibility
AVT 446. Corporate and Business Aviation Management. (3) Spring. A study of the history of corporate and business aviation, the regulation of the industry, and the operation and management of corporate and business flight departments. Students receive an overview of the social, economic, and political effects of business aviation. Aircraft selection and utilization, maintenance responsibilities, fiscal considerations, fractional ownership, and passenger and crew safety and security measures are also studied. Pr.: Junior standing.

AVT 448. Aviation Legislation. (3) Spring. Students are required to take part in the University Aviation Association’s Annual Seminar on Establishing Aviation Policy during the first full week of January in Washington, D.C. Students prepare for the seminar with required reading assignments. Pr.: Junior standing.

K-State 8:
- Ethical Reasoning and Responsibility

AVT 450. Aviation Safety Management. (3) Fall. A course designed to assist the student to develop an attitude and philosophy for accident prevention. The course includes ideal and practical, personal and organizational safety procedures and goals; safety philosophies; aircraft accident reports; human factors; principles of accident investigation; accident prevention program and accident statistics; current events; NTSB special studies. The safety program is analyzed from the theoretical and philosophic points of view. A safety program is developed with an examination of safety concepts, the human elements of accidents, managing a safety office in an organization, and current events. Pr.: Junior standing.

K-State 8:
- Empirical and Quantitative Reasoning

AVT 451. System Safety. (3) Spring, in odd years. This course is designed to provide an understanding of the system safety discipline. Students will learn how the system safety process is used in accident prevention and examine its role in management. Students will also examine various aircraft systems for overall safety of operation. Pr.: AVT 450.

K-State 8:
- Empirical and Quantitative Reasoning

AVT 455. Current Trends & Issues in Aviation. (3) Spring. This course explores current trends and issues in the aviation industry. Emphasis is placed on discussing current issues that are impacting the world aviation marketplace. Students address these issues and trends from the standpoint of application to their career, relevance to the economic viability of the industry, and the impact such trends place on aircraft operators and manufacturers. Pr.: Senior standing.

K-State 8:
- Global Issues and Perspectives

AVT 460. UAS Mission Planning and Operations. (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”). Studio format incorporating lecture and lab elements. Pr.: AVT 370 and PPIL 114.

K-State 8:
- Empirical and Quantitative Reasoning

AVT 461. Airport Planning and Management I. (3) Spring. An in depth overview of the Federal Aviation Regulation part 139 airport design standard as well as a study of both landside and airside airport business management, utilizing the American Association of Airport Executive’s Body of Knowledge modules. Includes a study of the role of the airport in community development. Major course project required. Pr.: PPIL 111 and PPIL 113.

AVT 462. Airport Planning and Management II. (3) Fall. A further study of airport planning and management practices utilizing the American Association of airport Executive’s Body of Knowledge. Major course project required. Pr.: AVT 461.
AVT 464. Airport Certified Manager. (1) Spring. Guided Study for the American Association of Airport Executives (AAAE) Certified Manager (CM) exam. One hour lab a week. Pr.: AVT 250, AVT 446, AVT 440, AVT 445, AVT 461, and consent of instructor.

AVT 470 UAS Flight and Data Acquisition Lab. (3) Fall. Emphasis is on advanced unmanned aircraft systems operations in the live flight environment, to include further development of payload operator skills and techniques in the acquisition, processing, and post-flight analysis of remotely sensed data. Emphasis is on experiential learning. Students are required to travel to an area designated for flight operations. Studio format incorporating predominantly lab components with less emphasis on lecture. Pr.: AVT 460.

AVT 485. Helicopter Maintenance. (3) Summer. An advanced study of the major components of rotary-winged aircraft to include airframe, rotor, transmission and engine components of turbine and reciprocating engine helicopters. Also includes a detailed study and validation of all Federal Aviation Administration required documentation related to maintenance, historical records, and inspection of components. Two hours lecture and four hours lab per week. Pr.: AVM 111, 121, 131, 141, 151 or consent of instructor.

K-State 8:
• Ethical Reasoning and Responsibility

AVT 497. Senior Project. (3) Spring. This culminating experience is a sustained occasion when students will put into independent practice the intellectual, creative, and expressive skills/knowledge they have cultivated in their undergraduate curriculum. In this course students integrate discipline-specific knowledge in addition to communication and inquiry methods to solve problems and communicate mastery of their respective area of interest. Pr.: Senior standing and instructor consent.

AVT 498. Research Project. (1-9) Fall, Spring, Summer. Research, scholarly and creative activities in the aviation field. Working with faculty on a current research project. The specific course content varies in accordance with current projects. Pr.: Junior or senior standing.

AVT 560. Airport Master Planning and Design. (3) Spring. Examination of the requirements and resources used to plan, fund and construct airport projects or modifications to show the airport manager’s role in project development. Components and organization of the Airport Master Plan (AMP) and Airport Layout Plan (ALP) are studied in outlines and existing plans to show applicability to local conditions and with emphasis on FAR Part 77 and AC 150/5300-13. Typical projects are reviewed for Airport Capital Improvement Funding and utilization of Computer Assisted Design (CAD). Student case study research will be integrated to assess a project’s feasibility. Pr.: AVT 360, AVT 361, and AVT 461.

Professional pilot courses
PPIL 109. Private Pilot Glider. (3) Spring. The subject areas necessary for completion and passing of the FAA Private Pilot Written Knowledge Test for Gliders are presented. K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

PPIL 111. Private Pilot. (4) Fall, Spring. The subject areas necessary for completion and passing of the FAA Private Pilot Written Knowledge Test are presented. Coreq.: MATH 100. K-State 8:
• Empirical and Quantitative Reasoning
• Ethical Reasoning and Responsibility

PPIL 112. Professional Instrument Pilot. (3) Fall, Spring. A study of the procedures, regulations, and techniques required to safely fly in instrument meteorological conditions within our national airspace system. The course will prepare the student to pass the FAA Instrument Airplane Written Knowledge Test. Pr.: PPIL 111, MATH 100. K-State 8:
• Empirical and Quantitative Reasoning
• Ethical Reasoning and Responsibility
PPIL 113. Private Pilot Flight Lab. (1) Fall, Spring, Summer. An introduction of the fundamentals of flight. Solo flights to include all flight operations and maneuvers necessary for meeting the aeronautical experience for the FAA Private Pilot Certificate. Six hours lab a week. Coreq.: PPIL 111.

PPIL 114. Professional Instrument Pilot Flight Lab. (1) Fall, Spring, Summer. Instructional flight training necessary to maneuver the aircraft safely in actual or simulated instrument meteorological conditions within the national airspace system. Six hours lab a week. Pr.: PPIL 111, 113. Coreq.: PPIL 112.

PPIL 115. Private Pilot Helicopter Flight Lab. (1) Fall, Spring, Summer. An introduction to the flight operations and maneuvers necessary to meet the aeronautical experience for the private pilot rotorcraft helicopter class rating. Six hours lab a week. Coreq.: PPIL 111.

PPIL 116. Instrument Helicopter Pilot Flight Lab. (1) Fall, Spring, Summer. Flight training necessary to maneuver a helicopter safely in actual or simulated instrument meteorological conditions within the national airspace system. Six hours lab a week. Pr.: PPIL 115. Coreq.: PPIL 112.

PPIL 196. VFR Pilot Proficiency Lab. (1) Fall, Spring, Summer. Instruction and flight training necessary to safely operate an aircraft to meet the Federal Aviation Regulations. This course provides the student the opportunity to review and demonstrate proficiency to satisfactorily meet the FAA regulations for the current ratings held.

PPIL 197. IFR Pilot Proficiency Lab. (1) Fall, Spring, Summer. Instruction, simulator, and flight training necessary to safely operate an aircraft, to meet and maintain the Federal Aviation Regulations currency requirement of Instrument Competency, and maintain instrument currency and proficiency.

PPIL 210. Aviation Safety. (3) Fall, Spring. This course provides an introduction to the field of aviation safety with an emphasis on promoting a safety culture. Various safety programs and their relevance in the field of aviation are discussed. Students will examine numerous accident reports and discuss safety issues facing the aviation industry today.

K-State 8:
• Ethical Reasoning and Responsibility

PPIL 211. Professional Commercial Pilot. (3) Fall, Spring. The subject areas necessary for passing the FAA Commercial Pilot Knowledge Test. Three hours rec. a week. Pr.: PPIL 112, 114.

K-State 8:
• Empirical and Quantitative Reasoning
• Ethical Reasoning and Responsibility

PPIL 212. Professional Commercial Pilot Flight Lab I. (2) Fall, Spring, Summer. Instructional cross country flight training necessary to maneuver the aircraft safely in actual or simulated instrument meteorological conditions within the national airspace system. Six hours lab a week. Pr.: PPIL 112, 114. Coreq.: PPIL 211.

PPIL 213. Professional Commercial Pilot Flight Lab II. (2) Fall, Spring, Summer. An introduction to complex airplane operations and a review of those operations required of a commercial pilot. The completion of this course readies the student to take the commercial FAA practical test. Six hours lab a week. Pr.: PPIL 212.

PPIL 214. Extended Cross Country. (1) A characteristic of aviation is that aircraft can cover a large geographic area. Aircraft operations in other geographic areas may differ greatly from a student’s training base. The experience of long-range navigation can be a great learning experience as well as a confidence booster. Selection of a destination that allows the student to increase their knowledge of aviation also aids in producing a more well-rounded, responsible professional. Pr.: PPIL 113.

PPIL 215. Mountain Flying. (1) A characteristic of aviation is that aircraft can cover a large geographic area. Aircraft operations in mountainous areas may differ greatly from a student’s training. The experience of reduced aircraft performance caused by high-density altitudes can be a great training into operations with aircraft exhibiting
marginal performance. Learning of weather patterns, hypoxia, and survival allows the student to increase their knowledge of aviation and also aids in producing a more well-rounded, responsible professional. Pr.: PPIL 113.

PPIL 216. Altitude Chamber. (1) Fall, Spring. This course offers a 1-day aviation physiology course for civil aviation pilots through the CAMI's Aeromedical Education Division in Oklahoma City, OK. In addition to the basic academic contents, this course offers practical demonstrations of rapid decompression and hypoxia in a hypobaric chamber, as well as a practical demonstration of spatial disorientation. Upon completion of the course students will receive a certificate noting that they have completed the FAA's Physiological Training course. The FAA requires a current Aviation Medical Certificate.

PPIL 217. Glider Towing. (1) Fall. Instruction and flight training necessary to obtain a logbook endorsement in the techniques and procedures for the safe towing of gliders. Pr.: PPIL 113.

PPIL 218. Commercial Pilot Helicopter Ground School. (3) Fall, Spring, Summer. Ground instruction covering helicopter aircraft to develop the aeronautical knowledge to meet the ground school requirements for a commercial pilot rotorcraft helicopter class rating. Pr.: PPIL 115.
K-State 8:
- Ethical Reasoning and Responsibility
- Natural and Physical Sciences

PPIL 219. Single Engine Seaplane Transition. (1) Spring. Instruction and flight training necessary to add the seaplane rating to the commercial pilot certificate. Course requires a one-week trip to a specified contract training location. One hour lecture a week. Pr.: PPIL 213.

PPIL 221. Preventive Maintenance. (2) Fall, Spring. This course will give the student hands-on experience with the maintenance tasks allowed under FAR 43 entitled preventive maintenance. One hour lec. and two hours lab a week.
K-State 8:
- Ethical Reasoning and Responsibility


PPIL 223. Commercial Pilot Helicopter Flight Lab II. (1-2) Fall, Spring, Summer. Flight instruction and experience in a helicopter to develop the aeronautical skills to meet the requirements for a Commercial Pilot rotorcraft helicopter class rating. Six hours lab a week. Pr.: PPIL 222.

PPIL 230. Private Pilot Glider Transition. (1) Instruction and flight training in the design, performance, operating characteristics, and flight proficiency for the safe operation of glider aircraft that will lead to an Private Pilot Glider certificate. This course provides students the opportunity to enhance and develop their skills in this segment of aviation. Pr.: PPIL 113.
K-State 8:
- Natural and Physical Sciences

PPIL 231. Commercial Pilot Glider Transition. (1) Instruction and flight training in the design, performance, operating characteristics, and flight proficiency for the safe operation of glider aircraft that will lead to a commercial pilot glider certificate. This course provides students the opportunity to enhance and develop their skills in this segment of aviation. Pr.: PPIL 213 and PPIL 230.
K-State 8:
- Natural and Physical Sciences

PPIL 251. Private Pilot Helicopter Ground School. (1) Fall, Spring, Summer. Ground instruction covering helicopter aircraft to develop the aeronautical knowledge to meet the ground school requirements for a private pilot rotorcraft helicopter class rating. Pr.: PPIL 111.
PPIL 262. **Multi-Engine Ground School.** (1) Fall, Spring, Summer. Ground instruction covering multi-engine aircraft to develop the aeronautical knowledge to meet the ground school requirements for a multi-engine land class rating. Pr.: PPIL 211.

PPIL 263. **Multi-Engine Flight Lab.** (1) Fall, Spring, Summer. Flight instruction and experience in a multi-engine aircraft to develop the aeronautical skills to meet the requirements to add a multi-engine land class rating to the student’s existing pilot certificate. Three hours lab a week. Coreq.: PPIL 262.

K-State 8:
- Natural and Physical Sciences

PPIL 281. **Instrument Helicopter Pilot Ground School.** (1) Fall, Spring, Summer. Ground instruction covering helicopter aircraft to develop the aeronautical knowledge to meet the ground school requirements for an instrument-helicopter rating. Pr.: PPIL 251.

K-State 8:
- Ethical Reasoning and Responsibility

PPIL 290. **Multi-Engine Crew Coordination.** (1-4) Instruction, simulator and flight training necessary to operate a multi-engine aircraft as a member of a crew. Enhances multi-engine, instrument and cross country skills. Pr.: PPIL 211, 263.

K-State 8:
- Human Diversity within the U.S.

PPIL 295. **Tailwheel Transition.** (1) Instruction and flight training in the design, performance, operating characteristics, and flight proficiency for the safe operation of conventional-gared (tailwheel) aircraft that will lead to an endorsement allowing the student to act as pilot-in-command. This course provides students the opportunity to enhance and develop their skills in this segment of aviation. Pr.: PPIL 113.

K-State 8:
- Natural and Physical Sciences

PPIL 312. **Certified Flight Instructor Ground School.** (6) Fall, Spring. Instruction techniques, practices, and procedures necessary to provide skill in organizing and presenting lessons. This course will prepare the student for the FAA Certified Instructor Knowledge Test. Six hours rec. a week. Pr.: PPIL 211.

K-State 8:
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility

PPIL 314. **Certified Flight Instructor Flight Lab.** (2) Fall, Spring, Summer. The needed flight skills and proper display of teaching ability will be emphasized. The demonstration of flight maneuvers with recognition of common errors in students performing the demonstrated maneuvers is stressed. Six hours lab a week. Pr.: PPIL 213. Coreq.: PPIL 312.

PPIL 315. **Certified Flight Instructor Glider.** (1) Summer. Instruction techniques, practices, and procedures necessary to provide skill in organizing and presenting lessons. Prepares the student for the FAA Certified Instructor Knowledge Test Glider. One hour lecture a week. Pr.: PPIL 314.

PPIL 316. **Certified Flight Instructor Glider Flight Lab.** (1) Summer. Provides the opportunity to apply and demonstrate concepts learned in the flight instructor glider ground instruction course (PPIL 315). Requires demonstration of flight maneuvers and the ability to recognize common errors in student performance. One hour lab a week. Pr.: PPIL 231. Coreq.: PPIL 315.

PPIL 325. **Advanced Aircraft Systems.** (3) Fall, Spring. Electrical, environmental, hydraulic, fuel, ignition, and lubrication systems, including theory of operation and calculations. Principles, systems, analysis, operation, and limitations of advanced electronic navigation, flight director, and automatic flight control systems, including Inertial Navigation Systems, GPS. Pr.: PPIL 211.

K-State 8:
Empirical and Quantitative Reasoning
Natural and Physical Sciences

PPIL 351. Flight Instructor Helicopter. (1) Fall, Spring, Summer. Ground instruction covering helicopter aircraft to develop the aeronautical knowledge to meet the ground school requirements for a certified flight instructor rotorcraft helicopter class rating. Pr.: PPIL 312 and PPIL 291.

K-State 8:
- Ethical Reasoning and Responsibility

PPIL 352. Flight Instructor Helicopter Flight Lab. (1) Fall, Spring, Summer. Flight instruction and experience in a helicopter to develop the aeronautical skills to meet the requirements for a helicopter instructor rating. Six hours lab a week. Pr.: PPIL 223. Coreq.: PPIL 312.

PPIL 353. Helicopter Turbine Transition Lab. (1) Instruction and flight training in the design, performance, operating characteristics, and flight proficiency, for the safe operation of a turbine-powered helicopter. This course provides students the opportunity to enhance their knowledge and skills related to an entry-level turbine helicopter. Three hours lab a week. Pr.: PPIL 223 or PPIL 292.

PPIL 354. Night Vision Goggle Lab. (1) Instruction and flight training in order to increase safety, situational awareness and mission operational capabilities during night flight while wearing night vision goggles. Upon completing FAA requirements, students may obtain a logbook or training record endorsement certifying they have completed the flight and ground training required to act as pilot in command of an aircraft using night vision goggles. Three hours lab a week. Pr.: PPIL 223 or PPIL 292.

PPIL 365. Environmental Helicopter Operations. (3) Spring. Foundational instruction for helicopter operations in varying terrain and environmental conditions. Topics include helicopter flight in diverse terrain and climate, principles of flight close to the earth, and avoidance of both natural and man-made hazards. Emphasis on aeronautical decision making and cockpit resource management. Pr.: Junior standing or instructor consent.

PPIL 379 Turbine Transition. (3) Fall, Spring. To provide required knowledge to meet FAA requirements to operate as second-in-command in KSU transportation aircraft. Covers systems performance and emergency procedures for turbine aircraft. In conjunction with simulator training, students will be qualified to operate as co-pilots on university transportation trips. Pr.: PPIL 213.

K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Sciences

PPIL 385. Airline Transport Pilot Rating. (2) By appt. Provides the student with the aeronautical knowledge necessary to prepare for the FAA Airline Transport Pilot Knowledge Test. The demonstration of flight maneuvers, with recognition of proper control of emergencies in compliance of the Airline Transport Pilot Practical Test Standards will be stressed. One hour lec. and three hours lab a week.

PPIL 387. Crew Resource Management I. (3) Fall. This course involves using all available resources for a safe and efficient flight. Aircraft crew performance is reviewed to include the background and philosophy of Crew Resource Management (CRM) communication, decision behavior, team building, workload management, and situational awareness. Students accomplish two flight scenarios using a Canadair Regional Jet advanced aircraft training device. Two hour lec. and four hours lab a week. Pr.: PPIL 262, PPIL 325.

K-State 8:
- Ethical Reasoning and Responsibility
- Human Diversity within the U.S.

PPIL 389. Problems in Aviation. (1–18) Fall, Spring, Summer. To provide the student an opportunity to apply aviation education to the improvement of skills previously learned as designated by the instructor.
PPIL 396. Introduction to Upset Training and Recovery. (1) Instruction and flight training necessary to develop an understanding and flight proficiency in basic upset flight attitudes. This course provides the student the opportunity to develop a better understanding of aircraft and safety of flight in other than normal flight attitudes. Pr.: PPIL 114.
K-State 8:
- Natural and Physical Sciences

PPIL 416. Crew Resource Management II. (3) Spring. Utilizing a Canadair Regional Jet advanced aircraft training device, special emphasis is placed on systems knowledge, flight profiles and cockpit flows of the CRJ 200. Students fly four Line Orientated Flight Training (LOFT) missions and self critique their performance. One hour lec. and five hours lab a week. Pr.: PPIL 387 and AVT 340.
K-State 8:
- Ethical Reasoning and Responsibility
- Social Sciences

PPIL 482. Certified Instrument Flight Instructor Ground School. (1) Fall, Spring, Summer. Instrument instruction techniques, practices, and procedures necessary to provide skills in organizing and presenting lessons in instrument flying procedures. This course will prepare the student for the FAA Certified Instrument Flight Instructor Knowledge Test. One hour rec. per week. Pr.: PPIL 312.
K-State 8:
- Ethical Reasoning and Responsibility

PPIL 483. Certified Instrument Flight Instructor Lab. (1) Fall, Spring, Summer. Instrument instruction techniques, practices, and procedures necessary to provide skills in organizing and presenting lessons in instrument flying procedures. This course will prepare the student for the FAA Certified Instrument Flight Instructor practical test. Three hours lab per week. Pr.: PPIL 314. Coreq.: PPIL 482.


PPIL 492. Certified Multi-Engine Flight Instructor Ground School. (1) Fall, Spring. Provides the student with the aeronautical knowledge necessary to meet the requirements for the addition of an airplane, multi-engine rating to the flight instructor certificate. One hour rec. a week. Pr.: PPIL 312, 314.

PPIL 493. Certified Multi-Engine Flight Instructor Lab. (1) Fall, Spring, Summer. Provides the student with the aeronautical skills and experience necessary to meet the requirements for the addition of an airplane, multi-engine rating to the flight instructor certificate. Three hours lab a week. Pr.: PPIL 314. Coreq.: PPIL 492.

PPIL 494. Helicopter Operations. (3) Spring. The in-depth study of helicopter operations in civil operations. Topics will include helicopter operations in law enforcement, EMS, petroleum industry, etc. Advanced helicopter systems, multi-crew and multi-engine helicopter operations will also be addressed. Pr.: Junior standing or instructor consent.

**Engineering Technology**

**Computer systems technology courses**

CMST 102. Introduction to Computer Technology. (3) Fall, Spring. A survey of the field of computer technology with an emphasis on the foundational concepts of how computers work. Topics include binary numbers, digital logic and hardware, computer architecture, operating systems, low-level and high-level programming languages, and algorithms.
K-State 8:
- Empirical and Quantitative Reasoning
- Historical Perspectives
CMST 103. Introduction to Program Design. (3) Fall, Spring. A language-independent introduction to computer programming logic. Topics include an overview of systems development and a detailed examination of problem definition, problem analysis, and general and detailed design. Students are introduced to the tools and techniques utilized in structured and object-oriented design. Coreq.: MATH 100.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 104. Database Management. (2) Fall, Spring. An introduction to using a database management system on a personal computer. Students begin with elementary database commands and progress to more sophisticated database applications. Students are required to complete assignments on the computer, some of which are completed outside of class.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 108. PC Desktop Software. (3) Fall, Spring. The use and application of popular software application packages. Topics include word processors, electronic spreadsheets, database management systems, and presentation software. Students are required to complete assignments on the computer, some of which are completed outside of class.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 110. Introduction to Visual Basic. (3) Fall. Computer programming using Visual Basic for students who are not majoring in computer systems technology or web development technology. Topics include variable and constant declarations, data types, arithmetic expressions, decision structures, repetition structures, sequential files and arrays. Emphasis on problem solving and program structure. Coreq.: MATH 100.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 115. Graphics Software Applications. (3) Fall, Spring. Introduction to popular graphics software application packages. Emphasis is on design concepts, color usage, image and concept development and creative problem solving using graphics software. Students are required to complete assignments on the computer, some of which are completed outside of class. Pr.: Experience with PC software.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 130. Introduction to PC Administration. (3) Fall, Spring. An introduction to the maintenance and configuration of personal computer hardware and software. Topics include proper hardware configuration, computer upgrades, and installation of system and user software. Two hours lec. and two hours lab a week. Pr.: Experience with PC software.
K-State 8:
• Empirical and Quantitative Reasoning
• Historical Perspectives

CMST 135. Web Page Development I. (3) Fall, Spring. Concepts of communications across the Internet, differences in browsers, and the technology required to create web pages. In-depth coverage of web page design and implementation with HyperText Markup Language (HTML). Students are required to complete several laboratory assignments outside of class. Pr.: Experience with PC software.
K-State 8:
• Aesthetic Interpretation
• Empirical and Quantitative Reasoning

CMST 137. Fundamentals of Visual Literacy. (3) Fall. An examination of the elements of visual design essential to communication with digital media technology. Topics include design elements, color theory, graphics creation
and optimization, and multimedia. Students receive hands-on experience with the elements and principles of visual literacy and working with 2-D and 3-D organization. Pr.: Experience with PC software.

K-State 8:
- Aesthetic Interpretation
- Empirical and Quantitative Reasoning

CMST 146. Digital Photography. (3) Fall, Spring. Introduces basic photographic techniques and computer assisted image manipulation. Topics include: basic camera functions, basic digital image processing, visualization and design skills and digital manipulation techniques needed in today's market place. Students have opportunities to create portfolio pieces. Pr.: Experience with PC software.

K-State 8:
- Aesthetic Interpretation
- Empirical and Quantitative Reasoning

CMST 155. Web Page Development II. (3) Spring. Extends the concepts covered in Web Page Development I to refine design techniques and include greater use of graphics and animation. Web page development tools are introduced and compared for ease of use and productivity. Topics include interacting with the user, gathering and sending information, and querying information from a database. Web page laboratory assignments will be completed outside of class time. Pr.: CMST 135.

K-State 8:
- Aesthetic Interpretation
- Empirical and Quantitative Reasoning

CMST 180. Introduction to Database Systems. (3) Fall, Spring. An introduction to properties and design principles of relational databases. Topics include database terms, E-R Modeling, relational table design and normalization, the relational algebra, Structured Query Language, and the database life cycle. Laboratory work includes the design and implementation of a database. Pr.: Experience with PC software.

K-State 8:
- Empirical and Quantitative Reasoning

CMST 216. Digital Media I. (3) Spring. Hands-on experience dealing with the elements and principles of digital communications working with industry-standard software for photo editing, illustration, and page layout. Students have the opportunity to produce portfolio pieces. Pr.: CMST 115 and CMST 137.

K-State 8:
- Aesthetic Interpretation
- Empirical and Quantitative Reasoning

CMST 247. Java Programming I. (3) Spring. The syntax and semantics of the Java programming language. Topics include expressions, statements, classes, methods, forms of dynamic storage allocation, console I/O, two-dimensional graphics, GUI, event handling, arrays, inheritance, and polymorphism. Students are required to complete programming assignments using Java to solve a variety of problems in business, mathematics, and engineering technology. Pr.: CMST 102 and 103.

K-State 8:
- Empirical and Quantitative Reasoning

CMST 250. Networking I. (3) Fall, Spring. The study of computer networking concepts and terms. Topics include local area networks, wide area networks, protocols, network topology, and transmission media. Two hours lec. and two hours lab a week. Pr.: Experience with PC software.

K-State 8:
- Empirical and Quantitative Reasoning
- Historical Perspectives

CMST 256. Digital Media II. (3) Fall. An intermediate course dealing with the elements and principles of digital communications working with industry standard software involved in video editing, audio editing, photo editing, vector drawing and page layout. Students have the opportunity to produce portfolio pieces. Pr.: CMST 216.
K-State 8:
• Aesthetic Interpretation
• Empirical and Quantitative Reasoning

CMST 270. Introduction to Unix. (3) Fall. An introduction to using the Unix operating system for programming and system administration. Topics include using the Unix command line interface, file attributes, editing text files, and programming with shell script and other interpreted languages. Two hours lec. and two hours lab a week. Pr.: CMST 102 and 247.

K-State 8:
• Empirical and Quantitative Reasoning

CMST 299. Topics in Computer Systems Technology. (Var.) Fall, Spring, Summer. Provides an opportunity for faculty to present computer systems technology topics. Pr.: Consent of instructor.

K-State 8:
• Empirical and Quantitative Reasoning

CMST 302. Applications in C Programming for Engineering Technology. (3) Fall. An introduction to structured program design and implementation using the C programming language. Topics include use of the C language in calculations, input, output, and file handling. Students design, implement, and test programs applicable to engineering technology majors. Pr.: CMST 110 or other college-level programming language.

K-State 8:
• Empirical and Quantitative Reasoning

CMST 303. Visual Basic Programming. (3) An in-depth study of Visual Basic as an object-oriented language for students having had previous college-level computer programming courses. Topics include advanced database manipulation, MDI programming, creation of controls, web forms, and help files. Assignments focus on large programming projects. Students design, implement, and present a final capstone course project. Pr.: CMST 180; and 247 or equivalent.

K-State 8:
• Empirical and Quantitative Reasoning

CMST 310. Visual Basic Programming. (3) An in-depth study of Visual Basic as an object-oriented language for students having had previous college-level computer programming courses. Topics include advanced database manipulation, MDI programming, creation of controls, web forms, and help files. Assignments focus on large programming projects. Students design, implement, and present a final capstone course project. Pr.: CMST 180; and 247 or equivalent.

K-State 8:
• Empirical and Quantitative Reasoning

CMST 315. Networking II. (3) Fall. An in-depth study of network and server administration in a Windows Server environment. Topics include network design, hardware and software selection, server and client installation, management of network services, Active Directory administration, configuration of permissions and policies, and server monitoring and tuning. Two hours lec. and two hours lab a week. Pr.: CMST 250.

K-State 8:
• Empirical and Quantitative Reasoning

CMST 317. C# Programming. (3) Fall. An in-depth study of the Microsoft C# language and its applications. C# is a development tool within the .NET framework. Students use the language to develop a wide variety of applications including stand-alone applications and those providing access to databases and Web services. Pr.: CMST 347.

K-State 8:
• Empirical and Quantitative Reasoning

CMST 323. Game Programming. (3) Fall. An introduction to computer game programming. Topics include game mathematics and physics, tile-based virtual worlds, artificial intelligence, and game graphics. Students design, develop, and present a functioning computer game as a capstone course project. Pr.: CMST 247 and PHYS 113.

K-State 8:
• Aesthetic Interpretation
• Empirical and Quantitative Reasoning

CMST 326. Page Layout and Type. (3) Fall. An intermediate course dealing with typographic design concepts, color usage, image development, idea development, and creative problem solving. Addresses typographic principles, techniques and development of a personal style to create typographic designs that are technically sound and visually interesting. Pr.: CMST 216.
K-State 8:
- Aesthetic Interpretation
- Empirical and Quantitative Reasoning

CMST 332. Web Development Project. (3) Spring. Each student implements a major web site. Students apply system analysis concepts to design a working website using graphics, security, and information processing. Pr.: CMST 180 and CMST 335.

K-State 8:
- Aesthetic Interpretation
- Empirical and Quantitative Reasoning

CMST 334. Computer Technology Project Development. (3) Spring. Provides sophomores with the capstone experience of developing a computer information system. Students learn the phases of the software development lifecycle and work in teams to follow a project management plan in order to analyze, design, and implement an information system. Pr.: CMST 180. Coreq.: Level 2 programming language elective.

K-State 8:
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility

CMST 335. Web Programming. (3) Fall. Covers server-side programming used in web development. CGI and scripting languages are covered and applied. Students create web applications, some of which include database components. Class involves significant laboratory assignments completed outside of class. Pr.: CMST 135, 180, and 247.

K-State 8:
- Empirical and Quantitative Reasoning

CMST 336. Digital Media Project. (3) Spring. Provides sophomores with the capstone experience of developing a professional quality project in digital media. Students learn problem solving through the design process used in digital media development. Pr.: CMST 216 and sophomore standing.

K-State 8:
- Aesthetic Interpretation
- Empirical and Quantitative Reasoning

CMST 341. C++ Programming. (3) An in-depth study of C++ as an object-oriented programming language for students having had previous college-level computer programming courses. Students write Windows applications using classes, MFC, and managed and unmanaged code. Programs involve Windows interfacing, exception handling, database access, COM and the creation of DLLs. Each student individually completes a final capstone course project. Pr.: CMST 247.

K-State 8:
- Empirical and Quantitative Reasoning

CMST 344. Internetworking. (3) Spring. Concepts and principles of internetworking with TCP/IP. Topics include IP addressing, subnetting, transport services, internet architecture, routing strategies, and TCP/IP applications. Students implement and analyze various internet topologies and router configurations through hands-on activities. Two hours lec. and two hours lab a week. Pr.: CMST 250.

K-State 8:
- Empirical and Quantitative Reasoning

CMST 347. Java Programming II. (3) Fall. An in-depth study of Java as a web programming language. Topics include exception handling, file I/O, advanced programming techniques and data structures, Java applets, multithreaded programming, client/server communication, and database and web connectivity. Students design, implement, and present a final capstone course project. Pr.: CMST 247.

K-State 8:
- Empirical and Quantitative Reasoning
CMST 350. Unix Administration. (3) Spring. The essentials of administering the Unix operating system. Topics include Unix installation, an in-depth look at its file system, software installation, user configuration, handling security, networking, and configuration of network services. Two hours lec. and two hours lab a week. Pr.: CMST 250 and 270. K-State 8:
- Empirical and Quantitative Reasoning

CMST 355. Network Programming. (3) Summer. Concepts and techniques of developing computer programs that communicate over a network using the TCP/IP and UDP/IP protocols. The course examines the use of sockets to communicate between a client and a server focusing on application-layer protocols commonly used on the Internet. Application layer topics and protocols studied include DNS, web (HTTP, HTML, and XML), electronic mail (SMTP, MIME, POP, and IMAP) and secure communication (SSL and TLS). Asynchronous and multi-threaded programming technologies are studied as client and server applications are developed. Pr.: CMST 247 and 250. K-State 8:
- Empirical and Quantitative Reasoning

CMST 356. Motion Graphics Technology. (3) Fall. A continuation of previous digital media courses. Includes an exploration of the various tools and processes associated with creating digital video, animation, and motion graphics. Students have the opportunity to produce portfolio pieces. Pr.: CMST 336. K-State 8:
- Aesthetic Interpretation

CMST 362. Introduction to Business Programming. (3) Fall. An introduction to computer programming for business applications. Topics include the nature of business programming, sequential file processing, detail and summary reporting, control break processing, and data validation. Lab work includes writing programs using the COBOL language. Pr.: CIS 200; or CMST 102 and 103. K-State 8:
- Empirical and Quantitative Reasoning

CMST 370. Applied Data Structures. (3) Fall. A systematic study of data structures and algorithms organized around the unifying concept of data abstraction. Topics include abstract data types, stacks, queues, linked lists, trees, hash tables, heaps, sorting, and searching. The implementations of these data types using object-based constructs are studied and compared with respect to algorithms running times. Pr.: CMST 247. K-State 8:
- Empirical and Quantitative Reasoning

CMST 406. Social Media Technology. (3) Spring. A continuation of previous digital media courses. Includes an exploration of the social media aspects of producing and consuming digital media content; including blogging, podcasting, and vodcasting. Diversity of the human condition is emphasized. Students will develop and publish an online portfolio of their best digital media work. Pr.: CMST 336. K-State 8:
- Aesthetic Interpretation
- Human Diversity within the US

CMST 410. Operating Systems. (3) Fall. An in-depth study of the concepts of basic operating systems and the services they provide. Topics include memory and file management, process control, input, output, and control of computer hardware. The features of modern, popular operating systems are highlighted. Coreq.: CMST 370. K-State 8:
- Empirical and Quantitative Reasoning

CMST 412. Software Architecture and Design. (3) Spring. An in-depth study of varied software architectures and their viability. Architectural analysis includes the influences of operating systems, programming languages, data distribution, user interaction, marketing methods, and deployment. Additional topics include software licensing,
metering, certification, configuration management, installation, and security. Pr.: CMST 332 or 334; and CMST 370.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 420. Advanced Database Systems. (3) Spring. An in-depth study of the theoretical foundations of database design, implementation, and management as well as social and ethical issues associated with database design. Topics include the enhanced E-R model, object-oriented model, distributed databases, advanced SQL, security, data warehousing and mining. Students design, implement, and present a capstone course project. Pr.: CMST 180 and level 2 programming language elective.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 445. Network Security. (3) Fall. An in-depth study of the information and skills needed to design, install, configure, secure, and administer the interface between a LAN and the Internet. Emphasis is on designing and implementing secure systems communicating within a TCP/IP environment. Two hours lec. and two hours lab a week. Pr.: CMST 315 or 350.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 456 - Digital Media Senior Project. (3) Spring. Provides seniors with the capstone experience of developing a professional quality project in digital media. Students work individually or in teams to develop a significant project in their area of interest. Students are expected to apply the production techniques covered in previous digital media courses, write project documentation, and make verbal presentations. Whenever feasible, real-world projects are solicited from local businesses. Pr.: CMST 356 and senior standing.
K-State 8:
• Aesthetic Interpretation

CMST 460. Systems Analysis and Design. (3) Fall. An in-depth study of software engineering methodologies for the analysis, design, and implementation of software systems. Topics include structured analysis and design, object-oriented analysis and design, implementation and testing strategies, and software principles and metrics. Students work in teams to design, implement, and present a final capstone course project. Pr.: CMST 332 or 334; and senior standing. Coreq.: CMST370.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 462. Computer Technology Senior Project. (3) Spring. A sequel to CMST 460 in which students work individually or in teams to develop a significant project in their area of interest. Students are expected to apply the software engineering methodologies from CMST 460, write project documentation, and make verbal presentations. Whenever feasible, real-world projects are solicited from local businesses. Pr.: CMST 460.
K-State 8:
• Empirical and Quantitative Reasoning
• Ethical Reasoning and Responsibility

CMST 470. Applied Algorithm Design. (3) Spring. Techniques of algorithm design including greedy, divide and conquer, dynamic programming, backtracking and branch–and–bound. Covers algorithmic solutions to problems from a variety of application areas including games, graphs and encryption. Emphasis is on programming assignments that enable students to develop their problem-solving and algorithm design skills. Pr.: CMST 370 and level 2 programming language elective.
K-State 8:
• Empirical and Quantitative Reasoning

CMST 499. Advanced Topics in Computer Systems Technology. (Var.) Fall, Spring, Summer. Provides an opportunity for faculty to present advanced computer systems technology topics. Pr.: Consent of instructor.
K-State 8:
• Empirical and Quantitative Reasoning

Construction engineering technology courses
CET 120. Materials Sampling and Testing. (2) Fall. A course in the proper use of aggregates and concrete materials (Portland cement and asphalt) in construction. Sampling and testing methods conform with current testing standards. Six hours lab a week.
K-State 8:
• Empirical and Quantitative Reasoning

CET 130. Plane Surveying. (4) Spring. A beginning course in the theory and practice of field measurements and notes for surveying. Emphasis is placed on accuracy and avoidance of common errors and mistakes. Three hours lec. and three hours lab a week. Pr.: MATH 151.
K-State 8:
• Empirical and Quantitative Reasoning

CET 210. Problem Solving with Computer Applications. (2) Fall. In-depth preparation with computer operating systems, spreadsheets, scheduling software and Visual Basic for construction applications. One hour lec. and one hour lab a week. Pr.: MATH 151 and CMST 108.
K-State 8:
• Empirical and Quantitative Reasoning

CET 220. Soils and Foundations. (2) Fall. A course in the identification and classification of soils by the Unified method and the American Association of State Highway and Transportation Officials method. Routine field tests are covered and used in the laboratory. One hour lec. and two hours lab a week. Pr.: MATH 100.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

CET 222. Construction Safety. (2) Fall. How to maintain safe working areas within unsafe working conditions. Particularly the recognition and prevention of unsanitary, dangerous, or hazardous conditions to workers in the construction industry. Instruction focuses on federal safety standards related to construction.
K-State 8:
• Empirical and Quantitative Reasoning

CET 241. Construction Methods and Estimating. (2) Fall. A study of the basic equipment needs, usage, costs, and quantity determinations for planning and estimating construction projects. Field trips through construction sites and visitations with inspectors assist in developing reporting procedures and inspection responsibilities. One hour lec. and two hours lab a week. Pr.: MATH 100.
K-State 8:
• Empirical and Quantitative Reasoning

CET 299. Topics in Construction Engineering Technology. (Var.) Fall, Spring, Summer.. Provides an opportunity for faculty to present construction engineering technology topics. Pr.: Consent of instructor.

CET 312. Transportation Systems. (3) Spring. A study of transportation systems with emphasis on traffic operations and control, planning, design, and drainage for highways, and urban roadways. Two hours lec. and two hours lab a week. Pr.: CET 130.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

CET 313. Structural Design. (3) Spring. A course combining design of components of structures in steel and reinforced concrete. Basic stress calculations and design concepts are studied for use in either a simplified design, detailing, or inspection role. Three hours lec. a week. Pr.: MET 245.
K-State 8:
• Empirical and Quantitative Reasoning

CET 320. Construction Materials. (2) Fall. Study and analysis of construction materials, their properties, selection and use. Two hours lec. a week. Pr.: MET 111.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

CET 323. Route Location Surveying. (3) Fall. A course in the geometric methods of horizontal and vertical curve alignment. In addition, transitional spirals are examined and calculated. The laboratory portion provides a grounding of these concepts in the field by actual calculation and staking of control for roads, streets, and various types of routes. Two hours lec. and three hours lab a week. Pr.: CET 130.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

CET 340. Mechanical and Electrical Systems. (3) Spring. The study of the use of mechanical and electrical systems within constructed buildings. Students develop skills related to plumbing, heating, air conditioning, wiring, power, and lighting systems.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

CET 341. Mechanical Systems. (3) Fall. The way mechanical systems, including plumbing, heating, ventilation, and air conditioning are used by contractors to construct a building. Two hours lec. and two hours lab a week. Pr.: MATH 151 and PHYS 113. Coreq.: CET 241.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

CET 342. Electrical Systems. (3) Spring. The way electrical systems, including design and wiring, and power and lighting systems are used by contractors to construct a building. Two hours lec. and two hours lab a week. Pr.: MATH 151 and PHYS 113. Coreq.: CET 241.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

CET 350. Site Construction. (3) Fall. Study of site construction problems and procedures, sit survey and investigations, review of site plans, construction layouts, earthwork calculation, excavation/shoring methods, and computer applications. Two hours lec. and three hours lab a week. Pr.: MET 111, CET 130, PHYS 113 and CMST 108.
K-State 8:
• Empirical and Quantitative Reasoning

K-State 8:
• Empirical and Quantitative Reasoning

Electronic and computer engineering technology courses
♦ ECET 100. Basic Electronics. (4) Fall. A survey course designed to provide an overview of basic direct and alternating current circuits and an introduction to linear and digital electronics. Laboratory exercises reinforce circuit theory and provide skills in the use of common electronic instruments. Three hours lec. and two hours lab a week. Coreq.: MATH 100 or consent of instructor.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

**ECET 101. Direct Current Circuits.** (3) Spring. An introductory course in basic circuit theory emphasizing the analysis of passive circuit networks containing resistance, capacitance, and inductance operating in direct current conditions. Topics include equivalent circuits, network theorems, capacitance, RC-circuit response, inductance, RL-circuit response, and computer simulation. Two hours lec. and two hours lab a week. Pr.: ECET 100.

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

**ECET 110. Semiconductor Electronics.** (4) Spring. An introductory course in electronic devices. Topics include PN-junction theory, diodes, transistors, transistor biasing, transistor modeling, operational amplifiers, voltage regulators, and field-effect transistors (FET). Three hours lec. and two hours lab a week. Pr.: MATH 100. Coreq.: ECET 101, and MATH 150 or 151.

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

**ECET 201. Alternating Current Circuits.** (4) Spring. Analysis of passive networks containing resistance, capacitance, and inductance operating in alternating current conditions. Includes sinusoidal waveforms, polar and rectangular complex algebra, inductive and capacitive reactance, impedance networks, power factor correction, resonance, magnetic circuits, and an introduction to three-phase power distribution. Three hours lec. and two hours lab a week. Pr.: ECET 101 and MATH 151.

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

**ECET 210. Linear Circuit Applications.** (4) Fall. Analysis and design of analog circuits including differential amplifiers, oscillators, linear and switching power amplifiers, applications of operational amplifiers, advanced semiconductor devices, and heat sinks. Three hours lec. and two hours lab a week. Pr.: ECET 110. Coreq.: ECET 201.

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

**ECET 240. Electronic Manufacturing.** (3) Fall. A practical course in the details of electronic system design and fabrication. Topics include 2D CAD; printed-circuit board design, layout, and fabrication; electronic-system design principles; fabrication, packaging and assembly techniques for electronic systems; and through-hole and surface-mount technologies. Two hours lec. and two hours lab a week. Pr.: ECET 110.

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

**ECET 250. Digital Logic.** (4) Fall. Study of basic logic elements including gates, flip-flops, counters, and registers. Includes Boolean algebra, logic reduction methods, and digital logic applications. Emphasis on computer simulation and PLD implementation of logic circuits. Three hours lec. and two hours lab a week. Coreq.: ECET 100.

K-State 8:
• Empirical and Quantitative Reasoning

**ECET 299. Topics in Electronic and Computer Engineering Technology.** (Var.) Fall, Spring, Summer. Provides an opportunity for faculty to present electronic and computer engineering technology topics. Pr.: Consent of instructor.

K-State 8:
• Empirical and Quantitative Reasoning
ECET 304. Electric Power and Devices. (3) Spring. Industrial applications of direct and alternating power, devices, and systems. Topics include electrical and electronic power devices, controllers, servomechanisms, and actuators; DC and AC motors and generators, motor speed control and drive systems; electrical power distribution, and industrial electronics applications. Two hours lec. and two hours lab a week. Pr.: ECET 100 and MATH 151. K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

ECET 330. Industrial Controls. (4) Spring. A study of electronic circuits and systems encountered in industrial environments. Topics include power control devices and applications, power system design, sensors, transducers, PLCs, computer-based data acquisition, and automatic control concepts. Three hours lec. and two hours lab a week. Coreq.: ECET 350. K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

ECET 335. Industrial Control Topics. (1) Spring. Study of the applications of electronic circuits and systems in industrial environments. Topics include control systems and devices, control system modeling and simulation. Coreq.: MET 382.

ECET 350. Microprocessor Fundamentals. (4) Spring. Concepts of microprocessor architecture, programming, and interfacing. Topics include assembly language programming, data conversion methods, and microprocessor-based system development tools. Three hours lec. and two hours lab a week. Pr.: ECET 250 or CMST 102. K-State 8:
• Empirical and Quantitative Reasoning

ECET 352. Digital Circuits and Systems. (4) Fall. Applications of programmable logic, including microprocessors, and microcontrollers. Students use software design tools such as simulators and cross compilers to design systems and analyze system performance. Data conversion methods and peripheral interfacing techniques are emphasized. Three hours lec. and two hours lab a week. Coreq.: ECET 350 and CMST 302. K-State 8:
• Empirical and Quantitative Reasoning

ECET 385. Programmable Logic Controllers. (3) Spring. Study of the applications of programmable logic controllers (PLCs) in industrial environments. Topics include hardware, wiring, configuration, programming, documentation, troubleshooting, and maintenance of PLC systems. Pr.: ECET 100. K-State 8:
• Empirical and Quantitative Reasoning

ECET 420. Communication Circuits Design. (4) Fall. An introduction to the theory and design of electronic circuits for communications emphasizing the implementation and analysis of common radio-frequency (RF) building blocks. Topics include s-parameters, the Smith chart, component behavior, RF test equipment, computer simulation, filter design, impedance matching, amplifiers, oscillators, mixers, and demodulators. Three hours lec. and two hours lab a week. Pr.: ECET 320. K-State 8:
• Empirical and Quantitative Reasoning
**Natural and Physical Sciences**

**ECET 421. Telecommunication Systems.** (4) Fall. An introduction to data communications and a survey of modern communication systems. Topics include Fourier analysis, data encoding, data link control, fiber-optic systems, cellular systems, satellite systems, and the modern telephone system. Three hours lec. and two hours lab a week. Pr.: ECET 320, CMST 250, and MATH 221.
K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Sciences

**ECET 430. Network Analysis.** (3) Fall. A study of various network topics including Laplace transforms, signal flow graph models, transfer functions, network response, and differential equations and linear approximations of physical systems. The theory of control systems and their applications are discussed. Three hours lec. a week. Pr.: ECET 330 and MATH 221.
K-State 8:
- Empirical and Quantitative Reasoning

**ECET 450. Digital Systems and Computer Architecture.** (4) Spring. Development of advanced digital design techniques. Topics include VHDL-based design, simulation, and synthesis; testing and validation; system-level interfacing; and computer architecture. Three hours lec. and two hours lab a week. Pr.: ECET 352.
K-State 8:
- Empirical and Quantitative Reasoning

**ECET 480. Electronic Design I.** (1) Fall. Application of electronic principles and the design methodology to solving a significant design problem in a team context. Includes determining customer requirements, exploring and choosing design alternatives, scheduling, and project management. Significant milestones are the project's conceptual, preliminary, and critical design reviews, which require written and oral presentations. One hour lec. a week. Pr.: ECET 320, 352. Coreq.: ECET 430.
K-State 8:
- Empirical and Quantitative Reasoning

**ECET 481. Electronic Design II.** (2) Spring. A continuation of ECET 480. Includes the implementation, testing, and delivery of the project initiated in ECET 480 Electronic Design I. Significant milestones are the project prototype, design report, and final presentation. Four hours lab a week. Pr.: ECET 480.
K-State 8:
- Empirical and Quantitative Reasoning

**ECET 499. Advanced Topics in Electronic and Computer Engineering Technology.** (Var.) Fall, Spring, Summer. Provides an opportunity for faculty to present advanced electronic and computer engineering technology topics. Pr.: Consent of instructor.
K-State 8:
- Empirical and Quantitative Reasoning

**Mechanical engineering technology courses**

**MET 111. Technical Graphics.** (3) Fall, Spring. Introduction to computer aided design and drafting for learning and applying technical graphics concepts and techniques to produce finished drawings. National and international standards. Theory and applications of orthographic projection and pictorial drawings. Standards for symbols, section views, and dimensioning included. Descriptive geometry, including, orthographic solutions involving the point, line and plane projections, intersections as well as surface development of solids, bearings, slope, true length, and true size determination. One hour lec. and four hours lab a week. Coreq.: MATH 100 or consent of instructor.
K-State 8:
- Empirical and Quantitative Reasoning

**MET 117. Mechanical Detailing.** (3) Spring. Preparation of shop drawings for manufacturing, fabrication, or assembly. Specifications of size, shape, material for manufacture. Cost and tolerance relationship. Introduction to
geometric tolerancing. Selective assembly and stress calculations in interference fits. Computer techniques including CAD, spreadsheets, and mathematical analysis are applied throughout the course. One hour lec. and four hours lab a week. Pr.: MET 111, MATH 100 and 151.

K-State 8:
• Empirical and Quantitative Reasoning

MET 121. Manufacturing Methods. (3) Fall. Introduction to contemporary manufacturing processes and practices, including precision measurement and inspection, machining, forming, casting, and welding processes. Recitation and laboratory experience in manufacturing practices, including metrology and basic setup and operation of manufacturing equipment. Observation of applications in local industry. One hour lec. and four hours lab a week.

K-State 8:
• Empirical and Quantitative Reasoning


K-State 8:
• Empirical and Quantitative Reasoning

MET 211. Statics. (3) Fall. A study of forces and their effects on the bodies upon which they act. Three hours lec. a week. Coreq.: PHYS 113.

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Science

MET 230. Automated Manufacturing Systems I. (3) Spring. A general survey of the various components and systems in automated manufacturing, including material handling, electro-pneumatic control, programmable logic control, robotics, tooling, inspection and quality control, CNC, and other production processes. Two hours lec. and two hours lab a week. Pr.: ECET 100.

K-State 8:
• Empirical and Quantitative Reasoning

MET 231. Physical Materials and Metallurgy. (3) Fall. A broad view of materials used in industry, including structures of materials, how they react to stress and temperature, how the polyphase structures form, and how they are controlled to produce optimum properties. Students will examine through study and laboratory experimentation ferrous and nonferrous metals, polymers, composites, and ceramics. Two hours lec. and two hours lab a week. Coreq.: MATH 100 and CHM 110.

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

MET 245. Material Strength and Testing. (3) Spring. Calculations of material strength and deformation are complemented with principles and practice of mechanical testing including instrumentation and measurement in the areas of loads, stresses, deformations, thermal stresses, and other quantities. Two hours lec. and two hours lab a week. Pr.: MET 211.

K-State 8:
• Ethical Reasoning and Responsibility
• Natural and Physical Sciences

MET 246. Dynamics of Machines. (3) Fall. Velocities, accelerations, and forces in existing mechanisms to produce motions. Work, energy, impulse and momentum concepts in kinetics. Vibrations in machine parts. Three hour lec. a week. Pr.: MATH 220; PHYS 113.

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences
MET 252. **Fluid Power Technology.** (3) Fall. Study, design, analysis, operation, maintenance, and applications of hydraulic and pneumatic power systems and components. Pr.: MATH 100, MATH 151.

K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Sciences

MET 264. **Machine Design Technology I.** (4) Spring. Introduction to application and selection of machine elements to design mechanical systems. Covers primary machine elements such as shafts and shaft components, screws and fasteners, welded joints, springs, bearings, gears, clutches and brakes. Three hours lec. and two hours lab a week. Coreq.: MET 245.

K-State 8:
- Empirical and Quantitative Reasoning
- Historical Perspectives

MET 299. **Topics in Mechanical Engineering Technology.** (Var.) Fall, Spring, Summer. Provides an opportunity for faculty to present mechanical engineering technology topics. Pr.: Consent of instructor.

K-State 8:
- Empirical and Quantitative Reasoning

MET 314. **Finite Element Analysis and Design Modeling.** (3) Fall. Introduction to finite element analysis applied to mechanical design. Study and application of advanced computer-aided modeling techniques. One hour lec. and four hours lab a week. Pr.: MET 117 and MET 245.

K-State 8:
- Empirical and Quantitative Reasoning

MET 333. **Advanced Material Science.** (3) Spring. A continuation of MET 231 Physical Materials and Metallurgy. Emphasizes the understanding of material properties used to give various materials their function. Theory and laboratory work focus on controlling and testing material properties. Ferrous and non-ferrous metals, polymers and adhesives, composites, smart materials, effects of corrosion, failure analysis, and selection techniques for design. Two hours lec. and two hours lab a week. Pr.: CHM 110, CHM 111, and MET 231.

K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Sciences

MET 346. **Elements of Mechanisms.** (3) Spring. Fundamental motion concepts of displacement, velocity, and acceleration are studied, as well as analytical and graphical analysis and synthesis of linkages, gear trains, cams, pulleys, and combinations of these elements. Pr.: MET 117 and MET 246.

K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Sciences


K-State 8:
- Empirical and Quantitative Reasoning
- Natural and Physical Sciences


K-State 8:
- Empirical and Quantitative Reasoning
MET 381. Quality Control. (3) Spring. An introductory course in quality concepts and techniques used in industry. Topics include fundamentals of statistics and probability, statistical process control charts, and quality improvement tools. Three hours lec. a week. Pr.: Junior standing or consent of instructor.
K-State 8:
• Empirical and Quantitative Reasoning

MET 382. Industrial Instrumentation and Controls. (3) Spring. An introduction to process control systems for industrial applications. Course topics include concepts and terminology, first- and second-order systems, measurement of motion, gauges and transducers, signal processing, and measurement of properties. Two hours lec. and two hours lab a week. Pr.: ECET 201 or ECET 304.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

MET 410. Managerial and Project Economics. (3) Fall. Economic analysis of problems as applied to managerial decision making. Students consider the economic viability of solutions in engineering and a variety of other kinds of projects common in technology-oriented businesses. Pr.: MATH 100. Same as BUS 410.
K-State 8:
• Social Sciences

K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

MET 462. Senior Design Project I. (1) Fall. Selection, definition, and analysis of a project supervised by faculty. Includes consideration of project parameters, trade-off studies, alternative solutions, and justification of selected solution. Completion and presentation of a written project proposal included. Two hours lab a week. Pr.: MET 365 and senior standing.
K-State 8:
• Empirical and Quantitative Reasoning

MET 464. Senior Design Project II. (2) Spring. Development and implementation of project proposal submitted in MET 462. Construction, packaging, and testing of project culminating in a senior design project report which may include full documentation and performance specifications, functional description, theoretical analysis, schematics, cost analysis, parts list, drawings, etc. Project results will be presented orally to a select committee at the end of the course. Four hours lab a week. Pr.: MET 462 and senior standing.
K-State 8:
• Ethical Reasoning and Responsibility

MET 471. Thermodynamics and Heat Transfer. (3) Spring. This course emphasizes thermodynamic laws and equations and the use of tables and charts for properties of important fluids. Applications to systems used for producing, transforming, and applying heat and mechanical energy are also studied. Conduction, convection, and radiation heat transfer processes are investigated. Three hours lec. a week. Pr.: MET 353 and MATH 221.
K-State 8:
• Empirical and Quantitative Reasoning
• Natural and Physical Sciences

MET 481. Automated Manufacturing Systems II. (3) Fall. Covers systems for manufacturing operations including facilities, supplies, materials, procedures, and control. Topics include design, programming, feedback for
manufacturing, production set-up, automated work cells, and decision issues. Two hours lec. and two hours lab a week. Pr.: MET 125, MET 230, and MET 382.

K-State 8:
- Empirical and Quantitative Reasoning
- Global Issues and Perspectives

**MET 490. Industrial Work Internship.** (Var.) Fall, Spring, Summer. The student will work as an intern with business and industry in mechanical engineering technology field. A report detailing duties performed and tasks accomplished is required at the end of the internship period. Pr.: Sophomore standing and consent of MET program coordinator.

K-State 8:
- Empirical and Quantitative Reasoning

**MET 499. Advanced Topics in Mechanical Engineering Technology.** (Var.) Fall, Spring, Summer. Provides an opportunity for faculty to present advanced mechanical engineering technology topics. Pr.: Consent of instructor.

K-State 8:
- Empirical and Quantitative Reasoning

**Other courses**

**ETA 020. Engineering Technology Seminar.** (0) Fall, Spring. An introduction to university life and the skills necessary for personal and professional success after college. Activities include discussions, hand-on projects, and opportunities to meet and learn from professionals. Topics explore the responsibilities of a college student and the benefits of a university education. Approximately 16 contact hours during the semester.

**ETA 292. Problems in Engineering Technology.** (Var.) Fall, Spring, Summer. Independent study in specific topics in engineering technology. Pr.: Consent of instructor.

K-State 8:
- Empirical and Quantitative Reasoning

**ETB 480. UAS Senior Design I.** (1) Fall. Application of UAS principles and design methodology to solving a significant design problem in a team context. Includes determining customer requirements, exploring and choosing design alternatives, scheduling, and project management. Significant milestones are the project's conceptual, preliminary, and critical design reviews, which require written and oral presentations. One hour lec. a week.

**ETB 481. UAS Senior Design II.** (2) Spring. A continuation of ETB 480. Includes the implementation, testing, and delivery of the project initiated in ETB 480 UAS Senior Design I. Significant milestones are the project prototype, design report, and final presentation. Four hours lab a week. Pr.: ETB 480.

**ETB 492. Advanced Problems in Engineering Technology.** (Var.) Fall, Spring, Summer. Advanced independent study in specific topics in engineering technology. Pr.: Consent of instructor.

K-State 8:
- Empirical and Quantitative Reasoning
Graduate Program
Raju Dandu, Program Director

Graduate Faculty: Ackerman, Barnhart, Collins, Dandu, DeGreeff, Gazek, Joseph, Khan, Most, Oh, Starkey, Von Bergen, and Zajac.

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Professional Master of Technology (MPMT)
Master of Technology
30 hours required for graduation

Kansas State University's Professional Master of Technology Degree is designed to enable professionals from diverse technology fields to thrive in rapidly changing work environments. As a professional program, the PMT degree provides advanced skills and knowledge in the areas of communication, leadership, project management, and teamwork. It also provides unique opportunities for students to arrange programs with concentrated study in the broad areas of aeronautical technology, engineering technology, and technology management. Qualified faculty work cooperatively with each graduate student to develop highly individualized plans of study. As one of the first Professional Master of Technology degree in the state of Kansas, this program provides unique educational opportunities for college graduates and industry personnel from a variety of backgrounds.

Required “Common Core” Courses (19-21 credit hours)
COT 701 Advanced Technical Communications 3
COT 702 Applied Research Skills and Methods 3
COT 781 Capstone Experience for PMT Degree 4-6
MANGT 810 Operations and Supply Chain Management 3
MANGT 820 Behavioral Management Theory 3
STAT 703 Statistical Methods for Natural Sciences 3

Electives (9-11 credit hours)
Aeronautical Technology
COT 662 Aviation Management 3
COT 713 Advanced Aviation Safety Management 3

Engineering Technology
Electrical
COT 632 RF Technology 3
COT 650 Analytical and Computational Tools for Engineering Technology 3
COT 731 Applied Electromagnetics 3

Mechanical and Manufacturing
COT 720 Application of Lean Six Sigma Methods 3
COT 721 Reliability Centered Maintenance of Plant Equipment 3

Other Electives
COT 792 Problems in Master of Technology 1-3
COT 799 Special Topics in Professional Master of Technology 1-3
ECON 640 Industrial Organization and Public Policy 3
IMSE 680 Quantitative Problem Solving Techniques 3

Students may enroll in relevant graduate level courses on the Manhattan campus to fulfill elective requirements if approved as part of their formal program of study.
Graduate Level Courses

COT 632. RF Technology. (3) Spring. An introduction to the theory and design of electronic circuits for communications emphasizing the implementation and analysis of common radio-frequency (RF) building blocks. Topics include s-parameters, the Smith chart, component behavior, RF test equipment, computer simulation, filter design, impedance matching, amplifiers, oscillators, mixers, and demodulators. Pr.: ECET 320. Note: A report will be required of all graduate students.

COT 650. Analytical and Computational Tools for Engineering Technology. (3) Fall. Ordinary differential equations, vector algebra, vector calculus, partial differential equations and the separation of variables technique for solving wave equations. Students also perform simulation and analysis using software tools including MATLAB and MATHCAD. Pr.: MATH 221.

COT 661. Airport Planning and Management. (3) Fall. An overview of the Federal Aviation Regulation part 139 airport design standard and airport master planning process. Includes a study of the role of the airport in community development. Pr.: PPIL 111. Note: Advanced course project required.

COT 662. Aviation Management. (3) Fall. Provides the Professional Master of Technology student with the opportunity to gain a thorough understanding of basic aviation industry management practices in use today combined with historical perspectives. Includes case study analysis.

COT 701. Advanced Technical Communication. (3) Fall. Intensive writing practice, applying rhetorical principles to a number of genres common to non-academic professions and workplaces, including oral presentations. Introduction to allied topics such as document design and editing, crafting technical presentations. Application of global information literacy and research methods, culminating in the preparation of a master’s project proposal. Pr.: ENGL 200, 302.

COT 702. Applied Research Skills and Methods. (3) Spring. Survey of qualitative and quantitative research methods; use of a range of tools to develop applied research skills focusing on literature reviews. Examines applied research concepts, methods, and skills to foster enlightened decision making in professional practice.

COT 713. Advanced Aviation Safety Management. (3) Spring. An examination of the development of safety and how safety management has become an important part of any company. Discusses Safety Management Systems and how this blueprint is becoming an integral part of most organizations, emphasizing specific governmental and corporate programs. Topics include management tools and techniques to aid in systematically controlling risk and developing a safety culture mind-set. Pr.: AVT 450.

COT 720. Application of Lean Six Sigma Methods. (3) Spring. Six sigma and lean tools within an enterprise to improve product and process development, production operations, and service activities. Pr.: STAT 703.


COT 731. Applied Electromagnetics. (3) Spring. Fundamentals of electromagnetic wave phenomena primarily using transmission line theory to study practical applications such as antennas, cables, and waveguides. Includes a treatment EMI and related issues. Pr.: MATH 221 and ECET 320.

COT 781. Capstone Experience for Professional Master of Technology. (Var.) Fall, Spring, Summer. Students formulate, research and execute a project for industry partners to gain hands-on experience under expert guidance while integrating knowledge to solve complex problems. Students write a convincing proposal for a capstone experience, gather and analyze data, draw conclusions and present results. Teams of first and second-year students may form to work on real-world projects. Pr.: Consent of instructor. Coreq.: COT 702.

COT 792. Problems in Professional Master of Technology. (Var.) Fall, Spring, Summer. Opportunity for advanced independent study of a specific topic in one of the following areas: Aviation safety, engineering
technology, or technology management. Topics selected jointly by student and the instructor. Pr.: Consent of instructor.

**COT 799. Special Topics in Professional Master of Technology.** (Var.) Fall, Spring, Summer. Offered on sufficient demand. Advanced topics in Professional Master of Technology. Pr.: Varies with announced topic.

**ECON 640. Industrial Organization and Public Policy.** (3) Spring. An examination of measures and determinants of industrial concentration, and an analysis of market structure, conduct, and performance, and policies related to performance. Pr.: ECON 120.

**IMSE 680. Quantitative Problem Solving Techniques.** (3) Survey of decision making techniques. Topics covered include: Linear, Integer and Nonlinear Programming, Network Flows and Stochastic Processes. A focus of the course will include modeling and the use of software to solve these problems. Pr.: MATH 205. Note: Three hours of lecture a week.

**MANGT 810. Operations and Supply Chain Management.** (3) Spring. The study of the role of operations systems in the provision of value for the customer. Operations systems design, capacity determination, resource requirements planning and control, theory of constraints, supply chain management, quality management and control and project management are discussed and analyzed. Pr.: STAT 351 or STAT 702.

**MANGT 820. Behavioral Management Theory.** (3) Fall, Summer. An in-depth analysis of the development of the behavioral bases of individual and group behavior in business, governmental, educational, and other organizations with emphasis on current research literature and applications. Pr.: Open only to students in graduate business degree or certificate programs or with permission of the instructor.

**STAT 703. Introduction to Statistical Methods for the Sciences.** (3) Fall, Spring, Summer. Statistical concepts and methods applied to experimental and survey research in the sciences; tests of hypotheses, parametric and rank tests; point estimation and confidence intervals; linear regression; correlation; one-way analysis of variance; contingency tables, chi-square tests. Pr.: Junior standing and equivalent of college algebra.