Information

You may call toll-free for information about admission to Kansas State University.

Undergraduate students
Dial 1-800-432-8270 in Kansas. Outside of Kansas dial 785-532-6250.

Prospective students should contact:
Office of Admissions
Kansas State University
119 Anderson Hall
Manhattan, KS 66506-0102
E-mail: kstate@ksu.edu
consider.k-state.edu

Graduate students
Dial 1-800-651-1816. Outside the United States dial 785-532-6191.

Prospective students should contact:
Graduate School
Kansas State University
102 Fairchild Hall
Manhattan, KS 66506-1103
E-mail: ksugrad@grad.ksu.edu
www.ksu.edu/grad

Equity in athletics

In accordance with the Equity in Athletics Disclosure Act, an annual report pertaining to K-State’s athletic programs is available to prospective students, students, and to the public in the following locations: Intercollegiate Athletics, Office of Admissions, Office of Registrar, Office of Student Life, Hale Library, and online at www.ksu.edu/uauc.

Any questions regarding the Equity in Athletics Disclosure Act should be directed to the Office of Unclassified Affairs and University Compliance, Kansas State University, 112 Anderson Hall, Manhattan, Kansas 66506.

Notice of nondiscrimination

Kansas State University is committed to a policy of nondiscrimination on the basis of race, sex, national origin, disability, religion, age, sexual orientation, or other nonmerit reasons, in admissions, educational programs or activities, and employment (including employment of disabled veterans and veterans of the Vietnam Era), all as required by applicable laws and regulations. Responsibility for coordination of compliance efforts and receipt of inquiries, including those concerning Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act, has been delegated to Jane D. Rowlett, Ph.D., Director of Unclassified Affairs and University Compliance, Kansas State University, 225 Anderson Hall, Manhattan, KS 66506-0244 (785-532-4392).

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The K-State Undergraduate Catalog is a reference for those interested in academic policies, procedures, and programs of the university. Refer to the table of contents or the index for specific topics of interest.

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

Course Descriptions

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

Sample course description

▶ GEOG 221. Environmental Geography II. (4) II.
A basic physical geography course emphasizing the geosphere and hydrosphere, including processes, patterns, and physical background for related issues such as natural hazards and human modification of physical conditions. Introduces remote sensing and the use of topographic maps in environmental study. Three hours lec. and one two-hour lab per week. Pr.: Environmental Geography I.

The diamond (◊) indicates the course has been approved for university general education program credit.

The letters GEOG denote the department in which the course is offered (in this case, Geography).

The three digits of the course number 221 represent the level of the course.

Course number system:

- 000–099 Not applicable toward degree requirements.
- 100–299 Lower division undergraduate. Designed as freshman or sophomore course.
- 300–499 Upper division undergraduate. Designed as junior or senior course.
- 500–699 Upper division undergraduate. Primarily for a junior or senior, but also may be taken for graduate credit. A course numbered 500 may be taken for graduate credit only in a graduate student's minor field. A course numbered 600 may be taken for credit in a graduate student's major field.
- 700–799 Graduate and upper division, primarily for graduate level.
- 800–899 Graduate level for master's course or professional course beyond the undergraduate level.
- 900–999 Graduate level, primarily for doctoral candidate.

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

The I, II, S, and/or intersession following the course title indicate the semester, or semesters, each course is usually offered; I stands for fall semester, II for spring, S for summer semester, and intersession for the term between semesters.

The abbreviation Pr. indicates prerequisites for the course. In the sample course, students would be required to have completed Environmental Geography I before enrolling. Some courses may allow or require concurrent enrollment in other courses. This is indicated by the abbreviation Conc.

Faculty Lists Key

In the departmental sections, faculty members are listed by their last names. Those on the graduate faculty have an asterisk following their names.

An all-inclusive faculty and administration section precedes the index. This section lists each faculty member's full name, academic degrees, and year of first appointment at K-State (in parentheses). Those on the graduate faculty have an asterisk following their names.

Contacts

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

Online Catalog

This catalog is available at www.ksu.edu/courses on the web.

Other Publications

Other K-State publications are available on request from the offices listed below.

Course schedule booklet

The Course Schedule, a listing of courses offered each semester, is available in the following places:

• World Wide Web
  www.ksu.edu/courses

• K-State Student Union Bookstore
  K-State Student Union, First Floor
  785-532-6583

For prospective students

Office of Admissions
119 Anderson Hall, 785-532-6250
consider.k-state.edu

Admissions Guide: Overview of majors and student life.

For prospective graduate students

Graduate School
103 Fairchild Hall, 785-532-6191 or 1-800-651-1816
www.ksu.edu/grad

Graduate Studies: Overview of K-State's graduate programs and representative research opportunities.
www.ksu.edu/grad

Graduate Catalog: Descriptions of graduate programs and courses.
www.ksu.edu/grad

Graduate Handbook: Presentation of university policies on graduate education adopted by the Graduate Council on behalf of the Graduate faculty.
www.ksu.edu/grad

For continuing education

Division of Continuing Education
College Court Building, 785-532-5687
www.dce.ksu.edu

Distance Education Catalog: Listing of courses—offered through a variety of delivery methods—that can be taken in your own community.
www.dce.ksu.edu/dce/distance

Summer Brochure for Teachers: Listing of courses of interest to educators. Available each April.
About the University

Kansas State University
The university was founded February 16, 1863, established under the Morrill Act, by which land-grant colleges came into being.

At first the university was located on the grounds of the old Bluemont Central College, chartered in 1858, but in 1875 most of the work of the university was moved to the present site.

The 664-acre campus is in northern Manhattan, convenient to both business and residential districts. Under an enactment of the 1991 Kansas Legislature, the Salina campus was established through a merger of the former Kansas College of Technology with the university.

Additional university sites include 18,000 acres in the four branch locations of the Agricultural Experiment Station—Hays, Garden City, Colby, and Parsons—and 8,600 acres in the Konza Research Prairie jointly operated by the AES and the Division of Biology.

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

Mission statement
Kansas State University is a comprehensive, research, land-grant institution first serving students and the people of Kansas, and also the nation and the world.

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

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

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

Kansas State University’s mission includes enriching the lives of the citizens of Kansas by extending to them opportunities to engage in life-long learning and to benefit from the results of research. The university addresses this charge through mutually supportive activities on its Manhattan and Salina campuses, research and extension sites at numerous locations, outreach programs offered throughout the state and nation, and international activities.

The mission of Kansas State University is enhanced by symbiotic relationships among the discovery of knowledge, the education of undergraduate and graduate students, and improvement in the quality of life through research applications. Coordinated teaching, research, and extension services help develop the highly skilled and educated work force necessary to the economic well-being of Kansas, the nation, and the international community.

Accreditation
Kansas State University is fully accredited by the Commission on Institutions of Higher Education of the North Central Accrediting Association and by various professional accrediting agencies. Credit earned at K-State is transferable to other institutions.

Faculty
The faculty at Kansas State University are dedicated to excellence in teaching, student advising, research, extension education, scholarly achievement, and creative endeavor. K-State recognizes superior teaching with annual faculty awards. Citations for the Outstanding Teachers of the Year and for Distinguished Graduate Faculty Members are presented at commencement. The university also honors faculty members who contribute to the expansion of knowledge in their respective fields.

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

Objective of the educational program
The objective of the educational program at Kansas State University is to develop individuals capable of applying enlightened judgment in their professional, personal, and social lives.

To that end the university program is designed:

I. To provide full and efficient counseling and guidance to students at the university. Specifically, this means to:
   A. Learn and make known to students all that is possible and useful about their interests, aptitudes, and abilities.
   B. Apply that knowledge to the students’ choice of courses and curricula as fully as possible without encroaching harmfully on their initiative and feeling of self-responsibility.
   C. Provide continuing guidance for students according to their needs.

II. To prepare students for an occupation or a profession which includes an organized body of information and theory so they may realize their creative potential. More specifically this means that students should acquire:
   A. The ability to recognize and master fundamental principles in their fields of specialization.
   B. The knowledge basic to their special fields of study.
   C. The ability to reason critically from facts and recognized assumptions to useful technical conclusions.
   D. The basic skills associated with their fields of study.
   E. A professional attitude in their chosen work.

III. To provide all students with an opportunity to gain the knowledge and abilities members of a democratic society need, whatever occupation or profession they expect to enter. Specifically, this means that through its program the university undertakes to help the student:
A. Develop communication skills.
B. Develop the ability to apply critical and creative thinking to the solution of theoretical and practical problems.
C. Understand the basic concepts of the natural sciences, the interrelations of the natural and social sciences, and the impact of science on society.
D. Comprehend and evaluate the processes and institutions in society at home and abroad, and develop a dynamic sense of personal responsibility as effective citizens in a democratic society.
E. Develop habits of self-evaluation, responsibility, and enterprise that will increase the effectiveness of the educative process in college, and provide the basis for continued self-improvement.
F. Develop a well-adjusted personality, good character traits, and a sound philosophy of life.
G. Prepare for effective participation in family life.
H. Utilize actively and fully the capacity for aesthetic appreciation and enjoyment.

IV. To stimulate the faculty and students to extend the boundaries of knowledge through critical and creative thinking and experimentation.
V. To provide the facilities for extending education outside the boundaries of the campus to the members of the community that the institution serves.

A. Develop communication skills.
B. Develop the ability to apply critical and creative thinking to the solution of theoretical and practical problems.
C. Understand the basic concepts of the natural sciences, the interrelations of the natural and social sciences, and the impact of science on society.
D. Comprehend and evaluate the processes and institutions in society at home and abroad, and develop a dynamic sense of personal responsibility as effective citizens in a democratic society.
E. Develop habits of self-evaluation, responsibility, and enterprise that will increase the effectiveness of the educative process in college, and provide the basis for continued self-improvement.
F. Develop a well-adjusted personality, good character traits, and a sound philosophy of life.
G. Prepare for effective participation in family life.
H. Utilize actively and fully the capacity for aesthetic appreciation and enjoyment.

IV. To stimulate the faculty and students to extend the boundaries of knowledge through critical and creative thinking and experimentation.
V. To provide the facilities for extending education outside the boundaries of the campus to the members of the community that the institution serves.

Calendar

Additional academic dates and deadlines can be found at [www.ksu.edu/calendar](http://www.ksu.edu/calendar) on the World Wide Web.

**Fall Semester 2000**

- **August 21, Monday**
  Semester begins.
- **September 4, Monday**
  University holiday.
- **October 20, Friday**
  Student holiday.
- **November 22–24, Wednesday–Friday**
  Student holiday.
- **November 23–24, Thursday–Friday**
  University holiday.
- **December 8, Friday**
  Last day of semester.
- **December 8–9, Friday–Saturday**
  Commencement.
- **December 11–15, Monday–Friday**
  Semester examinations.

**January 2001 Intersession**

- **December 27, 2000–January 10, 2001,**
  Monday–Friday
  Intersession.

**Spring Semester 2001**

- **January 11, Thursday**
  Semester begins.
- **January 15, Monday**
  University holiday.
- **March 19–23, Monday–Friday**
  University holiday.
- **May 4, Friday**
  Last day of semester.
- **May 7–11, Monday–Friday,**
  Semester examinations.
- **May 11–12, Friday–Saturday**
  Commencement.

**May 2001 Intersession**

- **May 14–June 1, Monday–Friday**
  Intersession.
- **May 28, Monday**
  University holiday.

**Summer Semester 2001**

- **May 15–August 3**
- **May 28, Monday**
  University holiday.
- **July 4, Wednesday**
  University holiday.

**August 2001 Intersession**

- **July 30–August 17**
  Intersession.

**Fall Semester 2001**

- **August 20, Monday**
  Semester begins.
- **September 3, Monday**
  University holiday.
- **October 19, Friday**
  Student holiday.
- **November 21–23, Wednesday–Friday**
  Student holiday.
- **November 22–23, Thursday–Friday**
  University holiday.
- **December 7, Friday**
  Last day of semester.
- **December 7–8, Friday–Saturday**
  Commencement.
- **December 10–14, Monday–Friday**
  Semester examinations.
### January 2002 Intersession

- January 2–16, 2002, Monday–Friday
  - Intersession.

### Spring Semester 2002

- January 17, Thursday
  - Semester begins.
- January 21, Monday
  - University holiday.
- March 18–24, Monday–Friday
  - Student holiday.
- May 10, Friday
  - Last day of semester.
- May 13–17, Monday–Friday
  - Semester examinations.
- May 17–18, Friday–Saturday
  - Commencement.

### May 2002 Intersession

- May 20–27, Monday–Friday
  - Intersession.
- May 27, Monday
  - University holiday.

### Summer Semester 2002

- May 21–August 9
- May 27, Monday
  - University holiday.
- July 4, Thursday
  - University holiday.

### August 2002 Intersession

- August 5–23, Monday–Friday
  - Intersession.
Glossary and Abbreviations

A/Pass/F: A grading option in which a student earning a grade of A in a course will have an A recorded for that course; a grade of B, C, or D will be recorded as a Pass; and a grade of F will be recorded as an F.

Academic load: The total number of credit hours enrolled in during one semester.

Academic warning: (W) An indication that a student is in academic difficulty which could lead to dismissal from the university.

Advanced standing: Having credit awarded for previous work or testing.

Advisor: A department or college-based faculty member who helps students achieve their educational goals by providing guidance on courses, program requirements, prerequisites, programs of study, and policies and procedures.

Audit: To attend a course regularly without participating in course work and without receiving credit.

Bachelor of arts degree: (B.A.) Courses selected from a variety of disciplines with concentrations in one or two areas. A modern language is required for a B.A. degree.

Bachelor of science degree: (B.S.) A specified program of required courses with fewer electives than the B.A. A modern language is not required.

Baccalaureate: Refers to the bachelor’s degree.

Classification: Level of progress toward a degree with classifications of freshman, sophomore, junior, or senior, depending on the number of semester hours completed.

College: An academic unit of the university. Kansas State University has nine colleges.

Cooperative education (co-op): The integration of academic experience with planned employment experiences that relate to a student’s academic major or career goals. The work experience supplements and complements the curriculum.

Concurrent enrollment: (Conc.) Taking a course during the same semester as another.

Course: A unit of study a student enrolls in during a semester.

Credit by examination: Credit received when a student takes an oral or written examination without enrolling for a course.

Credit hour: (Cr.) A unit of measurement used in determining the quantity of work taken. Each credit hour is roughly equivalent to one hour of course time per week. For example, a course meeting three hours a week would be a three-credit-hour course.

Credit/No Credit: (C/NC) A grading option with successful completion of a course recorded as Credit and failure as No Credit. No other grades are given for such courses and they are not figured into the grade point average.

Curriculum: A program of courses that meets the requirements for a degree in a particular field of study, also referred to as a major.

Degree program: Courses required for completion of a particular degree.

Department: A unit within a college representing a discipline.

Discipline: An area of study representing a branch of knowledge, such as mathematics.

Dismissal: (D) A student who neglects his or her academic responsibilities may be dismissed on recommendation of an academic dean.

Double major: Having two programs of academic study.

Drop/Add: Changing the student’s course schedule by adding and/or dropping a course.

Dual degrees: A student may elect to pursue two degrees at one time.

Electives: Courses chosen by a student that are not required for the major or minor. The number of hours of electives required varies according to student’s major.

Enrollment: The process of selecting courses and having courses reserved.

Equivalent: Equiv.

Extracurricular: Activities such as band or debate for which a student may earn credit toward graduation. Extracurricular activities are counted as electives.

Financial aid: Help for a student who lacks funds to pay for college. Aid is available from grants, loans, scholarships, and work/study employment.

Grade point average: (GPA) A measure of scholastic performance. A GPA is obtained by dividing the number of grade points by the hours of work attempted, where an A = 4 points, a B = 3 points, a C = 2 points, a D = 1 point, and an F = 0 points.

Hour: The unit by which course work is measured. The number of semester hours assigned to a course is usually determined by the number of hours a course meets per week.

Intersession: Courses offered between fall and spring semesters, and after spring semester and prior to summer semester.

Lecture: (Lec.) A course wherein the teaching is done primarily through oration.

Major: The subject or subject areas upon which a student chooses to place principal academic emphasis, also referred to as curriculum.

Minor: A systematic program of study in an area of emphasis outside a student’s major.

Option: An approved group of courses creating a specialty within a major field of study.

Orientation: Activities designed to help the new student become acquainted with the university.

Prerequisite: (Pr.) A requirement, usually credit in another course, which must be met before a particular course can be taken.

Recitation: (Rec.) A small section usually taken in conjunction with a lecture.

Scholastic honors: An award an undergraduate receives based on the excellence of K-State academic work.

Secondary major: Interdisciplinary major which must be completed along with a first major course of study.

Special student: An undergraduate student taking courses at K-State but not regularly enrolled in work toward a degree.

Transcript: An official copy of a student’s permanent academic record.

Transfer student: A student who terminates enrollment in another college or university and subsequently enrolls at K-State.

Undergraduate student: A university student who has not received a bachelor’s degree.

Variable: (V/Var.) The credits earned in some courses may vary.
Admission

Larry Moeder, Director
119 Anderson Hall, Manhattan
785-532-6250
1-800-432-8270 (Kansas only)
E-mail: kstate@ksu.edu
www.ksu.edu/admit

General Admission Information

Undergraduate students interested in attending Kansas State University on the main campus in Manhattan, or the College of Technology and Aviation campus in Salina, may request information and assistance by writing, calling, or sending e-mail to the Admissions Office.

The Admissions Office is located on the Manhattan campus and is open weekdays from 8 a.m. to noon and 1 p.m. to 5 p.m. All campus offices are closed on weekends.

Undergraduate students wishing to apply for admission may do so by submitting the traditional paper application form with appropriate application fee or by submitting the electronic application via the World Wide Web and providing credit card information for the application fee or sending the fee by personal check or money order. Students applying will not be admitted until the application fee has been received.

Access the electronic application at www.ksu.edu/admit/application.html. All supporting documents and credentials must be in paper format to be considered as official for admission purposes.

No qualified student will be denied admission to the university on the basis of race, sex, national origin, handicap, age, sexual orientation, or other nonmerit reasons.

Campus Visits

Students and parents are welcome and encouraged to visit the campuses. For a visit to the Manhattan (main) campus please write or call the Admissions Office (see address and phone information above). For maximum benefit from your visit it is wise to plan your visit two weeks in advance so that appropriate appointments can be made and admission representatives can be available for consultation concerning your educational plans.

Students and parents wishing to visit the College of Technology campus in Salina are encouraged to contact the College Center, 2310 Centennial Road, Salina campus. The phone number is 785-826-2640 or 1-800-248-5782 (Kansas only). The office is open during the same standard business hours, and admissions representatives are available to schedule campus visits and to provide information regarding College of Technology programs.

General Admission Information

Apply for admission: The process of submitting written or electronic application and supporting credentials so that an official determination of eligibility to attend the university can be made.

Enrollment: The process of selecting courses and arranging a schedule of classes for the semester.

International students: Individuals who are not citizens or permanent residents of the United States.

New freshmen: High school graduates with no earned college credits after high school graduation. Students taking college-level work while in high school are considered new freshmen.

Non-degree students: Students not pursuing a degree who have been admitted for special purposes or at the discretion of a director. Generally, these students are limited to 15 hours of credit from K-State. Other restrictions may apply. Non-degree students will not qualify for financial assistance.

Official test scores: ACT, SAT, and TOEFL results that are received directly from the testing service via magnetic tape reports or formal mail service. Scores noted on high school transcripts, personal reports, etc., are not official results.

Official transcript: A transcript that is sent directly by mail or fax from the registrar of a credit-granting institution to the K-State Admissions Office. Hand-carried documents, sealed envelopes, personal grade reports, etc., are not official records.

Readmitted students: Any student who has previously been admitted and attended K-State courses on the Manhattan campus at any time since high school graduation. Any student who was admitted to and attended classes on the College of Technology campus since fall of 1991.

Registration: The process of paying fees.

Special students: Students not pursuing a degree but meeting all standard admission requirements. Special students will not qualify for financial assistance.

Transfer students: Students who have earned college-level credit since high school graduation.

Freshman Admission

Requirements

Admission to Kansas State University is granted to individuals who meet one of the following requirements:

High school graduates must:
• Achieve an ACT score of 21 or above or an SAT of 990 or above; or
• Rank in the top third of the graduating class at the end of the seventh or eighth semester; or
• Complete the precollege curriculum:
One unit = 1 year or 2 semesters

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<td>Choose three units from: Biology, Advanced biology, Physical/earth/general science, Chemistry, Physics</td>
</tr>
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<td>Math</td>
<td>3</td>
<td>One unit each of: Algebra I, Algebra II, Geometry</td>
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<tr>
<td>Computer technology</td>
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Resident students must have a 2.0 in the precollege curriculum.

Nonresident students must have a 2.5 in the precollege curriculum.

Students who are officially nonresident but are eligible for special fee status will be evaluated for admissibility on the nonresident requirements.

GED graduates must:
• Achieve an overall GED score of 50 points or higher.

Glossary of Terms

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Registration: The process of paying fees.

Special students: Students not pursuing a degree but meeting all standard admission requirements. Special students will not qualify for financial assistance.

Transfer students: Students who have earned college-level credit since high school graduation.
Transfer students with fewer than 24 transferable credit hours must:

- Meet the conditions for high school graduates; and
- Achieve a cumulative college GPA of 2.0.

Adult students

Students who are 21 or older and have graduated from high school, or earned a GED score of 50 or higher, may be admitted to Kansas State University without meeting the required ACT score, high school rank, or high school GPA. Adult students will be required to have a cumulative college GPA of 2.0.

Students with unusual academic circumstances

Kansas State University realizes there are circumstances that may prevent students from meeting one of the admission requirements. Students who have encountered unusual situations that may have kept them from meeting the requirements for admission should bring those circumstances to the attention of an admissions director. In some situations, a student who has not met the established admission requirements may be admitted on an exception basis.

Apply early

Students are encouraged to initiate the application process early in the senior year by submitting a completed application and the non-refundable $20 application fee. To complete an application, each student must submit official scores from the American College Test (ACT) or from the Scholastic Aptitude Test (SAT). Following graduation from high school, an eighth-semester transcript showing the date of high school graduation should be submitted.

Home-schooled students

Home-schooled students will be considered for admission on the same basis as traditional high school graduates. Students should submit ACT results and descriptive information regarding their high school program of study. Course descriptions or portfolios are accepted in lieu of an accredited diploma. Contact the Office of Admissions if you have questions about home-schooling qualifications or requirements for admission.

American College Test (ACT)

All new freshmen applicants, regardless of age and non-traditional status, are required to take the ACT and have official test results forwarded to the university. The test should be taken on one of the national test dates throughout the year. If the applicant anticipates applying for scholarships, the October test is preferable. Test centers are available nationally. Information about the ACT is available from the Admissions Office and from your local high school counseling office.

Scholastic Aptitude Test (SAT)

In some situations, students are unable to participate in the ACT program but do have access to the SAT program offered through the College Board Services. K-State will substitute SAT results for purposes of making admission decisions, but students should take the ACT so that all data made available through that service can become part of the student’s advising portfolio. Specific questions concerning standardized testing should be referred to a director of admissions.

Transfer Admission

Transfer qualifications

Students who have earned college or university credit after high school graduation must have a minimum cumulative GPA of 2.0 on a 4.0 scale to qualify for admission to the university. The following programs of study require higher grade point averages.

- All College of Architecture, Planning, and Design programs
- All College of Engineering programs
- All College of Business Administration programs (does not apply to pre-business)
- Mass communication (journalism)
- Psychology
- All health-related professions
- All teacher education programs (does not apply to pre-professional education)

For information regarding specific program requirements contact the college’s dean’s office or refer to the college’s academic section of this catalog.

Students transferring fewer than 24 credit hours should see the Freshman Admission section in this catalog.

Transfer application

Application procedures require a completed application form, the $20 nonrefundable application fee, and complete official transcripts from all previous colleges or universities.

Transfer applicants who have earned less than 24 hours of transfer credit must also submit an official final high school transcript showing their graduation date and ACT results. Information about institutions previously attended must be furnished upon application and transcripts must be furnished regardless of the applicant’s wishes concerning use of previously earned credit.

The College of Arts and Sciences offers an option to enter the university without declaring a specific program of study. This program is limited to students who have earned less than 60 college-level credit hours. If you have earned 60 or more credit hours you must specify a major.

All applicants to the College of Business Administration must begin their studies in pre-professional business administration. Students who have earned more than 75 college-level credits and have less than 2.5 GPA will not be admitted to the College of Business Administration.

All documentation should be sent to the Office of Admissions in Manhattan. Hand-carried or personally delivered transcripts are unofficial even though they carry the college seal and/or signatures that are placed on official records. All documents submitted become the property of the university and cannot be returned or copied.

Transcript evaluations

Most academic credits from accredited junior colleges and universities are transferable to K-State. One-half of the hours required for a K-State baccalaureate degree can be taken at a two-year college.

Official evaluation of transfer credit is part of the admission procedure. Application of transfer credit toward degree requirements is determined by each college and major department.

University general education requirements for transfer students

Transfer students entering Kansas State University beginning in fall 1997 and/or transferring credit earned from accredited two-year or four-year institutions after summer 1997 are required to complete a minimum number of university general education credit hours at K-State. The minimum number of university general education credit hours required is based upon total number of completed transfer credit hours accepted at K-State.

Associate degree programs

<table>
<thead>
<tr>
<th>Number of completed transfer credit hours accepted at K-State</th>
<th>Minimum university general education credit hours to be taken at K-State</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–14</td>
<td>6</td>
</tr>
<tr>
<td>15 and above</td>
<td>3</td>
</tr>
</tbody>
</table>

Bachelor’s degree programs

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>0–7</td>
<td>18</td>
</tr>
<tr>
<td>8–29</td>
<td>12</td>
</tr>
<tr>
<td>30–44</td>
<td>9</td>
</tr>
<tr>
<td>45 or more</td>
<td>6</td>
</tr>
</tbody>
</table>

Each student pursuing a bachelor’s degree is required to complete a minimum of 6 credit hours of K-State upper-division university general education courses (300 or above) as specified in the program in which they will graduate. For precise requirements for degree completion, refer to the academic department of your major in this catalog.
Approved courses
Courses currently approved for university general education credit are listed on the web at: www.ksu.edu/registrar/enroll/gened.html. This list will change as courses are deleted and approved.

Please note that the Kansas Board of Regents defines basic skills courses as separate from university general education. K-State basic skills courses include Expository Writing courses, College Algebra, and Public Speaking. Therefore, these courses will not fulfill your general education requirements.

Community college articulation
K-State subscribes to the transfer articulation agreement with the 19 Kansas community colleges. Students who have received an associate degree from a Kansas community college are guaranteed junior classification.

All credits of an associate degree are not necessarily applicable toward a baccalaureate degree; additional freshman, sophomore, and general education courses may be required to meet degree requirements.

The associate of applied science (AAS) and associate of general studies (AGS) degrees will only transfer into specific baccalaureate programs. Generally, these degrees will only apply toward bachelor degrees in areas related to technical occupations. Students who wish transfer credit from the AAS or AGS degree should seek a transcript evaluation from the college or major department to which they are applying for admission.

Course equivalency information on all Kansas community colleges is available on the web. Access this information to look up specific course transferability at www.ksu.edu/admit/trans.html.

Military evaluation for credit
The evaluation of military training and experience is conducted in the Office of Admissions. An evaluation of military experience is optional and has no bearing on admission status to K-State. This evaluation does not include evaluation of transfer work from other educational institutions.

The evaluation of documents includes DD-214, DD-295, certificates of completion, Defense Language Institute transcripts, Academy of Health Sciences at Fort Sam Houston transcripts, and AARTS transcripts. Active military personnel may have their current, primary MOS evaluated, provided it has been validated by a performance evaluation within the last 12 months.

Credit awarded through military credential evaluation will be recorded on the K-State transcript at the time the student is admitted to a degree seeking program at K-State and enrolls in K-State courses.

In general, the university follows the recommendation given in A Guide to the Evaluation of Educational Experiences in the Armed Services published by the American Council on Education as these recommendations apply to a student’s K-State degree program. Kansas State University does not award physical education credit for basic training. Credit in military science is granted based on length of time in service and rank upon discharge. Military correspondence courses and courses which last less than two weeks are not recognized for college-level credit. Credits resulting from military evaluations granted by other institutions are not transferable to K-State.

Special and Nondegree Student Admission
Several categories of special and non-degree students exist at K-State. All students are subject to stated requirements and are responsible for payment of all fees, regular attendance at classes, and maintenance of satisfactory standing. Special and non-degree options are not available for international students on student visas.

Special student applicants
Students who do not intend to become candidates for a degree may apply for admission as special students. Such students must submit the traditional application, application fee, test scores, and appropriate transcripts. Special student applicants must meet standard admission requirements. Special and nondegree-seeking students are not eligible for financial assistance.

Nondegree-seeking student applicants
Some students may be admitted as nondegree-seeking students at the discretion of a director of admissions. Nondegree-seeking students must submit the standard application, application fee, test scores, and appropriate transcripts. These students will be allowed to complete a maximum of 15 semester hours in non-degree status. In order to pursue work beyond the 15 hour limit, students must apply for regular admission and meet all requirements. Nondegree-seeking students are required to sign an agreement specifying the terms of their admission.

High school students
Outstanding high school juniors and seniors may be admitted as special students to take courses while completing their high school requirements. High school students must submit the standard application, application fee, a recommendation from the high school, an outstanding high school academic record, and specify the courses in which they plan to enroll.

Younger students may be granted admission under special circumstances. In addition to the documents mentioned above, those students must file a letter of consent from one of the students’ parents and a letter of approval to enroll in the selected class from the K-State department offering the class.

The university monitors the progress of all pre-college students very carefully. Students are approved for enrollment on the basis of space available in the selected class and success in prior university course work, if applicable.

International Admission

For purposes of admission, international applicants are defined as all persons who are not citizens or permanent residents of the United States.

In most cases, international applicants seeking admission to Kansas State University must meet the same academic standards for admission as those required of American students. There are wide variations, however, between educational systems throughout the world that make exact comparisons of educational standards difficult. International applicants are selected on the basis of their prior academic work, English proficiency, probability of success in the chosen curriculum (as evidenced by prior work in the academic area involved), and certification of adequate financial resources.

International applicants must submit a completed international application form, a $45 nonrefundable application fee, translated secondary schooling records, results from the Test of English as a Foreign Language (TOEFL), notarized affidavit of financial sponsorship, and when applicable, translated college transcripts.

TOEFL/English proficiency
A minimum score of 550 on the TOEFL, or 213 on the computer-based TOEFL, is required for admission. Proficiency also may be demonstrated by passing a full academic year of college-level freshman English (i.e., equivalent to ENGL 100 and ENGL 120) with a grade of C or better at an accredited institution of higher education in the United States.
Deadlines for international application
1. For students currently studying in the United States:
   **Apply by**  | **For**
   June 15      | Fall semester
   October 15   | Spring semester
   April 1      | Summer semester

2. For students outside the United States:
   **Apply by**  | **For**
   April 15     | Fall semester
   July 15      | Spring semester
   January 1    | Summer semester

Advanced credit for international evaluation
The following methods are used by Kansas State University to validate the awarding of advanced standing credit for international students who have completed work in their home countries at the postsecondary level:

1. Credit is granted based upon recommendation by recognized academic publications, primarily the World Education Series of American Association of Collegiate Registrars and Admissions Officers.

2. Validation by a comparable credit-granting department at Kansas State University.
   Students initiate validation of prior academic experiences through the transfer coordinator in the Office of Admissions or their college dean’s office. Validation by one of the following two options will be at the discretion of the credit-granting department.

   **Option A:** Course-by-course evaluation examination by comparable K-State academic department.

   **Option B:** The advisor and/or academic dean’s office makes a preliminary evaluation of the level a student has completed and begins the student at that level. Upon successful completion of that course, all related lower-level courses in that area, as determined by the department granting credit, would be validated and credit awarded.

English Proficiency

Admission requirements
All undergraduate students whose primary language is not English must demonstrate English Language proficiency before completing enrollment for the first time at the university. This requirement applies to international and non-international, permanent residents, immigrants, transfer and non-transfer student alike.

An assessment test of written and spoken proficiency is given by the English Language Program prior to each enrollment period. If results of the student’s proficiency level indicate inadequate preparation, the director of the English Language Program may recommend one of the following conditional enrollment options.

1. Full-time study in the English Language Program before pursuing academic studies.
2. A combination of part-time study in the English Language Program and part-time study in his or her academic area.

Enrollment requirements
All new students whose primary language is not English must demonstrate English Language proficiency before completing enrollment for the first time at the university. This requirement applies to international and non-international, permanent residents, immigrants, transfer and non-transfer student alike.

An assessment test of written and spoken proficiency is given by the English Language Program prior to each enrollment period. If results of the student’s proficiency level indicate inadequate preparation, the director of the English Language Program may recommend one of the following conditional enrollment options.

1. Full-time study in the English Language Program until adequate proficiency is demonstrated.
2. A combination of part-time study (6 hours) in the English Language Program and part-time study (6 hours) in the academic area until adequate proficiency for full-time academic study is demonstrated.
3. Full enrollment in an academic program with no English language requirements.

Fraudulent Applications
Individuals who withhold or provide fraudulent information on applications for undergraduate admissions or readmissions are subject to immediate dismissal from the university. The decision for immediate dismissal will be made by the director of admissions. This decision will be made after a complete and thorough review of the situation and an individual conference with the student involved. The individual dismissed has the right to appeal the decision to the committee on academic policy and procedure, whose decision will be final.

Readmit Students
A readmit is any undergraduate student who has previously been admitted and attended K-State courses on the Manhattan campus at any time since high school graduation, or any undergraduate student who was admitted to and attended classes on the Salina (College of Technology and Aviation) campus since fall 1991.

Students need to reapply and be readmitted if they have graduated from K-State and wish to return for or continue further undergraduate work, have not been enrolled for one or more semesters at K-State or, have been dismissed from the university one or more semesters previously. There is no readmission application fee.

Graduate students who have attended graduate school at K-State or earned a K-State graduate degree, but have never been an undergraduate student at K-State, must file a new student application and pay the $20 application fee.

Students must be readmitted to a primary major. A minor or secondary major can be added once enrolled. Students who have graduated from K-State cannot be readmitted to seek or complete a minor or secondary major.

The application deadline for readmitting students is five working days prior to the scheduled enrollment date. Students submitting applications during the final five days before the first day of classes will enroll during late enrollment and will be assessed the $50 late enrollment fee.


### Advising Responsibilities

Kansas State University is committed to providing effective advising services to students as an essential component of their educational experience.

Advising generally is required as a condition for enrollment, especially for new students. Continuing students are encouraged to seek academic advising regularly throughout their academic careers. *Students are responsible for initiating advising contact and preparing for advising sessions.* The advising relationship between the academic advisor and the student is protected by confidentiality.

In accordance with the Kansas Board of Regents academic advising policy, department and college-based advising systems are available to all students to assist in and provide for the following:

1. **Goal setting.** Help students set both short- and long-term educational goals.
2. **Information.** Inform students of the graduation requirements of their department, help with strategic course selections so as to minimize the number of semesters required for graduation, and inform students of career opportunities in their field of study.
3. **Transitions.** Inform students how to change colleges and/or departments and provide information to explain the process students follow to enroll in their curriculum and to drop or add courses during the semester.
4. **Accessibility.** Have reasonable hours and methods of availability for students. Students should be able to set up appointments for an adequate amount of time to make curricular selections and career choices.
5. **Referral to campus resources.** Be able to refer students to various campus resources: Academic Assistance Center, University Counseling Services, Career and Employment Services, and others.

*Students are ultimately responsible for fulfilling all the requirements of the curriculum in which they are enrolled.* Students share responsibility for a successful university experience and are expected to contribute to effective advising sessions by:

1. Participating in orientation programs, providing standardized test scores, as required by Kansas Board of Regents policy, and providing an academic history that aids in course selection decisions.
2. Working with an advisor to develop and implement both short- and long-term educational and career goals.
3. Knowing academic policies and procedures, academic calendar deadlines, and degree or program requirements.
4. Consulting with an advisor when necessary and following through on recommendations.
5. Scheduling and keeping appointments with an advisor. Coming prepared for appointments by bringing appropriate materials, identifying course choices from requirements of the preferred program or major, and identifying questions to address.
6. Informing an academic advisor of any special needs, deficiencies, or barriers that might affect academic success.
7. Remaining informed of progress in meeting academic requirements, carefully maintaining academic records, and seeking assistance to resolve any errors or questions.

### Pre-Law Advising

Law schools across America select students from a wide variety of majors. As a result, there is no prescribed pre-law major or curriculum at K-State; rather, pre-law is an interest area for students considering attending law school. If a student is undecided, the pre-law advisor will help the student explore curriculum options with the goal of finding a major. Pre-law students may select the major of their choice in any college. The Association of American Law Schools does not prescribe a particular pre-law curriculum; however, it does emphasize the selection of rigorous courses that will aid students in the development of critical and analytical thinking skills, a facility with written and spoken expression, an understanding of our society’s institutions and values, and creative power in thinking. The development of these capacities is a highly individualized process to be pursued in consultation with the student’s major advisor and the pre-law advisor.

Students in all majors who are considering attending law school should consult with the pre-law advisor in the College of Arts and Science dean’s office as early as possible in their undergraduate career. Additional information about pre-law can be found on the College of Arts and Sciences homepage at [www-personal.ksu.edu/~jusnic/prelaw.html](http://www-personal.ksu.edu/~jusnic/prelaw.html).

### Pre-Health Professions Advising

Some disciplines in the pre-health professions program require students to complete a bachelor’s degree before applying to professional school. The bachelor’s degree should be in a discipline that interests the student. No specific major is preferred by professional schools over another, and students may choose the major from any undergraduate college at Kansas State University.

Pre-health professions is not a major (students cannot earn a degree in pre-health professions). Students are encouraged to declare interest in their major as well as the pre-health program when they apply for admission.

The College of Arts and Sciences provides advising assistance for all students interested in any pre-health profession. At K-State, the pre-health areas of study currently include medical technology, pre-dentistry, pre-health information management, pre-medicine, pre-nursing, pre-occupational therapy, pre-optometry, pre-pharmacy, pre-physical therapy, and pre-respiratory therapy. Pre-veterinary medicine advising is available through the College of Agriculture and the College of Arts and Sciences.

### Credit By Examination

Many opportunities exist at Kansas State University to earn college credit by examination. K-State participates in the College Level Examination Program (CLEP), Proficiency Examination Program (PEP), DANTES, high school International Baccalaureate, and the College Board High School Advanced Placement Testing Program. Local examination quizzes also are given in many course areas by individual departments within the university.

Details concerning testing opportunities are available on request from the Office of Admissions, Kansas State University, 119 Anderson Hall, Manhattan, Kansas 66506–0102, or Academic Assistance Center, Kansas State University, 101 Holton Hall, Manhattan, Kansas 66506–1307. Also see the catalog section on the Academic Assistance Center.
Credit By Departmental Examination

Students who are enrolled in K-State courses may petition a K-State department for permission to attempt to earn credit for a specific K-State course through a special departmental examination. Credit may be granted for any course with the consent of the head of the department offering credit for that subject. Permission is granted only if the student has prepared for the examination. The examination must be taken under the supervision of the head of the department in which the course is given. Credit earned by special examination is considered resident credit.

Credit by examination may receive letter grades or a notation ‘‘credit’’ as determined by the department. Check with your advisor to be certain a course will count to meet a requirement. The graded work will receive grade points to be computed in the student’s GPA. Nongraded credit by examination will be treated as graded hours in implementing A/Pass/F policy.

Academic Fresh Start GPA

The Academic Fresh Start GPA enables a student returning to K-State for a baccalaureate degree after an absence of three or more years to neutralize, in part, the grade impact of prior academic performance. Academic Fresh Start provides for the computation of an alternative GPA and for the use of that GPA in most academic situations. A student may apply only once, and the process cannot be reversed.

Eligibility

Conditions for a readmitted student to be eligible to apply for Academic Fresh start are:

The student was not enrolled in a K-State course for three calendar years prior to readmission.

For the course work completed following readmission the student has earned a cumulative GPA of 2.5 or higher at the end of the academic session in which the twelfth credit was earned.

Calculation and evaluation

The calculation and reporting of the Academic Fresh Start cumulative GPA and its uses in academic evaluation are:

The beginning point for the Academic Fresh start cumulative GPA will be at the end of the first, second, third, or fourth regular academic semester following the student’s initial K-State date of entry. The choice of starting point is designated by the student at the time of applying for Academic Fresh Start.

Academic Fresh Start deletes nothing from the student’s academic record. Grades earned before the Academic Fresh Start will remain on the transcript along with the cumulative GPA for all hours taken. In addition, the transcript will clearly indicate the starting point of the Academic Fresh Start as well as the Academic Fresh Start cumulative GPA.

University wide academic policies are based on a cumulative GPA. In order for students in the Academic Fresh start program to be eligible for university academic honors, they must complete a minimum of 60 hours in residence, with at least 50 hours in graded courses after returning to K-State. Other academic policies will not be affected.

Extension and Correspondence Credit

College-level credit earned through accredited extension divisions may be applied toward credit requirements for a degree at K-State. The credit must be applicable to the curriculum chosen and the amount of credit that can be used is limited. Contact the appropriate dean’s office for further information.
Enrollment

Enrollments for fall, spring, and summer semesters occur at specified times during the academic year. The specific times are outlined in the Course Schedule, a booklet published by the Registrar’s Office. The Course Schedule is available at www.ksu.edu/courses/ on the web.

Assignment to Courses

Each student is responsible for fulfilling all requirements of the curriculum in which he or she is enrolled. The student should consult with his or her advisors and be familiar with the K-State Undergraduate Catalog.

A catalog is given to each new student and copies are maintained for student use in the Office of Admissions, all deans’ offices, Hale Library, and all departmental offices. Catalogs may also be purchased at the K-State Student Union Bookstore.

No student is officially enrolled in courses or for private lessons in music or other subjects until a formal course assignment is completed.

A student may not enroll later than 10 class days after the beginning of a semester (five days for summer semester) except by permission of the dean. Students should enroll during regularly scheduled registration periods in order to avoid a late fee.

A student may not enroll for more than 18 K-State credit hours in a semester unless the student is granted permission to do so by the student’s academic dean or the dean’s representative. If the published curriculum of a college or department in which the student is enrolled requires that more than 18 K-State credit hours be taken during a semester, this 18-credit limit does not apply.

A student will be considered full-time for fall and spring semesters if she or he is enrolled in 12 or more semester hours and for summer if enrolled in at least 6 semester hours.

A student with documented disabilities may petition the university for a waiver of the full-time requirement to allow course loads that appropriately accommodate the disability. The petition must be made in a timely manner prior to the appropriate semester. A student must petition annually for continuation of the waiver.

Faculty and employees

Full-time faculty members and regular employees, with approval of their department heads or deans, may enroll in undergraduate or graduate work not to exceed 6 credit hours in fall and spring semesters or 3 credit hours during the summer semester.

Late enrollment

A student who seeks to enter the university later than 10 calendar days (five calendar days for a six-, seven-, or eight-week summer semester course) after the start of the semester is admitted only by special permission of the student’s dean. A course that is less than six weeks is prorated. A late fee will be assessed; see the Fees section of this catalog.

Drop/Add

If a student wants to drop or add a course or if an instructor recommends a change, the student should confer with an advisor.

The instructor may drop a student from a course after the first week of classes if the student has neither attended any of the scheduled course meetings nor notified the instructor of his or her intent to take the course. For purposes of this procedure enrollment in and payment of tuition for a course do not constitute notification of intent to take a course.

No student may add a course after the first week of classes without the permission of the instructor.

The last day for dropping a course without a W being recorded is at the end of the 25th day of the semester. After the 10th week of the semester, courses may not be dropped. For courses less than 16 weeks, the drop dates are prorated.

A summer semester course of six-, seven-, or eight-weeks may be dropped without a W being recorded through the thirteenth day; after the fifth week a six-, seven-, or eight-week course may not be dropped. A course less than six weeks is prorated.

Curriculum Change

Students desiring to transfer from one college to another within the university should confer with both deans concerned.

Retake Policy

Students may retake courses in order to improve the grades. If a course is retaken, the original grade is noted as retaken and removed from the grade point average.

Retakes can be accomplished only by re-enrolling in and completing a K-State resident course. Courses originally taken on a letter grade basis may be retaken on an A/Pass/F basis if appropriate, or if originally taken on an A/Pass/F basis may be retaken on a letter grade basis. The retake grade will always be used in the grade point average computation regardless of whether it is higher or lower than the original grade.

Although there is no limit to the number of times a course may be retaken, a student may retake a course with subsequent removal of the prior grade from calculation of the grade point average only once for each course, and for a total of five courses during the student’s academic career at K-State. Any grades obtained from retaking courses beyond these limitations will be used in calculating the grade point average. A retaken course will count only once toward meeting degree requirements. Courses retaken before fall 1986 will not be used in determining whether five courses have been retaken.

Any course retaken after completion of a bachelor’s degree will not affect the credits or the GPA applied to that degree.

A/Pass/F Policy

Undergraduate students, except first-semester freshmen and students on academic warning, may enroll in certain courses for which they have the normal prerequisites under the A/Pass/F grading option. Under this option, students earning a grade of A in a course will have an A recorded on the transcript for that course; a grade of B, C, or D will be recorded as Pass; a Grade of F will be recorded as F.

Students may request the A/Pass/F grading option for eligible courses through the fourth week of a 16-week semester or through the second week of a six-, seven-, or eight-week summer session. Students requesting the use of the A/Pass/F option must obtain the signature of their advisors. The decision by a student to use the A/Pass/F option is treated with strict confidentiality.

It is the responsibility of a student requesting enrollment under the A/Pass/F grading option to be sure that such an enrollment is valid in the declared degree program. A course origi-
nally completed under the A/Pass/F grading option may not be converted at any time to a graded basis.

Students should be aware that some schools, scholarship committees, and honorary societies do not find work taken on a nongraded basis (Pass) acceptable. Furthermore, many employers do not view nongraded (Pass) course work favorably. All students should be cautious in using the A/Pass/F grading option.

Each department or division may specify which courses its majors may take under the A/Pass/F grading option consistent with the university requirements listed below.

1. A student may enroll under the A/Pass/F option for any free elective course offered under this option, that is, in any course that is in no way specified even in general terms in his or her curriculum. Courses that are specified by name or number and courses that meet general distribution requirements are not considered free electives.

2. A student may enroll under the A/Pass/F option for any general distribution requirement offered under this option, provided the course is in the upper division level (300 and above), for example, three courses in the humanities.

3. A student may not enroll under the A/Pass/F option in any course that is required by name or number as part of his or her program of study.

Students may submit Pass hours for graduation requirements up to and not exceeding one-sixth of the total number of hours required for a bachelor’s degree. That is, five-sixths of all hours submitted for the degree must be hours submitted on a graded or credit basis.

Credit/No Credit Courses

Certain courses for which the learning experience is based primarily on participation and/or attendance may be offered solely on a Credit/No Credit basis. No grades are given for such courses.

For courses that are normally given for a grade, the designation Credit may be obtained in the case of credit by examination. (See the Academic Advising section of this catalog.)

Course Attendance

Attendance policies will be determined by the instructor of each course. Instructors will determine if, and the manner in which, work and exams missed may be made up.

Withdrawal From the University

A student who withdraws from the university must have an official withdrawal permit from the appropriate dean.

If a student withdraws during the first 25 days of a 16-week semester (first 13 days of a six-, seven-, or eight-week summer session), no mark will be recorded on the student’s transcript. Thereafter, a mark of W is recorded; a course less than 16-weeks is prorated. The deadline for withdrawing is the end of the 10th week of the semester; for a course less than 16 weeks, the withdrawal date is prorated.

When a student withdraws from the university, student privileges, such as use of the Recreation Complex, stop.

If a student finds it necessary to withdraw from the university for verifiable nonacademic reasons after the 10th week, he or she should consult the appropriate dean’s office.

Auditing Courses

Auditing is attending a course regularly, without participating in course work or receiving credit, and is permitted on a space-available basis. Permission to audit a course is granted by the instructor, with the approval of the dean of the college in which the course is offered. Laboratory, continuing education, and activity courses may not be audited. No record is made on the academic transcript. Students 60 years or older may audit on a space-available, no-fee basis.

Prep Week

The week before the final examination period (known as prep week) is set aside as a period of curtailed social activity. No examinations, other than weekly laboratory quizzes, studio, or language proficiency examinations, may be given during the last five calendar days before final examinations.

Final Examinations

A final examination period during which no regular courses meet is scheduled at the end of the fall and spring semesters. Final examinations are given during this period. There is no specially scheduled period for final examinations in the summer semester.

Except for honors, problems, seminars, and language and fine arts performance courses, the last examination (last unit test or comprehensive test) in a course must be given during the examination period specified by the Committee on Academic Policy and Procedure and is published in the Course Schedule. Courses may have take-home examinations, projects, papers (excluding semester papers), or other media, in lieu of written final examinations as the last evaluation instrument in the course. In such instances, a deadline for submittal of the medium may not be earlier than the time of the end of the course’s scheduled examination period as published in the Course Schedule.
Tuition and Fees

Keith L. Ratzloff, University Controller

The following schedule of tuition and fees was in effect at the time this catalog was prepared. There is no guarantee this schedule will not be changed without notice before the beginning of any semester or summer term.

Students will be assessed for all hours in which they are enrolled, including those for which the grade of W is recorded. Students withdrawing from courses are eligible for refunds in accordance with the refund policy.

Students receiving scholarships or grants not processed through the K-State Office of Student Financial Assistance before registration will be required to pay the full amount of their tuition and fees from personal resources.

Payment of Tuition and Fees

Unless a deferment is granted, students should pay the total amount of their semester or summer term tuition and fees by the due date on the statement of account they receive and should use a check for exact amount, MasterCard, or VISA. A special handling fee is assessed for students who enroll after the start of classes and a 1.5% default charge is assessed for any balance billed but not paid by the due date.

Deferments

If the student’s eligibility to receive financial aid is verifiable, the director of student financial assistance may authorize the deferment of payment of tuition and fees in accordance with the Board of Regents Policy and Procedures Manual (Chapter 2, Section E).

The student’s obligation to pay regularly assessed tuition and fees is not reduced by an approval to defer payment.

1. Those students who have fulfilled the application requirements and whose awards have been made by the June packaging date, but whose aid has not been disbursed. Deferments may be granted only to the approved level of financial aid eligibility. The amount of tuition and fees over and above the anticipated financial aid award must be paid by the student.

2. Veterans receiving benefits. Full tuition/fee deferment.


Returned checks

Tuition and fee payment checks that are returned uncollectible by financial institutions will be subject to a $30 charge, in addition to all other fees.

Withholding student records

The university withholds students’ academic records for nonpayment of tuition and fees, loans, and other appropriate charges and for nonreturn of university property.

Fee descriptions

Tuition

This fee is the student’s contribution toward the costs of instruction and covers approximately 20 to 25 percent of the instructional costs.

Privilege fees

The Kansas State University privilege fee provides students with services, activities, and supplemental educational opportunities tailored to fulfill their academic and personal goals.

Examples of privilege fees include:

- Educational Opportunity Fund
- Kansas State University repair and replacement fee
- K-State Student Union repair and replacement fee
- Recreation Complex expansion fee
- K-State Activity Fund
- KSDB-FM
- Student publications
- Fine arts
- Student publications equipment
- Office of Student Activities and Services
- Library expansion fee
- University enhancement
- Programming fee

Educational Opportunity Fund

This fee aids the academic achievement and progress of underrepresented K-State students.

Student health

For a description of the services provided by this fee, see the section on Lafene Health Center in this catalog.

K-State Student Union repair and replacement fee

This fee is used for repairs and replacements at the K-State Student Union.

Recreation Complex expansion fee

In 1991 a student referendum was passed providing for a $5 million commitment by students to partially fund the expansion of the library. This commitment is to provide a bond issue to be retired, in part, by a continuation of student debt service fees which were previously assessed for the retirement of Bramlage and Holton Hall bonds.

Activity

This fee is used for a range of student interests and activities.

K-State Student Union

This fee is used for the administration, support, and operation of the K-State Student Union.

Student publications

This fee supports the Collegian and Royal Purple.

Recreational Services

This fee supports the K-State Student Union repair and replacement fee.

KSDB-FM

This fee supports the student radio station (equipment, means of service to operate the station, recent upgrade of power wattage, etc.).

Athletics

This fee supports intercollegiate athletics.

Fine arts

This fee supports fine arts programming (theater, dance, music, art, etc.).

Student publications equipment

This is a temporary fee to provide new equipment for student publications (Collegian and Royal Purple).

Office of Student Activities and Services

This fee was implemented to separate the administrative operating budget of the Student Governing Association and its entities from the student activity fee, thus removing it from competition with general student groups within the same funding pool.

Union enhancement

This fee will enable the K-State Student Union to expand the building and enhance and improve infrastructure deficiencies. The finished product will create an environment that will serve the needs of its customers much more efficiently.

Programming fee

This fee allows the Union Program Council to select a broad variety of events and attract current national talents to the campus.
Schedule of Fees

The following schedule of fees was in effect at the time this catalog was prepared. There is no guarantee this schedule will not change without notice. A schedule of fees for Kansas State University at Salina follows this section.

Contracts and compensatory charge
This schedule does not limit the charges that may be collected under arrangements with other governmental or private agencies, except that such arrangements may not provide for lesser charges. Compensatory or other charges to more nearly cover the actual cost of instruction are specifically authorized.

Fall/spring semester
(subject to change without notice)

<table>
<thead>
<tr>
<th>Tuition (based on course level)</th>
<th>Resident</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate per credit hour</td>
<td>$69.65c</td>
<td>$289.75</td>
</tr>
<tr>
<td>Veterinary medicine per credit hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(enrolled in 7 or more credit hours)</td>
<td>$2,456.00e</td>
<td>$8,601.00e</td>
</tr>
</tbody>
</table>

Campus privilege fee rates

| 1st hour                                          | $64.00    |
| 2nd thru 12th hour                                | $17.00 per hour |
| Maximum fee for 12 hours or more                  | $251.00 total |

Campus privilege fee recipients:
- Educational Opportunity Fund
- Student health
- K-State Student Union repair and replacement
- Rec Complex expansion
- Library expansion
- Coliseum repair and replacement
- Activity fee
- K-State Student Union
- Student Publications
- Recreational Services
- KSDB-FM
- Athletics
- Fine Arts
- Student Publications equipment
- Student Union enhancement
- Student Union special program
- OSAS

Total undergraduate for student taking 15 credit hours $1,295.75 $4,597.25
Total veterinary medicine for student enrolled in 12 or more credit hours $2,707.00 $8,852.00

Summer semester
(subject to change without notice)

<table>
<thead>
<tr>
<th>Tuition (based on course level)</th>
<th>Resident</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate per credit hour</td>
<td>$69.65c</td>
<td>$289.75</td>
</tr>
<tr>
<td>Veterinary medicine per credit hour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine</td>
<td>$163.75e</td>
<td>$573.40e</td>
</tr>
</tbody>
</table>

Campus privilege fee rates

| 1st hour                                          | $30.00    |
| 2nd through 6th hour                              | $13.50 per hour |
| Maximum fee for 6 hours or more                   | $97.50 total |

Auditing
(subject to change without notice)

Auditing, which allows class attendance without participation or credit upon approval of the instructor, is permitted at no charge on a space-available basis. This privilege is not applicable to laboratory and Division of Continuing Education courses.

- Employees (as defined in the Eligibility for Resident Tuition section) are assessed the resident tuition.
- Summer-term campus privilege fees are not applicable to students enrolled in formally organized classes actually conducted at off-campus locations.
- Students in the veterinary medicine senior class will be assessed three equal tuition payments based on 5 credit hours for the summer term and full-time tuition for the following fall and spring semesters. The tuition assessments will be equal, but the campus privilege fees assessments will be based on the applicable amounts for each enrollment period.

a Students enrolled in a spring semester but not attending summer sessions, may use Lafene Health Center services during the summer by paying the health privilege fee assessed a summer student enrolled in 6 or more credit hours, due prior to receiving services. A student who has paid the health privilege fee in a current semester may elect to provide his/her nonstudent spouse with health service eligibility by paying the health privilege fee assessed a full-time student, as defined by the university, for the fall and spring semesters or the summer session fee defined above. This fee is also due prior to receiving services.

These special health service fees do not include the use of University Counseling Services. Full-time employees of Kansas State University enrolled in classes are not assessed a student health fee, but may elect to pay the fee, based upon enrolled credit hours, and therefore be eligible for Lafene Health Center services.

b Students who will attend classes off-campus in excess of the 30-miles radius for an entire semester and who will reside outside of a 30-mile radius of the Manhattan campus during that semester are exempt from all campus privilege fees.
## Tuition and Fees

### Off-campus courses

*(based on course level, subject to change without notice.)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Resident per credit hour</th>
<th>Non-resident per credit hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate credit</td>
<td>$81.65</td>
<td>$301.75</td>
</tr>
<tr>
<td>Veterinary medicine</td>
<td>175.75</td>
<td>585.40</td>
</tr>
</tbody>
</table>

### Course charge

An additional charge may be made to correspond with the actual costs of providing goods and services that are an integral part of presenting a course bearing academic credit. Examples include equipment and laboratory fees, media fees, testing fees, equipment rental, video/audio tapes, supplies, and directly related items.

### Non-credit tuition

Vary to correspond with total direct costs

### Student fees (both credit and applicable non-credit courses)

<table>
<thead>
<tr>
<th>Category</th>
<th>Per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus privilege fees</td>
<td>$1.00*</td>
</tr>
</tbody>
</table>

*Not to exceed the maximum privilege fee assessed per semester.

### Conferences, institutes, and seminars

Non-credit

Vary to correspond with total direct costs

## Application for admission processing fees

*(not subject to refund)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>$20.00</td>
</tr>
<tr>
<td>For first-time admission</td>
<td>$45.00</td>
</tr>
<tr>
<td>For international students</td>
<td>$30.00</td>
</tr>
<tr>
<td>For admission to Non-traditional Study Program</td>
<td>$50.00</td>
</tr>
</tbody>
</table>

## Veterinary medicine applications

Application for admission to first professional program in College of Veterinary Medicine $50.00

## Engineering equipment fee

*(subject to change without notice)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall or spring semesters</td>
<td>$85 per student per semester if enrolled in 7 or more credit hours</td>
</tr>
<tr>
<td>Summer semester</td>
<td>$42.50 per student per summer semester if enrolled in 4 or more credit hours</td>
</tr>
</tbody>
</table>

## Regents Center construction fee

Students enrolled in K-State courses offered in the KU Regents Center in Kansas City will be assessed a $10-per-credit-hour charge to defray costs of construction of this new facility.

## Field camps

*(subject to change without notice)*

Summer field camps in geology, archeology

Vary to correspond with total direct costs.

## On-campus courses offered through the Division of Continuing Education

*(subject to change without notice)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-credit-hour course</td>
<td>$25</td>
</tr>
<tr>
<td>2-credit-hour course</td>
<td>$30</td>
</tr>
<tr>
<td>3-credit-hour course</td>
<td>$35</td>
</tr>
</tbody>
</table>

## TELENET media fee

*(For courses delivered via Kansas Regents Network)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-credit-hour course</td>
<td>$25</td>
</tr>
<tr>
<td>2-credit-hour course</td>
<td>$30</td>
</tr>
<tr>
<td>3-credit-hour course</td>
<td>$35</td>
</tr>
</tbody>
</table>

## Non-campus courses

*(based on course level, subject to change without notice.)*

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application for admission to first professional program in College of Veterinary Medicine</td>
<td>$50.00</td>
</tr>
</tbody>
</table>

## Conferences, institutes, and seminars

Non-credit

Vary to correspond with total direct costs
Tuition and Fees

**Special handling fee for late enrollment**
Not subject to refund
On or after the first day of classes $50

Exceptions: The fee begins after the last regular evening registration if registering for evening courses only and after the starting date for late-starting courses. The special handling fee does not apply to corrections of fee assessments.

**Study abroad program fee**
Not subject to refund
Administrative fee per semester for each student enrolled in a study abroad program not taught or conducted by K-State faculty $25

**Additional fees**
- Copies of public documents
  At cost
- Laboratory courses
  Cost of breakage
- Parking misuse fees
  As filed in the Board of Regents office
- Interlibrary loan and other charge
  As appropriate when authorized
- Library misuse fees
  As appropriate when authorized
- Loans and related interest and charges
  As appropriate when authorized
- Rental and use fees for recreational equipment
  As appropriate when authorized
- Returned check fee
  $30 per check
- ROTC property
  As appropriate when authorized
- Student health services
  As appropriate when authorized
- Transcript fee
  $5 per transcript
- Student identification card replacement
  $15 per each
- Graduation fee
  $15

Students are required to reimburse the institution for the cost of excess breakage and wastage of materials, and materials used in excess of those required for completion of course work.

**American Institute of Baking students**

Students enrolled in a regular semester at the American Institute of Baking will be considered adjunct students by paying the maximum campus privilege fees as indicated previously. These students will be entitled to use the Lafene Health Center, K-State Student Union, and Recreational Center, and to purchase tickets for athletic and cultural events at student prices.

**Other expenses**

In addition to the applicable fees, students are required to purchase textbooks, drawing instruments, and other personal equipment and supplies when needed for courses in the curriculum chosen. Costs will vary each semester, but are estimated to approximate the following:

<table>
<thead>
<tr>
<th>Expense Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment fees for an undergraduate Kansas resident—Manhattan campus 14 hours</td>
<td>$1,226</td>
</tr>
<tr>
<td>Books and supplies, approximately</td>
<td>306</td>
</tr>
<tr>
<td>Room and board in university housing (20-meal plan)</td>
<td>2,261</td>
</tr>
<tr>
<td>Clothing, laundry, postage, travel, extra meals, phone, social activities (varies with the individual)</td>
<td>1,260</td>
</tr>
<tr>
<td><strong>Total estimated expenses</strong> (half of academic year)</td>
<td><strong>$5,019</strong></td>
</tr>
</tbody>
</table>

Note: The above estimates are based on general costs and may vary depending on individual circumstances.
Schedule of Fees
for K-State at Salina

The following schedule of fees was in effect when this catalog was prepared. All rates are subject to change without notice.

Contracts and compensatory charges
This schedule does not limit the charges that may be collected under arrangements with other governmental or private agencies, except that such arrangements may not provide for lesser charges. Compensatory or other charges to more nearly cover the actual cost of instruction are specifically authorized.

Fall/spring semester
(subject to change without notice)

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tuition</strong> (based on student classification)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate (per credit hour)</td>
<td>$ 61.10</td>
<td>$234.15</td>
</tr>
<tr>
<td><strong>Campus privilege fees</strong></td>
<td>$69.66</td>
<td>$69.66</td>
</tr>
<tr>
<td>1st hour through 11 hours</td>
<td>8.66a</td>
<td>8.66a</td>
</tr>
<tr>
<td>Maximum for 12 or more hours</td>
<td>103.92a</td>
<td>103.92a</td>
</tr>
</tbody>
</table>

Summer semester
(subject to change without notice)

<table>
<thead>
<tr>
<th></th>
<th>Resident</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tuition</strong> (per credit hour)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate</td>
<td>$61.10</td>
<td>$234.15</td>
</tr>
<tr>
<td><strong>Campus privilege fees</strong></td>
<td>$63.99</td>
<td>$63.99</td>
</tr>
<tr>
<td>1st hour through 6 hours</td>
<td>8.66a</td>
<td>8.66a</td>
</tr>
<tr>
<td>Maximum for 6 or more hours</td>
<td>51.96a</td>
<td>51.96a</td>
</tr>
</tbody>
</table>

aCredit courses, workshops, and seminars may be exempt from this fee.

Flight training lab fees per hour
(subject to change without notice)

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Solo/ hour</th>
<th>Dual/ hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cessna 150 Trainer</td>
<td>$ 38.00</td>
<td>$ 63.00</td>
</tr>
<tr>
<td>Cessna 172 Skyhawk</td>
<td>60.00</td>
<td>85.00</td>
</tr>
<tr>
<td>Piper PA-28 Cherokee</td>
<td>52.00</td>
<td>77.00</td>
</tr>
<tr>
<td>Beechcraft BE-23 Sundowner</td>
<td>60.00</td>
<td>85.00</td>
</tr>
<tr>
<td>Beechcraft BE-33A Bonanza</td>
<td>120.00</td>
<td>145.00</td>
</tr>
<tr>
<td>Beechcraft BE-58 Baron</td>
<td>220.00</td>
<td>245.00</td>
</tr>
<tr>
<td>Beechcraft BE-90 King Air</td>
<td>450.00</td>
<td>500.00</td>
</tr>
<tr>
<td>Citabria (or equivalent)</td>
<td>70.00</td>
<td>95.00</td>
</tr>
</tbody>
</table>

**Flight simulators**
| Frasca 141 (single engine) | 20.00 | 45.00 |
| AST 300 (multiengine w/visual) | 30.00 | 55.00 |
| AST 300T (multiengine turbo-prop w/visual) | 40.00 | 65.00 |

**Ground time**
One-on-one instruction per hour 25.00

**Other fees**
| International student matriculation (non-refundable) | 25.00 |
| Off-campus credit courses | Workshops, conferences, and seminars; when announced (per credit hour) | 74.10 |
| A & P program only (per credit hour)                  | 85.10 |

**Additional fees**
| Transcript fee | $ 5.00 |
| Library misuse fees | As appropriate when authorized |

Students are required to reimburse K-State at Salina for cost of: excess breakage and waste of materials and materials used in excess of those required for course work.
People Eligible for Resident Tuition

1. Residents
Guidelines for the determination of residency for tuition purposes are set forth in Appendix D, Residency Rules and Regulations, of the Policy and Procedures Manual for the Kansas Board of Regents along with referenced Kansas Statutes and Administrative Regulations.

2. Employees
a. Employees for universities under the Kansas Board of Regents, other than hourly student employees, working four-tenths time or more as follows:
   - For fall semesters: Employed September 1 through November 17.
   - For spring semesters: Employed February 1 through April 17.
   - For summer semesters: Employed the duration or employed from February 1 through April 17.
Exceptions to the above requirements can be made for the semester in which a graduate degree is awarded.
b. Employees of the federal government given adjunct appointments at Kansas State University or assigned to one of the ROTC units at K-State.

3. Military
a. Military personnel stationed and living in Kansas except military personnel assigned to K-State as full-time students.
b. People who are domiciliary residents of the state, who were in active military service prior to becoming domiciliary residents of the state, who were present in the state for a period of not less than two years during their tenure in active military service, whose domiciliary residence was established in the state within 30 days of discharge or retirement from active military service under honorable conditions, but whose domiciliary residence was not established in time to meet the residence duration requirement.

4. Dependents
Spouses and dependent children of full-time employees and military personnel defined above.

5. Exchange students from Missouri
Students eligible to pay resident fees at the University of Missouri who are enrolled in the following programs at Kansas State University: bachelor of architecture; B.S. in architectural engineering; B.S. in bakery science and management; B.S. in construction science (not available for new and readmitted students); B.S. in feed science and management; B.S. in horticultural therapy; bachelor of interior architecture; bachelor of landscape architecture; B.S. in milling science and management; M.S. and Ph.D. in grain science and industry.

This privilege is granted in exchange for resident tuition for Kansas students who enroll in certain programs in Missouri. (Subject to limitation arbitrated by Kansas Board of Regents and Missouri Board of Education.)

6. Kansas high school graduates
Persons who are not domiciliary residents of Kansas, who have graduated from a high school accredited by the State Board of Education within six months of enrollment, who were domiciliary residents of Kansas at the time of graduation from high school or within 12 months prior to graduation from high school, and who are entitled to admission at a state educational institution pursuant to K.S.A. 72-116 and its amendments.

7. Recruited/transferred employees
People who have been recruited to full-time employment in Kansas or transferred to a Kansas location within the last 12 months and their dependents. Self-employed persons are not eligible for this resident tuition status.

Refund Policy

This policy is subject to change without notice. The following table applies to students who completely withdraw from a semester or field camp and to the reduction, if any, in tuition and fees for students who reduce their enrollment. Refund percentages will not apply if enrollment is reduced then later increased to the same number of credit hours and level of courses (grad or undergrad) during the same refund percentage period. Refunds will not be made until sufficient time has lapsed to ensure that fee payment checks have been honored by the bank—usually 15 days after student pays. Students who completely withdraw from a semester lose access to all campus services as of the date of withdrawal.

On-campus students
Regular semesters:
- 100% through first full calendar week.
- 90% refund through second full calendar week.
- 50% refund through third and fourth full calendar weeks.
- No refund after fourth calendar week.
Summer semester:
- 100% refund through first Friday of classes.
- 50% refund through second Friday of classes.
- No refund after second Friday of classes.
Courses less than eight weeks:
- Refunds will be prorated accordingly.

Military
Students serving in the National Guard or reserves who are called to active duty during an academic semester are entitled to receive a full refund of tuition and fees. Students who are drafted and must report for active duty during an academic semester are entitled to receive a full refund of tuition and fees. All refunds are subject to presentation of official military documentation. Students who volunteer for military service will be subject to the university’s non-military refund policy. Room and board charges will be prorated to the extent that services have been provided.

Continuing education refunds
This policy is subject to change without notice.

Extension credit courses
- 100% refund if requested prior to second course meeting or if the course is canceled.
- 50% refund if requested after the second class meeting.
- No refund if requested after one-third of the scheduled class meetings.
- Extension course fees are not transferable.

Non-credit courses
Fees are non-refundable unless, subsequent to acceptance of the fees, the service, at the option of the university, is not provided.

Conferences and non-credit programs
Refund policies will be published in the registration brochure, and refunds for cancellation of registration will be determined in relation to the actual share of the participant cost in effect at the time of the cancellation request.
List of Degrees

The letter in parentheses refers to the recommended mathematics background for each degree. See the Math Requirements for Degrees section immediately following.

College of Agriculture
Bachelor of science in agriculture
(E) Agribusiness (B.S. in agribusiness)
(E) Agricultural economics
(E) Agricultural education
(E) Agricultural communications and journalism
(E) Agricultural technology management
(E) Agronomy (crops and soils)
(E) Animal sciences and industry
(E) Bakery science and management (B.S. in bakery science and management)
(E) Feed science and management (B.S. in feed science and management)
(E) Food science and industry (B.S. in food science and industry)
(E) Horticulture
(E) Horticultural therapy
(E) Milling science and management (B.S. in milling science and management)
(E) Recreation and park administration
(E) Park management and conservation
(E) Pre-veterinary medicine (nondegree)

College of Architecture, Planning, and Design
(F) Architecture—five years (bachelor of architecture)
(F) Interior architecture—five years (bachelor of interior architecture)
(F) Landscape architecture—five years (bachelor of landscape architecture)

College of Arts and Sciences
Bachelor of arts, bachelor of fine arts, bachelor of music, bachelor of music education, and bachelor of science
(B) Anthropology, B.A. or B.S.
(A) Art, B.A. or B.F.A.
(E) Biochemistry, B.A. or B.S.
(E) Biology, B.A. or B.S.
(E) Chemistry, B.A. or B.S.
• General chemistry
• Chemical science
(B) Economics, B.A. or B.S.
(A) English, B.A.
(E) Fisheries and wildlife biology, B.A. or B.S.
(B) Geography, B.A. or B.S.
(E) Geology, B.A. or B.S.
(A) History, B.A. or B.S.
(E) Kinesiology, B.A. or B.S.
(B) Mass communications, B.A. or B.S.
(F) Mathematics, B.A. or B.S.
(E) Medical technology, B.A. or B.S.
(E) Microbiology, B.A. or B.S.
(A) Modern languages, B.A.
(A) Music
• Music, B.A.
• Applied music, B.M.
• Music education, B.M.E.
(A) Philosophy, B.A. or B.S.
(E) Physics, B.A. or B.S.
(B) Political science, B.A. or B.S.
(E) Pre-dentistry, advising program
(E) Pre-law (nondegree)
(E) Pre-health information management (nondegree)
(E) Pre-medicine, advising program
(E) Pre-nursing (nondegree)
(E) Pre-occupational therapy (nondegree)
(E) Pre-optometry (nondegree)
(E) Pre-pharmacy (nondegree)
(E) Pre-physical therapy (nondegree)
(E) Pre-respiratory therapy (nondegree)
(E) Pre-veterinary medicine (nondegree)
(E) Psychology, B.A. or B.S.
(E) Social work, B.A. or B.S.
(E) Sociology, B.A. or B.S.
(A) Speech, B.A. or B.S.
(A) Statistics, B.A. or B.S.
(A) Theatre, B.A. or B.S.

Interdisciplinary studies
(A) Humanities, B.A.
(D) Life science, B.A. or B.S.
(E) Physical science, B.A. or B.S.
(A) Social science, B.A. or B.S.

College of Business Administration
Bachelor of science in business administration
(E) Accounting
(E) Finance
(E) Management
(E) Marketing
(F) Management information systems
(E) General business

College of Education
(A) Elementary education (bachelor of science in elementary education)

Secondary education (bachelor of science)
(A) Education—Art
(E) Education—Biological science
(B) Education—Business
(E) Education—Chemistry
(E) Education—Earth science
(B) Education—Economics
(A) Education—English
(A) Education—English and journalism
(A) Education—Geography
(A) Education—History
(A) Education—Journalism
(F) Education—Mathematics

(A) Education—Modern languages
(E) Education—Physical science
(E) Education—Physics
(B) Education—Political science
(B) Education—Sociology
(A) Education—Speech

College of Engineering
(F) Architectural engineering (B.S. in architectural engineering)
(F) Biological and agricultural engineering (B.S. in biological and agricultural engineering)
(F) Chemical engineering (B.S. in chemical engineering)
(F) Civil engineering (B.S. in civil engineering)
(F) Computer engineering (B.S. in computer engineering)
(F) Computer science (B.S. in computer science)
(D) Information systems (B.S. in information systems)
(F) Construction science and management (B.S. in construction science and management)
(F) Electrical engineering (B.S. in electrical engineering)
(F) Industrial engineering (B.S. in industrial engineering)
(F) Manufacturing systems engineering (B.S. in manufacturing systems engineering)
(F) Mechanical engineering (B.S. in mechanical engineering)
• Nuclear engineering option

College of Human Ecology
B.S. in apparel and textiles
(C) Apparel marketing and design
• Apparel design and production
• Apparel marketing
(C or F) Textiles

B.S. in dietetics
(C) Dietetics

B.S. in human nutrition
(C or F) Food science
(F) Nutritional sciences (pre-medical)
(C or F) Nutrition and exercise sciences
(C) Public health nutrition

B.S. in hotel and restaurant management
(C) Hotel and restaurant management

B.S. in family studies and human services
(C) Communication sciences and disorders
(C) Early childhood education
(C) Family studies and human services
• Family and consumer economics
• Family life and community services
• Life span human development
• Family studies and human services and social work

Agronomy (crops and soils)

Bachelor of arts, bachelor of fine arts, bachelor of music, bachelor of music education, and bachelor of science

College of Architecture, Planning, and Design

Bachelor of science in agriculture

College of Arts and Sciences

College of Education

College of Engineering

College of Human Ecology

College of Mathematics and Science
B.S. in interior design  
(C) Interior design

B.S. in human ecology  
(C) General human ecology  
• Family and consumer sciences education teacher certification

B.S. in human ecology and mass communications  
(C) Human ecology and mass communications

B.S. in aviation and technology  
(C) Aviation maintenance

B.S. in human ecology and mass communications  
(E) Aviation maintenance

B.S. in human ecology and mass communications  
(E) Avionics technology

B.S. in human ecology and mass communications  
(F) Airway science

B.S. in human ecology and mass communications  
(F) Computer science technology

B.S. in human ecology and mass communications  
(F) Computer engineering technology

B.S. in human ecology and mass communications  
(F) Computer information systems

B.S. in human ecology and mass communications  
(F) Computer science technology

B.S. in human ecology and mass communications  
(F) Electronic engineering technology

B.S. in human ecology and mass communications  
(F) Mechanical engineering technology

B.S. in human ecology and mass communications  
(E) Professional pilot

B.S. in human ecology and mass communications  
(F) Surveying technology

B.S. in human ecology and mass communications  
(F) Environmental engineering technology

Aviation maintenance certificate  
(B) Aviation maintenance

Bachelor of science in aeronautical technology  
(F) Airway science

Bachelor of science in electronic engineering technology  
(F) Electronic engineering technology

Bachelor of science in land information technology  
(F) Land information technology

Bachelor of science in mechanical engineering technology  
(F) Mechanical engineering technology

Bachelor of science in technology management  
(F) Technology management

College of Veterinary Medicine  
Veterinary medicine (doctor of veterinary medicine)  
(See Colleges of Agriculture and Arts and Sciences for B.S. degrees in connection with College of Veterinary Medicine.)

Math Requirements for Degrees

The degrees shown earlier in this section are conferred on completion of the prescribed curricula. The letter that precedes each curriculum indicates the suggested high school math courses that students should have completed in high school.

(A) One unit of algebra, or one unit of geometry, or a unit involving the combination of these, or approved substitute

(B) One unit of algebra

(C) Two units of algebra

(D) One unit of algebra and one unit of geometry

(E) One and one-half units of algebra and one unit of geometry

(F) Two units of algebra, one unit of geometry, and one-half unit of trigonometry

Common Degree Requirements

The common requirements for all curricula leading to an undergraduate degree are:

• Expository Writing, 6 credits
• Public Speaking, 2 credits

Degree Requirements

To graduate, a student must complete a prescribed curriculum. Under special conditions substitutions are allowed as the interests of the student warrant. The total credit requirement for bachelor’s degrees ranges from 120 to 167 hours, according to the curriculum taken.

There are two grade point averages a student must meet to be awarded a degree: (1) at least 2.0 on K-State resident graded courses that are applied to the degree, and (2) at least a 2.0 cumulative GPA for all resident graded courses taken at K-State. Professional curricula may impose additional degree requirements.

Students must file an application for graduation clearance in the appropriate dean’s office during the first four weeks of the semester (first two weeks for summer semester) in which the degree is to be completed.

It is the student’s responsibility to be certain that transcripts from all transfer institutions are on file in the Registrar’s Office before the end of the semester the degree requirements will be completed.

Up to half of the credits required for a normal four-year degree may be completed at an accredited two-year college.

Each student must complete at least 30 resident credits to be considered for a degree. Further, the student must complete 20 of the last 30 hours of resident credit at K-State. Courses in the student’s major field shall be taken in residence unless an exception is granted by the major department on petition of the student. That department shall have jurisdiction over the acceptance of major courses by transfer for fulfillment of the major requirement.

Exceptions to the residence requirement of the final year may be made by the dean of the college and the department head in the student’s major field, if the student has completed a total of three years of work acceptable to K-State. The student must submit satisfactory plans and reasons for completing the degree requirements at another institution, such as a dental, medical, law, or medical technology school, before earning a degree here.

Resident work includes all regularly scheduled course or laboratory instruction given by the regular university faculty.

At least five-sixths of the credit hours taken at K-State and applied toward a degree must be graded hours. Required courses of an internship or practicum nature or credit by examination, offered on a Credit/No Credit basis only, are to be considered as graded hours in implementing the five-sixths policy.

Candidates for spring graduation should attend commencement. Fall graduates are asked to participate in the commencement exercises in December or the following spring. Prospective summer graduates may participate in the exercises before or after graduation.

Students generally complete degree requirements in the normal four or five academic years allotted for that purpose. However, it could take additional time because of a significant change of educational objective. A student may interrupt studies for one or more semesters. Normally, the student will be expected to complete the degree program in not more than two years beyond the scheduled time. The individual whose education has been interrupted may have to meet new degree requirements if a change has occurred.

Dual degrees

Students may elect to earn two degrees at the same time. The requirements for both must be satisfied. Students should confer with each academic dean as early as possible to determine appropriate programs of study.

Students who are eligible to graduate with two degrees must file an application for graduation for each degree in the academic dean’s offices during the first four weeks of the semester they plan to complete degree requirements. Summer graduates must file their applications for graduation during the first two weeks of the summer semester.

Minors and Secondary Majors

Minor requirements

Undergraduate minors provide students an opportunity to emphasize study in an area outside their major curriculum. Because expertise
in areas related to a major may be beneficial, students are encouraged to consider broadening their course of study through pursuit of a minor. Students completing all requirements for a minor will receive official recognition for their emphasis on their permanent records.

A minor requires completion of at least 15 designated hours of course work. Faculty in departments offering minors have specified courses that enable students to acquire moderate expertise in their discipline. Courses forming a minor may be used to satisfy the general requirements of a major curriculum, including free electives.

Declaration of a minor is optional. Students are not required to complete a minor to graduate.

Students interested in completing one or more minors should consult their advisor. Additional counsel should be sought from the minor program director. Students are encouraged to seek advice and information about potential areas of emphasis early in their academic planning.

For more information on specific minors, consult individual department course listings.

**College of Agriculture**

- Agribusiness
- Agricultural economics
- Agronomy
- Agricultural technology management
- Animal sciences and industry
- Bakery science and management
- Cereal chemistry
- Entomology
- Feed science and management
- Food science
- Horticulture
- Plant pathology

**College of Architecture, Planning and Design**

- Community planning

**College of Arts and Sciences**

- American ethnic studies
- Anthropology
- Biology
- Chemistry
- Dance
- Economics
- English
- Geography
- Geology
- History
- Military leadership
- Modern languages (French, German, Japanese, Russian, or Spanish)
- Music
- Philosophy
- Political science
- Rhetoric/communication
- Statistics
- Theatre
- Women’s studies

**College of Business Administration**

- Business

**College of Education**

- Leadership studies

**College of Engineering**

- Computer science
- Computing and information sciences
- Digital systems
- Engineering management
- Ergonomics and safety
- Manufacturing systems
- Operations research

**College of Human Ecology**

- Apparel and textiles
- Communication sciences and disorders
- Family financial planning

**Secondary majors**

See the Secondary Majors section of this catalog for information on these programs:

- American ethnic studies
- Gerontology
- Industrial and labor relations
- Latin American studies
- Natural resources and environmental sciences
- Women’s studies

**University General Education Requirements**

**Objective**

The university general education program strives to add breadth to the educational experience. It helps students widen their perspectives, explore the relationships between various subjects, and develop critical and analytical thinking skills.

The university general education courses are not designed to be taken in a single block at the beginning or ending of a student’s college career. They should be continuous and spread across the entire college career.

Any student whose acquired credit at Kansas State University or any other institution began entering a bachelor’s degree program after completing an associate degree at Kansas State University are not considered to be transfer students, as far as the university general education requirements are concerned; these students must meet the general education requirements for the curriculum they are entering.

**Univeresity general education policy for double majors and dual degrees**

A student must meet the university general education requirements for his/her primary degree/major. University general education requirements for additional degrees or majors are waived.

The courses accepted for university general education credit will vary according to college and major. All students should consult with their advisors to determine which university general education courses meet the requirements of their degree programs.

Only courses completed at Kansas State University and approved for university general education can be used to meet these requirements.

**For more information**

- Consult your advisor.
- Check each semester’s Course Schedule for a listing of university general education courses. The Course Schedule is available at [www.ksu.edu/courses/](http://www.ksu.edu/courses/) on the web.
- More information about the university general education program is available at: [www.ksu.edu/cat1/uge](http://www.ksu.edu/cat1/uge)

**Approved courses**

In course descriptions, university general education courses are marked with a ♦. A list of currently offered university general education courses is available on the web at this address: [www.ksu.edu/registrar/enroll/gened.html](http://www.ksu.edu/registrar/enroll/gened.html)

**Policy for credit by examination**

Advanced Placement (AP), International Baccalaureate Programs (IB), College Level Examination Program (CLEP), and Defense Activity for Non-traditional Education Support (DANTES) credits may be considered “transfer credits” for purposes of the university general education policy for students transferring credit to K-State. See the Transfer Admission section of this catalog.

**Policy for curriculum changes**

Students changing curricula within Kansas State University must satisfy the university general education requirements for the program in which they will graduate. Students entering a bachelor’s degree program after completing an associate degree at Kansas State University are not considered to be transfer students, as far as the university general education requirements are concerned; these students must meet the general education requirements for the curriculum they are entering.
Grades

The university uses the following grades:
A, for excellent work
B, for good work
C, for fair work
D, for poor work
F, for failure
I, for incomplete
P, for grades of B, C, or D in courses taken under the A/Pass/F grading option
Cr, for credit in courses for which no letter grade is given (nongraded courses)
NC, for no credit in courses for which no letter grade is given (nongraded courses)
NR, for no grade reported
W, for withdrawn
XF, Violation of Honor Code

The grade of Incomplete (I) is given in regular courses (other than independent studies, research, and problems) upon request of the student for personal emergencies that are verifiable. The faculty member has the responsibility to provide written notification to the student of work required to remove the incomplete. The student has the responsibility to take the initiative in completing the work, and is expected to make up the incomplete during the first semester (enrolled) at the university after receiving the grade of I. If the student does not make up the incomplete during the first semester in residence at the university after receiving it, a grade may be given by the faculty member without further consultation with the student.

If after the end of the first semester the I remains on the record it will be designated as F for record-keeping purposes and will be computed in the student’s GPA, weighted at 0 points per credit. A grade of NR will be treated in a like manner using the designation F.

Courses in which a Cr or P grade is received will be used in fulfilling graduation requirements. Only the grades A, B, C, D, and F are used in calculating resident grade averages.

Incomplete is reported, a reasonable time, usually not over one month, is allowed in which to take the examination.

Points

For each semester hour of graded work, students earn points, as follows:
A = 4.0
B = 3.0
C = 2.0
D = 1.0
F = 0

Scholastic Deficiencies

Students are notified of their scholastic status by the appropriate academic deans from information supplied by the Registrar’s Office. The scholastic record of each undergraduate is evaluated twice yearly, at the end of the fall semester and at the end of the spring semester. The student’s scholastic status does not change as a result of work taken in summer semester or intersession.

Students (excluding students in the College of Veterinary Medicine) are placed on academic warning or dismissal according to the following policy.

Students who earn less than a 1.0 GPA in a given semester
Students who earn less than a 1.0 GPA in any semester are considered to have neglected their academic responsibilities. The following policy applies:
1. Any student (freshman or transfer) who earns less than a 1.0 semester GPA in his or her first semester at K-State will be dismissed.
2. Any continuing student enrolled at K-State not dismissed by university academic standards policies but who earns less than a 1.0 semester GPA at K-State will have registration for the next semester withheld subject to review by the academic dean or the dean’s representative(s).

Academic dismissal
1. Credit hours used to determine the appropriate threshold will include transfer hours accepted, all K-State graded hours, and miscellaneous hours completed.
2. Credit hours used in calculating semester and cumulative grade point averages will include only K-State graded hours. Grades for courses accepted in transfer from another institution will not be used in the grade point average calculation.
3. Students with a K-State cumulative GPA of 1.0 or greater will not be dismissed until they have accumulated at least 20 semester credit hours as defined in item 1. (Exception: A student who earns less than a 1.0 semester GPA in his or her first semester at K-State will be dismissed.)
4. Students must be on academic warning the semester prior to dismissal. (Exception: A student who earns less than a 1.0 semester GPA in his or her first semester at K-State will be dismissed.)
5. Students will be academically dismissed if their K-State cumulative GPA is below the following threshold values:

<table>
<thead>
<tr>
<th>Total hours accumulated*</th>
<th>K-State GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>20–29</td>
<td>1.50</td>
</tr>
<tr>
<td>30–45</td>
<td>1.75</td>
</tr>
<tr>
<td>46–60</td>
<td>1.80</td>
</tr>
<tr>
<td>61–75</td>
<td>1.85</td>
</tr>
<tr>
<td>76–90</td>
<td>1.90</td>
</tr>
<tr>
<td>91–105</td>
<td>1.95</td>
</tr>
<tr>
<td>greater than 105</td>
<td>2.00</td>
</tr>
</tbody>
</table>

*Defined in item 1 above

6. Students who earn a K-State semester GPA of 2.20 or more on 12 or more graded hours (or the minimum grade point average established by the student’s college, if higher) during the semester in question will not be dismissed.
7. Students who neglect their academic responsibilities may be dismissed at any time on recommendation of the academic dean.
8. Dismissed students will be readmitted only when approved for reinstatement by the Academic Standards Committee of the college the students are attempting to enter. Normally students must wait at least two semesters before being considered for reinstatement and are on academic warning at the time of readmission.
9. Students who have been dismissed or have had their enrollment withheld will receive a letter providing a contact person and information about reinstatement or enrollment procedures.

Report of Grades

Academic progress reports for new freshmen are mailed to students and deans’ offices at the close of the fifth week of courses of the fall or spring semester.

The instructor reports final semester grades, based on examinations and course work, to the Registrar’s Office.

In case of absence from the final examination, the instructor reports a mark of I for incomplete or computes the grade on the basis of zero for the final examination. If an
Reinstatement

Normally a student must wait at least two semesters before being considered for reinstatement. A dismissed student will be readmitted only when approved for reinstatement by the academic standards committee of the college the student is attempting to enter; the application for reinstatement must be directed to the academic standards committee.

Students who earn a semester grade point average of at least 2.0 but less than 2.2 on 12 or more credits during the semester they are dismissed can be considered for immediate reinstatement.

Honors

Graduation honors
Degree candidates who have completed a minimum of 60 hours in residence, with at least 50 hours in graded courses, are considered for graduation with scholastic honors as follows: Students with a 3.950 or above K-State academic average are designated as summa cum laude. The remaining students in the upper three percent of the college graduating class are designated magna cum laude. Those remaining in the upper ten percent are graduated cum laude. Doctor of veterinary medicine degree candidates are eligible to receive these honors based on courses completed in the professional program.

Semester honors
Students with 12 graded hours whose semester grade point average places them in the upper ten percent academically of their classification and college will be awarded semester scholastic honors.

Credits for Extracurricular Work

Students may earn credit toward graduation by satisfactory participation in certain extracurricular activities. These activities, and the maximum semester hours of credit allowed, are as follows:

<table>
<thead>
<tr>
<th>Subject and course</th>
<th>Semester Hours</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSU Symphony (MUSIC 130, 404)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Concert Band (MUSIC 115, 401, 411)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Concert Choir (MUSIC 111, 400)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Collegiate Chorale (MUSIC 121, 403)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>K-State Singers (MUSIC 125)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Women's Glee Club (MUSIC 135, 408)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Men's Glee Club (MUSIC 140, 409)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Instrumental Ensemble (MUSIC 177, 280, 402, 480)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Vocal Ensembles (MUSIC 280, 480 voice)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Opera Workshop (MUSIC 475)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Debate (SPCH 210)</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Kansas State Collegiate (MC 360)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>K-State Agriculture (AGCOM 410)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>K-State Engineer (DEN 200)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Women's Athletics (ATHW)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Women's Athletics (ATHW)</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Extracurricular credit is also available with the K-State Dance Workshop (through Dance Production course).

Crediting may be counted as electives in a student's curriculum. A student may use no more than 8 semester hours in these subjects toward graduation and enroll for not more than two in a semester.

A student is regularly assigned to these activities, with permission of the instructor in charge of the work. A student participating in one or more of these activities must be enrolled even though the credits exceed the maximum for graduation.

Classification of Students

An entering high school graduate with less than 30 semester hours accumulated credit is classified as a freshman. A student is advanced to a higher classification upon successful completion of sufficient credit hours to meet the requirements as listed below:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
<th>Fifth-year student*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 30</td>
<td>30</td>
<td>60</td>
<td>90</td>
<td>120</td>
</tr>
</tbody>
</table>

* Applies only to the College of Architecture and Design and the College of Engineering.

Directory information

Certain information concerning students is considered to be open to the public upon inquiry. This public information is called directory information and includes: name, local address and telephone number, permanent address, photograph or likeness, e-mail address, college, curriculum, year in school, date and place of birth, dates of attendance at Kansas State University, awards and academic honors, degrees and dates awarded, most recent previous educational institution attended, participation in officially recognized activities and sports, and height and weight of members in athletic teams.

Directory information as defined above will be released upon inquiry, unless the student has requested that this information not be released. The student’s request to have directory information withheld must be submitted each semester of enrollment and should be made at the Registrar’s Office (118 Anderson Hall) in Manhattan or College Advancement (208 College Center) in Salina, which will notify other appropriate university offices.

Confidential information

With the exception of the information noted above, students’ records are generally considered to be confidential. The following policies govern access to confidential student records:

1. Each type of student record is the responsibility of a designated university official, and only that person or the dean, director, or vice-president to whom that person reports has authority to release the record. The responsible officials are:

   a. Academic records: For undergraduates, the registrar, 118 Anderson Hall; for graduate students, the Graduate School office, Fairchild Hall.

   b. Admissions records: For undergraduates, the director of admissions and student financial assistance, Anderson Hall; for graduate students, the Graduate School office, Fairchild Hall.

   c. Financial aid records: director of admissions and student financial assistance, Fairchild Hall.

   d. Business records: Controller’s Office, Anderson Hall.

   e. Traffic and security records: head of KSU Police Department, Edwards Hall.

   f. Medical records: director, Lafene Health Center.

   g. Counseling records: director, University Counseling Services, 232 Lafene.

   h. Actions of academic standards committee: college dean.

   i. Academic disciplinary records: chair, undergraduate grievance committee.
j. Non-academic disciplinary records: dean of student life, Holton Hall.

k. Housing records: director of Housing and Housing Services, Pettit Hall.

1. Placement records: director of Career and Employment Services, Holtz Hall.

m. Evaluations for admission to graduate or professional programs: dean (of the graduate school or the appropriate college) or department head.

n. Special academic programs: Faculty member in charge of the program and dean of the college.

2. Confidential educational records and personally identifiable information from those records will not be released without the written consent of the student involved, except to other university personnel, or in connection with the student’s application for financial aid; or by submitting proof of dependency; or in response to a judicial order or subpoena; or in a bona fide health or safety emergency; or, upon request, to other schools in which the student seeks or intends to enroll; or to the U.S. comptroller general, the secretary of H.E.W., the U.S. commissioner of education, the director of the National Institute of Education, the assistant secretary for education, state educational authorities, or state and local officials where required by state statute adopted before November 19, 1974.

3. The responsible official may release records to university officials who have a legitimate need for the information in order to carry out their responsibilities.

4. All student records are reviewed periodically. Information concerning the frequency of review and expurgation of specific records is available in the Registrar’s Office.

5. With certain exceptions, students may review records which pertain directly to them in accordance with the process described in the following section. Further information concerning this policy can be obtained from the Registrar’s Office, 118 Anderson Hall, 785-532-6254.

A. Transcript of academic record: $5 per copy.

B. Medical records (Lafene Health Center): no charge to patient for medical purposes. A charge of $10 or $25 to outside parties with patient release.

C. Other records: .10 per page.

The major exceptions to student review are medical and counseling records. These may be released, however, to other medical or psychological professionals at the written request of the student and may be inspected by the patient at the discretion of the professional staff. Other exceptions are law enforcement records, private notes of staff members, and financial records of parents.

6. A student may waive the right to review a specific record by submitting in writing a statement to this effect to the responsible official for that record. Examples are recommendations for career placement or admission to graduate study.

7. University personnel who have access to student educational records in the course of carrying out their university responsibilities shall not be permitted to release the record to persons outside the university, unless authorized in writing by the student or as required by a court order. Only the official responsible for the records has the authority to release them.

8. All personal educational information about a student released to a third party will be transferred on condition that no one else shall have access to it except with the student’s consent. A record is maintained showing who has had access to student records, and this record is open to inspection by the student.

When records may be withheld

In the case of a student who is delinquent in an account with the university, including unpaid traffic or parking violations, or about whom official disciplinary action has been taken, the appropriate university official may request that the student’s record not be released. The effect of this action is that transcripts are not released, and registration forms are withheld.

In order for the action to be rescinded, the Registrar’s Office must receive authorization from the official who originally requested the action, indicating that the student has met the obligation.

To contest the withholding of a record, a student must attempt to settle the dispute with the official who requested that the record be withheld. If this attempt to resolve the dispute is unsuccessful, the matter will be resolved in accordance with the process described in the following section. Further information concerning this policy can be obtained from the Registrar’s Office, 118 Anderson Hall, 785-532-6254.

Review and challenge of records

Upon request to the official listed above, a record covered by the act will be made available within a reasonable time to the student and in no event later than 45 days after the request. Copies are available at the student’s expense and explanations and interpretations of the records may be requested from the official in charge.

If the student believes that a particular record or file contains inaccurate or misleading information or is otherwise inappropriate, the university will afford an opportunity for a hearing to challenge the content of the record. Prior to any formal hearing, the official in charge of the record is authorized to attempt, through informal meetings and discussions with the student, to settle the dispute.

If this is unsuccessful, the matter will be referred to the appropriate vice-president. If the student is still dissatisfied, a hearing may be requested. The hearing, conducted by a hearing officer appointed by the president, will be held within two weeks. The student will have the opportunity at the hearing to present any relevant evidence, and a decision will be rendered within two weeks after the hearing. If the result does not satisfy the student, he or she may place a statement in the file.

Complaints

A student who believes the university has not complied with federal law or regulations may send a written complaint to the Family Educational Rights and Privacy Act Office, Department of Education, 400 Maryland, SW, Washington, DC 20202.

Transcripts

A transcript is a certified, official copy of your permanent academic record.

Each transcript costs $5, which is to be paid in advance by cash, check, credit card (MasterCard, Visa, Discover), or Wildcat debit card.

There is no additional mailing charge if the transcript is sent by regular mail. Priority mailing charge (continental USA only) is an additional $3 per envelope. Overnight charge (continental USA only) is an additional $10 per envelope. Fax charge is an additional $4 per fax.

If you are delinquent to the university, transcript services are withheld.

By mail or fax

Send your written request to:
Registrar’s Office
Kansas State University
118 Anderson Hall
Manhattan, Kansas 66506–0114
Fax: 785-532-5599.

Include the following:

1. Your current name, plus any other name(s) you may have used when attending Kansas State University.

2. Your social security number.

3. Your date of birth.

4. Your beginning and ending dates of enrollment at K-State.
All-University Regulations

Student Conduct

Philosophy of student conduct
At Kansas State University students have a direct and primary role in the establishment and enforcement of campus and living group policies and regulations. The basic philosophy of discipline is one of education and enforcement of community standards. Since that is the ultimate purpose, we focus on the growth and development of the student. Most efforts are directed at preventing problems, or at least correcting them, rather than concentrating on punishment. The responsibility for proper conduct is placed upon the student, not the university, with the assumption that most students do not try to intentionally cause violations, and will generally respect the rights and property of others.

The following principles govern the disciplinary process. Every effort is made to bring about outcomes that are positive for all parties involved; students will be members of all Student Governing Association judicial bodies; formal hearing processes are fundamentally fair and respect the rights of the individuals involved; confidentiality will be respected; records of proceedings will be released only on written authorization of the student involved unless otherwise authorized by law or court order. The procedures are outlined in the SGA Judicial Code, included in the by-laws to the SGA Constitution.

Descriptions of the judicial structure and process, as well as university policies, are free and available in the Office of Student Activities and Services in the K-State Student Union.

Prohibited conduct
Important information regarding the judicial process and student rights are available in the Office of Student Activities and Services in the K-State Student Union.

The following described behaviors constitute misconduct in which disciplinary sanctions will be imposed:

1. Acts of dishonesty, including but not limited to the following:
   a. Furnishing false information to any university official, faculty/staff member, or office.
   b. Forgery, alteration, or misuse of any university document, record, or instrument of identification.
   c. Tampering with the election of any organization or student governing body.

2. Disruption or obstruction of teaching, research, administration, disciplinary proceeding, other university activities, including its public-service functions on or off campus, or other authorized non-university activities.

3. Conduct that threatens or endangers the mental or physical health or safety of any person, including, but not limited to physical abuse, verbal abuse, threats, intimidation, harassment, and coercion.

4. Attempted or actual theft of, or damage to, public property.

5. Hazing, which is defined as an act which endangers the mental or physical health or safety of a student, which destroys or removes public property, for the purpose of initiation, admission into, affiliation with, or as a condition for continued membership in, a group or organization. Consent by the person hazed shall be no defense to the hazing.

6. Telephone harassment, which shall include:
   a. Making calls containing lewd or obscene remarks.
   b. Making calls intended to harass whether or not conversation ensues.
   c. Making the telephone ring repeatedly with intent to harass.
   d. Making repeated calls in which conversation ensues solely to harass.

7. Failure to comply with directions of university officials or law enforcement officers acting in performance of their duties or failure to identify oneself to these persons when requested to do so.

8. Unauthorized possession, duplication, or use of keys, or other devices that provide access to any university premises.

9. Unauthorized presence in or use of university premises, facilities, or property.

10. Violation of university policies, rules, or regulations.

11. Violation of federal, state, or local law.

12. Unauthorized distribution, use, or possession of a controlled substance as described in Chapter 65, Article 41 of Kansas Statutes Annotated on university premises or at university sponsored activities.

13. Unlawful use, possession, or distribution of alcoholic beverages or violation of the university’s alcoholic beverage policy.

14. Illegal or unauthorized possession or use of firearms, explosives, weapons, or dangerous chemicals on university premises or at university-sponsored activities.

15. Intentionally initiating or causing to be initiated any false report, warning, or threat of fire, explosion, or other emergency on university premises or at a university-sponsored activity.
16. Participation in a campus demonstration which unreasonably disrupts the normal operations of the university and infringes on the rights of other members of the university community; inciting others to disrupt scheduled and/or normal activities within any campus building or area; intentional obstruction which unreasonably interferes with freedom of movement, either pedestrian or vehicular, on campus.

17. Intentionally interfering with the freedom of expression of others on university premises or at a university-sponsored activity.

18. Conduct that is disorderly, lewd, or indecent; breach of peace; or aiding, abetting, or procuring another person to breach the peace on university premises or at university-sponsored activities.

19. Any violation of the stated K-State information technology usage policies.

20. Abuse of the SGA Judicial Program, including, but not limited to:
   a. Falsification, distortion, or misrepresentation of information.
   b. Disruption or interference with the orderly conduct of a judicial proceeding.
   c. Knowingly initiating a complaint without cause.
   d. Attempting to discourage an individual’s proper participation in, or use of, the judicial system.
   e. Attempting to influence the impartiality of a member of a judicial board prior to, or during the course of, the judicial proceeding.
   f. Verbal, written, phone, or physical harassment, and/or intimidation of a member of a judicial board.
   g. Failure to comply with the sanction(s) imposed under this code.
   h. Influencing or attempting to influence another person to commit an abuse of the judicial system.

21. Misconduct may also include any violation of any rules appearing in the leases and contract entered into by a student to obtain accommodations with the Department of Housing and Dining Services.

### Undergraduate Honor System

Kansas State University’s undergraduate honor system is based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, each student’s work is performed honestly and without unauthorized assistance. Undergraduate students, by registering at K-State acknowledge the jurisdiction of the undergraduate honor system.

The policies and procedures of the undergraduate honor system apply to all full-time and part-time students enrolled in undergraduate courses on-campus, off-campus, and via distance learning.

A prominent part of the honor system is the honor pledge, which applies to all assignments, examinations, or other course work undertaken by undergraduate students. The honor pledge is implied, whether or not it is stated: “On my honor, as a student, I have neither given nor received unauthorized aid on this academic work.”

### Honor Council

The honor system trusts students to perform their academic work honestly and with integrity. The honor system is based on trust and administered jointly by students and faculty members of the Honor Council. Having students equally share in the process increases the visibility of Honor Council procedures and promotes a community of trust.

The Honor Council is comprised of students and faculty who are appointed each spring for two-year terms. Students are nominated by the student body president, and faculty are nominated by their respective dean. All nominations are subject to the approval of the provost. Members of the honor council adjudicate the honor system by serving as case investigators, advisors, and hearing panelists.

### Reporting academic dishonesty

All members of the academic community, both students and faculty, are urged to report acts of academic dishonesty. To discuss or report an alleged violation, contact the director of the honor system.

### Additional information

The honor system uses the Faculty Senate-approved definition of academic dishonesty found in the Faculty Handbook and at the honor system webpage.

Students’ rights are enumerated under Article XII of the Student Governing Association constitution.

The undergraduate Honor Council constitution, by-laws, and policies can be reviewed in the student handbook section of the campus phone book or on the Internet at www.ksu.edu/honor.

K-State Undergraduate Honor Council
Kansas State University
215 Fairchild Hall
Manhattan, KS 66506
785-532-5344
E-mail: honor@ksu.edu

### University Policies

Students, faculty, and administrators are members of a community dedicated to the growth and development of individuals.

Enrollment at K-State entails responsibilities as well as privileges. Acceptance of and adherence to the following policies is necessary for the protection of the rights of others and the protection and health of the community.

Complete copies of these policies, which are excerpted below, are available in the Office of Student Activities and Services in the K-State Student Union and the Office of Student Life in Holton Hall, unless otherwise indicated.

The most current version of these policies is available in the Faculty Handbook: www.ksu.edu/uauc/fhbook. Information about these policies can also be found in the student life handbook section of the campus phone book.

### Academic grievance

The following procedures will be employed to deal with academic grievances brought by students against faculty members and with grade appeals. These procedures will serve three functions: (1) safeguard the rights and academic freedom of both students and faculty, (2) assure due process, and (3) provide for consistency in handling undergraduate academic grievances throughout the university.

### Grievances against faculty or administrators

Unethical actions by faculty or administrators should be reported as soon as possible so that appropriate action can be taken. The grievance must be made within six months of the alleged unethical action(s). Students should begin by contacting the office of their dean. The dean, or a representative of the dean, will describe the procedure to be followed and will aid the student in procedural matters. Further, the dean or representative will appoint a faculty member as an advocate for the student if the situation seems to warrant an advocate or if the student requests an advocate. If a faculty advocate is appointed, the student will participate in the selection of, and must agree to the appointment of, the person selected. The advocate need not be in the college.

### Grievances involving change of grade

(a) All efforts will be made by the student and instructor involved in any grievance to settle all disputes that may arise. Grade appeals must be initiated within six months following the issue date of the grade in question.

(b) If a grade change grievance is not resolved by the student and instructor, the student may appeal in writing to the department head who
will act as a mediator in the dispute. This appeal should be made within two weeks of the date of the original appeal. At this time, the student may petition the dean of his or her college for an ombudsperson. The duties of the ombudsperson are to arrange meetings of all concerned parties and report actions taken at each level to the appropriate persons or groups. The role of the ombudsperson is to expedite the process and to ensure a fair hearing.

c. If the grievance has not been settled to the student’s satisfaction at the department level, written appeal may be made to the dean of the college in which the course is taken. This appeal should be made within two weeks of the date of receipt of the appeal by the dean. The dean will act as a second mediator.

d. If the student does not feel that an adequate solution has been reached in any academic dispute, she/he may appeal in writing to the Undergraduate Grievance Board, which will arbitrate the dispute. This appeal should be made within two weeks of the date of receipt of the appeal by the dean.

e. The two week time limits given in the sections above are intended to move the grievance process along at a reasonable rate. The limits may be modified for reasonable reasons such as illness, scheduled academic holidays, or mutual consent of both parties.

Advertising, sales, and solicitation
Facilities of Kansas State University are not available for unrestricted use by non-university groups. University property may not be used for commercial purposes except when sponsored by a university-affiliated organization or department. The regulations governing fund-raising and the posting and distribution of literature are available in the Office of Student Activities and Services.

Alcohol and cereal malt beverage policy
The legal drinking age in Kansas for alcoholic beverages is 21. The Kansas Board of Regents policy permits the use and sale of cereal malt beverages (3.2 beer) under authorized and appropriately controlled conditions and regulations. By state law, the sale of alcoholic liquor is not permitted on state property. Included in the K-State policy is information on alcohol and cereal malt beverage consumption in residence halls, at athletic events, and for student organizations.

Drug-free workplace policy
In 1988, Congress passed the Drug-Free Workplace Act. This act applies to all institutions holding and applying for federal grants and contracts. K-State adopted the policy that the unlawful manufacture, distribution, dispensing, possession, or use of controlled substances is prohibited in its workplace.

Facilities usage
K-State facilities are available for use by authorized groups for activities that complement the teaching, research, and service programs of the university. Policies and procedures for use of K-State facilities (other than the K-State Student Union) are available in the Division of Facilities in Dykstra Hall.

Policies and procedures for use of the K-State Student Union are available in the Union Reservations Office on the second floor or in the Source Handbook for Registered Organizations.

Gender
The university seeks to create an environment in which all students, faculty, and staff interact solely on the basis of individual strengths and characteristics without having those interactions shaped by generalizations, stereotypes, or valuations based on gender. Copies of applicable policies are available in the Women’s Center in Holton Hall and Affirmative Action Office in Anderson Hall.

HIV/AIDS university guidelines
Under the direction of the Kansas Board of Regents, the university has developed guidelines to assist students, faculty, and staff in the event that a situation involving Human Immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) should occur. Current copies of the guidelines are available upon request from the Department of Health Education and Promotion, Lafene Health Center.

Political activity guidelines
All members of the university community are encouraged to take advantage of opportunities to educate themselves regarding the candidates and issues relating to national, state, and local elections. Copies of the university guidelines related to political activities on campus are available in the Office of Student Activities and Services.

Prayer at university functions
Nonsectarian prayers, invocations, benedictions, or silent meditations are permitted at university functions to enhance mutual respect and awareness.

Racial and/or ethnic harassment
Racial and/or ethnic harassment is prohibited by K-State and includes conduct toward an individual or group on the basis of race, ethnicity, or racial affiliation that has the purpose and effect of creating an intimidating, hostile, or offensive work or educational environment; interfering with an individual’s work, academic performance, living environment, personal security, or participation in any university-sponsored activities; or threatening an individual’s employment or academic opportunities.

Racial and/or ethnic harassment should be reported to the university administrator responsible for the department or unit or to the Affirmative Action Office. For students with complaints of harassment by other students, the dean or associate dean of student life may be regarded as the appropriate administrator. Copies of the policy are also available from the Affirmative Action Office in Anderson Hall.

Religious activities
In a pluralistic, multicultural, and interdenominational university environment, freedom of worship is supported. Religious programs and activities must comply with university policies as well as federal, state, and local laws. In keeping with its education mission, the university may specify the time, place, and manner of religious events, but may not regulate their content. Since students may refrain from class and work activities on major faith holidays, faculty and staff are requested to give consideration to these religious holidays in planning exams, deadlines, and class requirements. Students are requested to coordinate their plans with instructors in preparation for these observances. Assistance or clarification may be received at the Office of the Coordinator of Religious Activities, Holton Hall.

Sexual harassment policy
K-State prohibits sexual harassment and has defined sexual harassment as any behavior that, through inappropriate sexual content or disparagement of members of one sex, interferes with an individual’s work or learning environment. This policy applies to the working and learning relationships of all individuals within the university community—faculty, staff, and students.

Sexual harassment should be reported to the university administrator responsible for the department or unit or to the Affirmative Action Office. Students with complaints of harassment by other students should contact the Women’s Center, Office of Student Life, or the Affirmative Action Office. Copies of the policy prohibiting sexual harassment are available from the Office of Student Activities and Services, departmental offices, the Women’s Center, Office of Student Life or the Affirmative Action Office.

Sexual violence
No form of sexual violence will be tolerated or condoned at Kansas State University. This policy prohibits not only those acts commonly understood to constitute “sexual assault,” but all attempts to coerce sexual activity as well. Although the university cannot assure protec-
tion from sexual violence, it can state expectations of conduct and impose sanctions on any university student who fails to meet those expectations. Copies of the policy prohibiting sexual violence are available in the Women’s Center in Holton Hall.

Student discrimination review committee guidelines

The Student Discrimination Review Committee hears complaints of discrimination from students based on race, color, religion, national origin, sex, sexual orientation, disability, military status, or age in employment, academic areas or other programs, services, or activities in the university community. This committee is an appellate body and is to be used if a satisfactory resolution is not reached at the departmental or unit head level.

The committee is appointed by the university president upon recommendations from the student body president and the president of Faculty Senate. Copies of this policy are available from the Office of Student Activities and Services or the Affirmative Action Office.

Student Financial Assistance

Larry Moeder, Director
104 Fairchild Hall
785-532-6420
E-mail: ksusfa@ksu.edu
www.ksu.edu/sfa

Kansas State University administers an extensive financial aid program to bridge the gap between family contribution and the cost of attending the university. Detailed information concerning financial aid is available on request from the Office of Student Financial Assistance, 104 Fairchild Hall.

The Free Application For Federal Student Aid (FAFSA) should be used by students applying for all federal and state aid programs. Students may obtain the FAFSA from any high school counselor or from K-State. The priority date for submitting the FAFSA is March 1 before the fall semester in which the student intends to enroll.

Programs

Scholarships

Each year nearly 4,000 Kansas State University undergraduate students receive more than $6 million of scholarship assistance based on their academic records, financial need, and/or leadership qualities. Freshmen are encouraged to meet K-State’s early application deadline of November 1 of their senior year. All students should meet the final application deadline date of February 1 each year for the following academic year. Applications and scholarship information are available from high school counselors, the Office of Student Financial Assistance, and the various colleges at K-State.

Grants

Approximately 6,000 students are assisted through two federal grant programs.

Assistance exceeds $8 million. The Free Application For Federal Student Aid is the application for these programs and should be filed by March 1.

Loans

K-State has six kinds of student loans: the Federal Perkins Loan, the Federal Subsidized Direct and the Federal Unsubsidized Direct loans, the Federal Parent Loan for Undergraduate Students (PLUS), the Health Professions Student Loan (HPSL), and Alumni/Foundation Loans.

The Perkins Loan is a five percent interest loan. The Direct Loans are variable interest loans. The HPSL carries a five percent interest rate.

The Federal Subsidized and Unsubsidized Direct Loans contain the same basic annual limits and interest rates, which is capped at 8.25%. The Subsidized Direct Loan is based on financial need while the Unsubsidized Direct does not carry a need requirement. Repayment on the principal of both loans begins six months after the student stops attending at least half time. In school interest payments on the Subsidized Direct Loan is maintained by the federal government and by the student on the Unsubsidized Direct Loan.

The repayment period may be up to 10 years.

The Alumni/Foundation Loan charges six percent interest payable annually from the date of the loan, with $50 monthly payments beginning three months after the borrower leaves school.

The Federal PLUS loan is capped at 9 percent but has a variable interest rate from year to year. It begins accruing interest 60 days after the borrower receives the money. Parents borrowing on their student’s behalf, begin monthly payments 60 days after receiving the money.

Qualified students also may borrow through emergency, alumni, and endowment funds to meet specific needs. Interested students should contact the Office of Student Financial Assistance.

Employment

Kansas State University provides services for students seeking part-time employment to help offset educational, living, and social expenses. K-State has two categories of jobs: college work–study program jobs and campus payroll jobs. In addition, students are frequently employed in off-campus positions. Available jobs are posted on the job board in the K-State Student Union.

To be employed on the hourly student payroll, a student must be enrolled in at least 6 resident semester credit hours at K-State during a fall or spring semester, and at least 3 resident semester credit hours at K-State during a summer term, or have been enrolled in at least 6 resident semester credit hours at K-State during the preceding spring semester.

Services for veterans

The university maintains a veterans’ service to aid veterans and children of deceased or disabled veterans in securing educational benefits.

Veterans who have more than 181 days of service after January 31, 1955, may be eligible for educational benefits. Children of a deceased or disabled veteran may be entitled to educational benefits, providing the veter-
an’s death or disability was due to active service in World War I, World War II, the Korean Campaign, or Vietnam.

Information may be obtained from your nearest Veterans’ Administration Office or the Office of Student Financial Assistance.

Satisfactory Academic Progress

Federal regulations require that financial aid recipients make satisfactory academic progress in order to remain eligible for federal financial assistance.

Satisfactory academic progress standards, therefore, apply to students receiving financial assistance from such programs as: Federal Pell Grant, Federal Supplemental Educational Opportunity Grant (FSEOG), State of Kansas Scholarship, Federal Perkins Loan, Federal Stafford Loan, Federal Direct Loan, Federal Parent Loan for Undergraduate Students (PLUS), Health Professions Student Loan, and College Work-Study. The only programs not covered by Kansas State University’s satisfactory academic progress policy are athletic grants-in-aid and non-federally funded forms of assistance.

To measure satisfactory academic progress, K-State has established a framework for evaluating a student’s successful progression toward a degree. This policy has two components: quantitative and qualitative. Students are monitored for satisfactory academic progress beginning with their first term for which federal financial assistance is received.

Quantitative measure

Two measurements make up the quantitative portion of K-State’s satisfactory academic progress policy.

1. Successful completion of courses
   A student must successfully complete a minimum number of his/her scheduled courses for which federal financial assistance has been received. For example, if an undergraduate student’s financial assistance is calculated on a full-time basis (12 or more hours) for one semester, that student must, at a minimum, successfully complete at least 9 hours for that semester. See the chart below for further details.

### Undergraduate requirements per semester

<table>
<thead>
<tr>
<th>Hours for which aid was received</th>
<th>Minimum hours to be successfully completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 hours scheduled (full-time)</td>
<td>9 hours</td>
</tr>
<tr>
<td>9 hours scheduled (3/4-time)</td>
<td>7 hours</td>
</tr>
<tr>
<td>6 hours scheduled (1/2-time)</td>
<td>4 hours</td>
</tr>
</tbody>
</table>

### Graduate requirements per semester

<table>
<thead>
<tr>
<th>Hours for which aid was received</th>
<th>Minimum hours to be successfully completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 hours scheduled (full time)</td>
<td>7 hours</td>
</tr>
<tr>
<td>7 hours scheduled (3/4-time)</td>
<td>5 hours</td>
</tr>
<tr>
<td>5 hours scheduled (1/2-time)</td>
<td>4 hours</td>
</tr>
</tbody>
</table>

Hours successfully completed in excess of the minimum requirement will result in the student earning “credits.” Such credits are carried forward to subsequent semester(s) as part of the student’s satisfactory academic progress record.

Alternatively, failure to meet the noted minimum requirements will result in the accumulation of “deficiencies,” which are also carried forward to subsequent semesters. Courses for which a grade of F, incomplete (I), (IX), withdrawn (WD), no grade recorded (NR), or no credit received (NC) is recorded are not considered to have been successfully completed.

**Note:** Graduate students will receive “credits” for any incompletes associated with research conducted as part of the published degree requirements, elective or required course work, or as part of developmental studies once credit has been posted.

2. Maximum timeframe

Federal regulations have also established a maximum timeframe in which a student is expected to have completed a program. At K-State, a student may not receive financial assistance if he/she has exceeded the following number of earned credit hours:

- Undergraduates: 180 hours
- Master’s degree students: 60 graduate hours
- Doctoral students: 120 graduate hours

Qualitative measure

In addition to the quantitative component for satisfactory academic progress, federal regulations also require that a student must, at a minimum, maintain a 2.0 cumulative grade point average after having completed 60 hours. K-State’s satisfactory academic progress policy requires that all students classified as juniors and above maintain a cumulative GPA of 2.0 or higher in order to receive financial assistance.

Financial assistance warning

Students who have accumulated any “deficiencies” (quantitative component) and/or who have failed to meet the minimum 2.0 cumulative GPA (qualitative component) within a given award year will be placed on a “financial assistance warning” status for one academic year by K-State’s Office of Student Financial Assistance.

A student will be removed from the warning status if he or she successfully removes any deficiencies and/or raises his or her cumulative GPA to a 2.0. during the academic year.

Failure to remedy either one of the noted components within one academic year will result in the student being placed onto a “financial assistance exclusion” status.

Financial assistance exclusion

Students who have reached the maximum allowable hours for which financial assistance may be received and/or who have failed to remove themselves from the “financial assistance warning” status will be placed onto “financial assistance exclusion.” Students on financial assistance exclusion will be denied financial assistance until they meet the above noted qualifications for satisfactory academic progress.

Students may appeal their exclusion status by filing a satisfactory academic progress appeal. Appeal forms may be obtained at K-State’s Office of Student Financial Assistance. The appeal requires statements from both the student and the student’s academic advisor to be considered complete.

An appeal may be either approved or denied. If approved, financial assistance may be awarded to the student subject to its availability for the semester in question. Decisions regarding satisfactory academic progress appeals are final and not subject to further review.

Transfer students

If a transfer student meets established federal guidelines for student aid eligibility, he or she may receive financial assistance at K-State.

The first evaluation of a transfer student’s academic progress at K-State occurs at the same time as the scheduled review of all financial aid recipients at the end of the spring semester. Credit hours earned by a student at another institution will only be included in satisfactory academic calculations after K-State’s Office of the Registrar has formally accepted the transfer credits.
Services for Students

Academic Assistance Center

Judith Lynch, Director
101 Holton Hall
785-532-6492
E-mail: aac@ksu.edu
www.ksu.edu/aac

The Academic Assistance Center provides a comprehensive and coordinated system for the identification, diagnosis, advisement, counseling, and referral of students to the various academic support services available at K-State. In addition, the AAC provides direct academic support through programs which include:

Tutorial assistance
Free tutoring is available in a variety of introductory courses through the EOF tutoring program. Students desiring assistance on a regular basis are assigned to small groups that meet weekly with a peer tutor who assists them with course content and learning strategies. Walk-in tutoring sessions are also available on evenings and weekends.

The University Experience
The AAC offers the course EDCEP 111 The University Experience to new students for 1–3 hours of credit. This course provides any new student with a general orientation to K-State and university life. Topics covered include study skills, effective use of campus resources, academic planning, career decision making, and university policies and procedures.

Math assistance
The AAC provides a math review class for students desiring basic review of pre-algebra mathematics before actually enrolling in a formal mathematics course. Assistance with Intermediate or College Algebra is available to students enrolling in The University Experience as a part of that course. Students who are unsure of which math course to enroll in may take a 45-minute math placement exam. This assessment is available on a walk-in basis in the AAC.

PILOTS program
PILOTS is a cooperative, year-long program meant to provide structure and encourage academic discipline and critical reasoning for qualifying entering freshmen. Students enjoy smaller classes, a computer Reading/Writing Lab, a clustering of support courses, and free tutoring. Classes are geared to a diversity of learning styles.

Credit by examination
K-State offers students a variety of quiz-out programs through which a student may earn academic credit in specific courses. The AAC is the campus service agency for the College-Level Examination Program (CLEP), the DANTES Program, and the American College Test Proficiency Examination Program (ACT-PEP). The center will also provide consultation and conduct utility studies for academic departments interested in implementing a credit-by-examination program. Information and registration for the CLEP, DANTES, and ACT-PEP programs are available from the AAC.

Entrance and professional examinations
The AAC administers the following examinations, which are often required to enter selected undergraduate, graduate, or professional programs. Contact the AAC to obtain further information concerning these and other examinations.

American College Test (ACT)
Graduate Record Examination (GRE)
Law School Admission Test (LSAT)
Medical College Admission Test (MCAT)
Miller Analogies Test (MAT)
Optometry Admission Testing Program (OATP)
Praxis Series (NTE, PPST)
Scholastic Aptitude Test (SAT)
Test of Spoken English (TSE)
Veterinary College Admission Test (VCAT)
COPA (Planners)

Academic and Career Information Center

Tinsley Furry, Coordinator
14 Holton Hall
785-532-7494
E-mail: acic@ksu.edu
www.ksu.edu/acic

The Academic and Career Information Center provides assistance to students in their exploration and selection of academic majors and career options. ACIC resources include a variety of printed and computer software programs. Available resources include career assessments containing exploration inventories related to individuals’ interests, abilities, and career-related values; career information library housing comprehensive reference materials including books and files, curriculum guides; employment profiles of recent college graduates; graduate school directories; and career planning seminars and courses for credit focusing on the elements and processes of career development.

Adult Student Services

Nancy Bolsen, Director
101 Holton Hall
785-532-6434
E-mail: nontrad@ksu.edu
www.ksu.edu/adult

Adult Student Services assists undergraduate and graduate students who meet one of the following criteria:

- Married
- Parent
- Re-entering
- 25 years of age or older

Staff members assist students with admission and enrollment and provide information or referrals for housing, child care, refresher and study skills courses, tutoring, financial aid, scholarships, insurance, public school enrollment, community family programs, emergency locator and commuter information. The staff may be able to assist returning K-State students in advising about remedying past academic deficiencies. Staff also help students with their everyday challenges and special concerns before, during, and after their admission to K-State.

Alcohol and Other Drug Education Service

Bill Arck, Director
214 Lafene Health Center
785-532-6927
www.ksu.edu/ics/aoes.html

The Alcohol and Other Drug Education Service offers information about physical effects and social issues related to alcohol and other drug use or abuse. Campus services provided include media activities such as newspaper ads, posters, brochures, and radio public service announcements; coordination of and participation in awareness events, such as National Collegiate Alcohol Awareness Week; and presentations providing information on alcohol and drug-related topics.

This office can also make referrals to various resources for those with concerns about their own or another’s possible alcohol and/or drug use or abuse.
Career and Employment Services

Tracey L. Fraser, Director
Holtz Hall
785-532-6506
E-mail: ces@ksu.edu
www.ksu.edu/ces

Career and Employment Services assists students and alumni with activities related to finding employment. Whether seeking part-time employment while attending classes, a summer job, a curriculum-related internship, experience through experiential learning, or a full-time career position, CES can help. Career and Employment Services is a service and resource center, containing an extensive, up-to-date job search library, a staff dedicated to assisting students and alumni in their job search, and contacts with thousands of employers throughout the country.

The staff is committed to fostering self-direction and personal responsibility in those seeking help with their career development. Strong academic programs, capable students, a strong work ethic, and a coordinated job search program combine to give K-State students a distinct advantage over those from many other institutions.

The CES home page contains current information for events, companies recruiting on campus, career and student employment jobs listed with CES, and links to career and employment sites on the Internet. The career resource library includes job vacancy announcements, employer directories, company profiles, salary information, job search training materials, and prospective employer lists. Workshops and individual career advisors provide training and consultation on resume writing, interviewing, job search, and career planning. Unique services include an extensive on-campus interview program, interview clinics and career fairs.

Cooperative Houses

Alpha of Clovia Cooperative House accommodates up to 62 women. Although 4-H members are given preference, any undergraduate woman is welcome to apply for membership. To keep the house self-supportive, the women at Clovia contribute four to six hours a week for duties. Providing economical living conditions for members is a main goal at Clovia. Housebills are approximately $185 per month, and vary according to social activities and other house functions. Rent is $300 per semester. Applications can be obtained at County Extension Offices, the State 4-H Department at Kansas State University, or the Clovia Membership Chairperson, 1200 Pioneer Lane, Manhattan, Kansas 66502, 785-539-3575.

Smith Scholars Program
331 North 17th Street
Manhattan, Kansas 66502
785-395-4685
www.ksu.edu/smithhouse
E-mail: smithhouse@ksu.edu

The Smith Scholars Program provides a broad learning experience for 40 young men each year. Smith Scholars are selected on the basis of academic promise and potential to contribute to a structured program of organized living. The Smith Scholars live in Smith Scholarship House, a cooperative living arrangement wherein the men do the cooking and housekeeping, providing a substantial savings in housing costs over most other types of living groups.

The Smith Scholars Program is a joint project of the Maitland E. Smith Scholarship House Alumni Association and the KSU Foundation.

Disabled Student Services

Gretchen Holden, Director
Holtz Hall
V/TTY 532-6441
Fax: 785-532-6457
www.ksu.edu/dss/

Disabled Student Services works to meet the needs of students with documented disabilities by providing academic accommodations and related services. Staff will work as a liaison with students’ instructors. Writing assistance and study skills instruction may be of special interest to students with learning disabilities.

Academic accommodations provided to students include readers, materials in large print, and note takers. Test taking accommodations, including extended time for test taking, oral examinations and scribes, can be arranged through this office. Assistance is provided in obtaining taped texts. Classes scheduled in inaccessible locations will be relocated for qualified students. Efforts will be made to provide interpreters for students with hearing impairments, upon request. Tutorial assistance is available to all students for some classes.

An Assistive Technology Center located in Hale Library, Microforms and Periodicals, includes a computer equipped with enlarging software, an Arkenstone reading machine, a CCTV, and voice recognition software.

Special equipment available for use by students includes FM listening systems, a talking calculator, and TTY (telephone for the hearing impaired). A shuttle van, equipped with a hydraulic lift, operates on campus between all buildings. Transportation is available to students with either a temporary or permanent physical disability. Accessible housing is available.

Educational Supportive Services

Kathleen Greene, Director
Holtz Hall
785-532-5642
E-mail: ess@ksu.edu
www.ksu.edu/ess

Low-income students and first-generation college students are assisted in setting and attaining realistic educational goals and are provided information about graduate-level educational opportunities. Students admitted and enrolled at K-State are offered educational supportive services including the study skills and academic enrichment program courses, academic preadvising, individualized tutorial assistance, and a variety of referral services.

McNair Scholars Program

The McNair Scholars Program, named for the African American astronaut who died in the 1986 space shuttle explosion, encourages and prepares academically promising students to pursue doctoral degrees. McNair Scholars are from low-income and first generation college educated backgrounds or are from minority groups who are underrepresented in graduate study.

Staff will assist McNair Scholars in selecting an appropriate graduate school for their career goals, in preparing for the Graduate Record Examination, and in applying for graduate admittance and financial assistance. Each year McNair Scholars will be matched with a faculty mentor and will work on research projects for which they will receive a stipend.
House bills in sororities will average approximately $1,800 a semester. This includes room, board, and sorority dues. Freshman members, however, live in residence halls and pay sorority dues of approximately $90 a month.

The following national sororities have established chapters at K-State: Alpha Chi Omega, Alpha Delta Pi, Alpha Kappa Alpha, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Sigma Theta, Gamma Phi Beta, Kappa Alpha Theta, Kappa Delta, Kappa Kappa Gamma, Pi Beta Phi, Sigma Gamma Rho, Sigma Kappa, Sigma Lambda Gamma, and Zeta Phi Beta.

Fraternities
Fraternities select new members primarily during the summer months. High school seniors are often guests at fraternity houses during their senior year, and throughout the spring and summer months each fraternity has representatives visiting high school seniors and their parents in Kansas and surrounding states.

Freshman men may live in a fraternity house if they accept invitations to membership before classes start and if they cancel their residence hall contracts. Costs will average $1,800 a semester.

The following national fraternities are established at K-State: Alpha Gamma Rho, Alpha Phi Alpha, Alpha Tau Omega, Beta Sigma Psi, Beta Theta Pi, Delta Chi, Delta Sigma Phi, Delta Tau Delta, Delta Upsilon, FarmHouse, Kappa Sigma, Lambda Chi Alpha, Omega Psi Phi, Phi Delta Theta, Phi Gamma Delta, Phi Kappa Theta, Pi Kappa Alpha, Pi Kappa Phi, Sigma Alpha Epsilon, Sigma Chi, Sigma Lambda Beta, Sigma Nu, Sigma Phi Epsilon, Tau Kappa Epsilon, Theta Chi, Theta Xi, and Triangle.

Housing and Dining Services
Charles Werring, Director
104 Pittman Building
1-888-568-5027 (toll free)
785-532-6453
E-mail: housing@ksu.edu
www.ksu.edu/housing

The university encourages all new K-State students to live in an organized living group, such as a residence hall. Living in a residential community helps provide students with a sense of belonging and an avenue for getting involved. Research indicates that academic achievement is enhanced by involvement. Students who choose a community-based living group are provided many varied opportunities for interaction with other students and university staff. Furthermore, the opportunity to participate in organized social, athletic, and educational events is highly rated as a catalyst for career success.

K-State provides on-campus residence hall living for approximately 3,800 students, and 510 apartments for student families, nontraditional, single graduate and upperclass undergraduate students.

Residence halls
K-State residence halls have a rich tradition of providing a living and learning environment that encourages personal growth and academic success.

A number of lifestyle options exist, including academic cluster areas and intensive study/quiet floors. Additional information on these options is available on request. Staff members work diligently to meet the needs of all students.

An academic-year housing and dining services contract is issued to the student following the receipt of a residence hall application and $25 nonrefundable application fee for fall enrollees and $12.50 for those entering in the spring.

The cost of the contract is set on an annual basis. Students may select a full-semester or a monthly payment plan.

Smurthwaite Leadership/Scholarship House
The Smurthwaite Leadership/Scholarship House is a special leadership and personal development program for students who would like to become active in leadership positions in student government, academic organizations, and cocurricular organizations.

Assignment to Smurthwaite Leadership/Scholarship House is made through a special application process. Because space is limited and assignment is not guaranteed, it is best also to go through the regular residence hall application and contract process.

Academic initiatives
Residence halls offer individualized academic support to residents through trained staff, programming, and faculty involvement. Computer labs, study rooms, two academic resource centers, and a calendar of tutorial sessions make the residence halls a great environment for learning and academic success.

Leadership and involvement opportunities
Hall Governing Boards (HGB) and floor governments plan and implement educational and cultural programs, intramural events, community service projects, and more. The Judicial Boards provide an opportunity for students to address one another regarding policy violations that impact the community. The Kansas State University Association of Residence Halls (KSUARH) works closely with hall representatives to develop and implement policies that promote respect and acceptance of all students in the residence halls.

Jardine Apartment Complex
Student families, nontraditional, single graduate and upperclass undergraduate students have access to one- and two-bedroom apartments at Jardine, both furnished and unfurnished. These apartments are adjacent to the campus. Affordable laundry facilities are available.

The rental includes gas, water, and trash. A deposit equivalent to one month’s rent is required. Assignments are made on a first-come, first-serve basis, and early application is recommended. Students residing in Jardine Apartments use a residents’ council form of government to regulate community life.

Apartments are partially accessible for people with disabilities. Housing and Dining Services is pleased to work with students and family members to accommodate special needs.

International Student Center
Donna Davis, Director
785-532-6448
E-mail: intlstucenter@ksu.edu
www.ksu.edu/intlstucenter

The International Student Center provides a comfortable, relaxed atmosphere where people wanting to increase their international perspective can always find new friends. The three-building complex has been completely funded by private gifts to the university. The main building includes a multipurpose meeting room, dining room, kitchen, and reading lounge.

The Taiwan Wing provides space for the staff, who assist all K-State nonimmigrants with their immigration paperwork and related matters. They also provide leadership and support for a variety of programs that promote global awareness and understanding. The Koren Room is a small media center that has computers, a television viewing area, general meeting space, and a small office for the International Coordinating Council.

The university recommends that international students and their dependents (if they are with the student) purchase or be in possession of a medical insurance policy or equivalent coverage. Medical insurance can be purchased on the campus or from other independent agencies.
Lafene Health Center

Lannie W. Zweimiller, Director
785-532-6544
E-mail: lafene@ksu.edu
www.ksu.edu/lafene

The Lafene Health Center is a modern ambulatory healthcare facility designed to provide for most student outpatient health needs. The health center is fully accredited by the Joint Commission on Accreditation of Healthcare Organizations. Students who have paid the health fee as a part of their tuition are eligible for care. Non-student spouses, university conference participants, and other campus visitors may receive care upon payment of a special fee.

Lafene Health Center provides, through a full complement of medical and other professional personnel, a range of services that include special clinics for sports-related injuries, women, and allergies and immunizations, as well as a clinic for general care. Also included are services in health education, nutrition, and physical therapy. The services of a pharmacy, laboratory, and x-ray are available at reduced rates.

The center is staffed by full-time physicians with medical support personnel. When necessary, the student is referred to specialists for treatment at the student’s expense.

After regular clinic hours, a student who is ill or injured may receive medical care at a local hospital, at the student’s expense. Home visits are not made. The local ambulance service is available, when needed, to transport patients to the appropriate health care facility.

Insurance
It is strongly recommended that all students at K-State carry medical insurance, either through the parents’ plan at home or through the university-sponsored student health insurance plan available at special rates. This latter plan covers most services provided at Lafene Health Center and allowed claims for medical expenses if the student requires care away from the campus.

Medical history
K-State requires a complete medical history, including a current immunization record, on all new students or transfer students. This history must be completed on the Kansas State University medical history form and is required prior to provision of non-emergency treatment at the health center. A physical examination is not required, but encouraged, and a copy of this examination assists the staff in evaluating illnesses. If a student has a continuing medical problem, a summary from the attending physician is helpful should treatment at the center be needed. Students receiving allergy injections must furnish instructions from their allergist before injections can be administered at the health center.

Multicultural Programs and Services

The Office of Multicultural Programs and Services provides assistance to the Asian-American Student Union (AASU), Black Student Union (BSU), Hispanic American Leadership Organization (HALO), Native American Student Body (NASB), and other cultural and academic interest organizations focusing on multicultural students.

MPS assists organizations in sponsoring programs and activities that heighten multicultural awareness and leadership at K-State and in the community. MPS also provides support and assistance to all multicultural students through individual counseling and through building strong support systems that help foster the educational and personal development of multicultural students on campus.

New Student Services

Pat J. Bosco, Associate Vice President/Dean of Student Life
Susan Hansen, Assistant Director
122 Anderson Hall
785-532-7091
consider.k-state.edu

New Student Services works with prospective students and their families. Admissions representatives meet with high school students during school visits, college fairs, and special events.

New Student Services coordinates campus visits, orientation and enrollment, and the Presidential Lecture Series.

Off-Campus Housing

The Office of Student Activities and Services maintains an up-to-date listing of major apartment complexes, real estate agents, and property management companies. The office also provides a bulletin board in the Union that lists available rental units, with information on cost, size, restrictions, etc., and other housing options. A roommate matching service is also available.
The Office of Student Life is responsible for student affairs/social services.

Student life services, including Admissions, Student Financial Assistance, Greek Affairs, Housing, K-State Student Union, New Student Services, Recreational Services, Registrar, and the Associate Dean of Student Life Office, are coordinated and directed by the associate vice president and dean. These units meet the needs of prospective and enrolled students.

The Office of Student Life is responsible for student activities, student government, and the administration of the judicial program for nonacademic misconduct. Adult Student Services, Religious Affairs, Women’s Center, and the International Student Center are supervised and supported by this office. Staff members coordinate assistance to students and families in times of personal crisis and are available to students for general advice, counsel, and assistance with personal problems.

Religious Affairs

Don Fallon, Coordinator
102 Holton Hall
785-532-6432

The coordinator of religious activities in Holton Hall provides information regarding religious activities and organizations on campus and in the community. Pastoral care and counseling are available through this office and by referral. Students may seek counseling regarding relationships, sexuality, death and loss, or other personal and spiritual concerns. Two memorial chapels on campus, Danforth and All Faiths, are available for student worship, weddings, and private meditation.

Recreational Services

Raydon H. Robel, Director
785-532-6980
E-mail: recservices@ksu.edu
www.recservices.ksu.edu

Recreational Services is responsible for intramural, recreational sports, and fitness programs for the campus.

The recently expanded Chester E. Peters Recreation Complex features 14 racquetball courts; two squash courts; three gyms for basketball, volleyball, and badminton; two weight training and cardiovascular areas; a large multipurpose area for exercise sessions, two indoor running/walking tracks; a combatives area; a table tennis room; locker rooms; and central services area for equipment checkout.

The natatorium at the Ahearn Sports Complex offers two 25-yard pools and one diving pool. A sun deck is also available.

Intramural sports are scheduled competitive activities. Teams are organized for men, women, and co-rec play from fraternities, residence halls, off-campus, and faculty/staff groups. More than 40 different intramural activities are offered for competition.

Outdoor facilities include lighted playfields for football, soccer, softball, and sand volleyball; lighted tennis and 3-wall racquetball courts; horseshoe pits; and a fitness cluster with running/walking trails. Outdoor recreational equipment and camping equipment can be rented at the Outdoor Rental Center.

The department provides many student employment opportunities for lifeguards, sports officials, building supervisors, exercise leaders, fitness consultants, and office assistants.

Additional information and a complete schedule of hours and events is available on the Recreational Services home page.

Student Activities and Services

Gayle Spencer, Coordinator
Office of Student Activities and Services,
K-State Student Union, Ground Floor
785-532-6451
Fax: 785-532-7292
E-mail: osas@ksu.edu
www.ksu.edu/osas

The Office of Student Activities and Services helps students identify campus activities and avenues of campus and community involvement. The office houses the Student Governing Association, Student Judicial System, Student Legal Services, Consumer and Tenant Affairs, and the Student Organization Budget Office. The office also assists individuals and groups who wish to organize and register their organization on the K-State campus.

Student Government

Gayle Spencer, Coordinator of Student Activities and Services
Office of Student Activities and Services,
K-State Student Union, Ground Floor
785-532-6541
Fax: 785-532-7292
E-mail: osas@ksu.edu
www.ksu.edu/osas

The purpose of the Student Governing Association is to help students voice concerns, suggestions, or grievances. Every student is a member of SGA and is represented by a college council (elected by the students in each respective college), a student senator, and by the student body president and vice president.

The student senators, student body president, and vice president are elected by the K-State student body.

SGA is divided into three branches: legislative, judicial, and executive. Student Senate makes up the legislative branch. It is composed of seven standing committees: academic affairs/university relations, allocations, communications, governmental relations, privilege fee, senate operations, and student affairs/social services.

The judicial branch is composed of the judicial council, student review board, student tribunal, parking citations appeals board, and the housing and dining services judicial boards.

The student body president, vice president, and cabinet make up the executive branch. The president has the responsibility to promote the general welfare of the students and acts as the official voice of the student body to the faculty, administration, and public.

Student organizations

More than 320 organizations are available to students, faculty members, staff, and community members.

Any organization desiring to become a registered organization must register with the Office of Student Activities and Services. Registered groups have the opportunity to request funds from SGA, have fundraising activities on campus, and may schedule rooms and tables in the K-State Student Union as well as most campus facilities. Registered student organizations may also post notices in university buildings and on campus bulletin boards.
University Counseling Services

Fred Newton, Director
232 Lafene Health Center
785-532-6927
E-mail: ucs@ksu.edu
www.ksu.edu/ucs

University Counseling Services is open 8 a.m. to 5 p.m. weekdays and 5 to 7 p.m. on Tuesdays.

Professional counselors, psychologists, and a psychiatrist are available to assist K-State students. Individual, couple, and/or group counseling is offered for people wishing to discuss academic, career, or personal concerns. Psychological testing may be used as an adjunct to career or personal counseling.

Counseling is a confidential service. Anything you say to a counselor, the fact that you used this service, or test results will not be disclosed to other persons or agencies within or outside the university, within ethical limitations. No information about counseling goes on your academic record.

University Counseling Services is funded in part by the student health fee. Students receive some initial individual sessions without charge per year. A nominal fee is charged for additional services. Lafene Health Center eligibility fees for spouses and non-enrolled summer students do not apply to UCS.

Upward Bound

Reginland McGowan, Assistant Vice President for Educational and Personal Development Programs
201 Holton Hall
785-532-6497
E-mail: upwardbound@ksu.edu

This federally funded program provides academic and personal counseling and guidance to disadvantaged high school students from Topeka and in Pottawatomie, Riley, Geary, and Saline Counties. Designed to motivate students with academic potential and prepare them for postsecondary programs of education in the fields of math and science, the Math and Science Program provides participants with academic, social, cultural, and vocational activities and experiences during the school year and with a summer campus residential program.

Programs using a workshop or seminar format are offered to enhance personal growth and skill development. These may include stress management, biofeedback, career life planning, assertiveness training, relationship enhancement, responsible drinking, and ACOA support. A Career Life Planning course is offered for academic credit.

The University Counseling Services staff, and the APA-accredited internship training program in psychology, adhere to the ethical code of the American Psychological Association.

Women’s Center

Susan L. Allen, Director
Elizabeth Crain, Sexual Violence Education Coordinator
206 Holton Hall
785-532-6444
E-mail: womenscenter@ksu.edu
www.ksu.edu/womenscenter

The Women’s Center works with individual students and the K-State community to promote the well-being of K-State students through gender-related advocacy, programming, training, information, and referral services. Our goals are to raise the level of awareness and understanding of issues relevant to women; motivate both women and men toward greater involvement in circumstances that adversely affect women; and empower women to find and explore options in their lives.

The center works closely with other offices and agencies to help women who are in crisis for reasons of domestic and sexual violence, harassment, and other forms of abuse. We provide free self-defense courses for women students each semester, share a video library on gender-related topics with groups and classes, and publish the online newsletter, Women’s Circle, as a means of informing and building a sense of community among the 2,400-plus women faculty and staff on campus and around the state.
Auxiliary Services and Facilities

Affirmative Action

Clyde Howard, Director
214 Anderson Hall
785-532-6200
E-mail: affact@ksu.edu
www.ksu.edu/affact

The Office of Affirmative Action is available to students on matters of equal opportunity in admissions, access to programs and activities, and employment due to race, ancestry, color, religion, national origin, sex, sexual orientation, disability, military status, or age. Students with concerns about racial/ethnic harassment or sexual harassment may also contact the office.

Alumni Association

Amy Button Renz, President
KSU Foundation Center
2323 Anderson, Suite 400
785-532-6200
E-mail: alumni@ksu.edu
www.k-state.com

The Kansas State University Alumni Association is a 35,500-member organization. It is an independent group of alumni and friends devoted to the university.

The nonprofit organization supports K-State through student recruitment programs, maintenance of records on more than 159,000 alumni and friends, publication of the K-State, sponsorship of alumni gatherings, Homecoming, and class reunions.

Child Care

KSU Child Development Center
Angela Allison, Director
1948 Jardine Drive, Building L-9
785-532-3700
E-mail: ksucdc@ksu.edu

The KSU Child Development Center is a nonprofit corporation serving the child care needs of K-State students, faculty, and staff. It is fully licensed by Kansas and is professionally staffed.

The center offers full-day programs for toddlers (ages 12 months and walking through 2½), preschoolers (ages 2½ through 5), and school-age children (ages 5–12). Limited part-time program spaces are offered to families of toddler and preschool children who need flexible care. The center is open all year offering care Monday through Friday from 7 a.m. to 5:30 p.m.

School of Family Studies and Human Services

Mary DeLaCue, Director of Early Childhood Programs
Justin Hall
785-532-5510
Fax: 785-532-5505
E-mail: fshs@ksu.edu

This school operates two early childhood facilities. Both are licensed by the Kansas State Department of Health and Environment and accredited by the National Academy of Early Childhood Programs. Enrollment in these programs is open to members of the K-State and Manhattan communities.

The Hoeflin Stone House Child Care Center is on the northeast edge of campus. The center provides full day care for 30 children ranging in age from 18 months to 5 years. Priority is given to children of working parents. The program focuses on the children’s developmental needs and interests.

The Early Childhood Laboratory on the east edge of campus hosts an interagency program with USD 383. The facility integrates children who have disabilities with nonhandicapped children, and accommodates an age range from 3 to 5 years in a part-day program.

The activities and environment at both facilities are designed to foster children’s cognitive, language, social, emotional, and physical growth and development.

Computing and Network Services

Harvard Townsend, Director
146 Foundation Center
785-532-6311
Fax: 785-532-5914
E-mail: cns@ksu.edu
www.ksu.edu/cns

CNS provides the computing and networking infrastructure for the K-State community, as well as other information technology resources. For detailed information about services, visit the CNS website. Questions about using information technology resources should go to the IT help desk in Hale Library, 785-532-7722, consult@ksu.edu.

Computing IDs/accounts

All K-State students and employees have a free K-State computing ID on the central computer system. It allows access to e-mail, the Internet, the World Wide Web, file space for classwork and projects, and a personal webpage.

Passwords on computing IDs must be changed each fall and spring semester; use the www.ksu.edu/password webpage.

All K-Staters are expected to be ethical and courteous in their use of computing resources. Use of a K-State computing ID constitutes acceptance of the university’s information technology policies, posted at www.ksu.edu/uacc/docs/policy.html.

Computing labs

More than 100 PCs, plus printing facilities and Unix workstations, are available 24 hours a day in the university computing labs. The labs may be freely used by students and employees. Labs provide access to many programming languages and software programs, including e-mail, Internet/web access, word processing, spreadsheets, databases, statistical analysis, file transfer, and multimedia creation.

Campus network

CNS maintains the university’s fiber-optic data network that connects all K-State buildings. It provides quick access to K-State’s central computer systems, many departmental computers, the university’s website, and Internet and Internet2. These networks allow K-Staters to communicate worldwide, collaborate on projects, and access information at other educational and research institutions.

Central computer systems

CNS maintains K-State’s central computer systems, including an IBM S/390 and a network of Unix servers. The central systems provide e-mail, web space (official site plus personal pages), Unix accounts, the library catalogue system, administrative systems, and many other services.

Central LANs

CNS provides local area network servers running Novell Network and Microsoft NT for the university computing labs, numerous administrative units, and some academic units.

Technology Service Center

This CNS center provides local, cost-effective technology repair services for campus offices and departments at cost-recovery rates. It builds, repairs, and upgrades computer systems; installs and configures software; and provides installation and maintenance of technology in K-State’s multimedia classrooms.
World Wide Web site
CNS maintains K-State’s central website at www.ksu.edu. It includes academic resources, news and events, calendars, directories, policies, publications, and more. It provides links to college and departmental web servers, and to IT resources such as the KATS student-access system and library systems.

Family Center
Stephan R. Bollman, Director
Nancy T. O’Connor, Director
Marriage and Family Therapy Clinic
Campus Creek Road
785-532-6984
Fax: 785-532-6523
E-mail: family@humec.ksu.edu
www.ksu.edu/humec/fshs/fsfhfc.htm
The Family Center provides applied educational experiences to students while offering family-related educational outreach, therapy, and consultation services to the Manhattan community and the state. The Family Center provides an interdisciplinary focus with faculty participation from different disciplines.

Students, under faculty supervision, offer services involving marriage and family therapy and family life education. Affiliated programs include the State Training Office for Kansas Child Care Training Opportunities training grants from Social and Rehabilitation Services awarded to child and family program units. Special workshops address particular family topics, including single parenting, parent education, and family life.

Services are available to students and the general public. A fee is assessed for therapy services based on a sliding fee scale.

Foundation
Gary Hellebust, President and CEO
KSU Foundation Center
2323 Anderson, Suite 500
785-532-6266, 785-532-7505
www.found.ksu.edu
The Kansas State University Foundation, the official fund-raising arm of the university, is a nonprofit organization certified under Section 501 (C) (3) of the IRS Code of 1954. The purpose of the Kansas State University Foundation is to encourage, receive, and hold in trust any real and personal property given for the use of K-State, and to administer and control all the gifts to provide services that are not or cannot be provided through appropriated funds.

Although the KSU Foundation is not a bank, it offers many of the same services and is responsible for the administration of more than 4,000 fund accounts and the processing of 66,000 gifts annually, while administering total assets of $247 million. Policy is formulated by a 175-member board of trustees and an executive committee of 15 members to which the staff, directed by the president, is responsible.

IDEA Center
Bill Pallet, Director
1615 Anderson Avenue
785-532-5970
E-mail: idea@ksu.edu
www.idea.ksu.edu
The IDEA Center provides services and products to improve teaching and learning from both individual and programmatic perspectives. The center serves both K-State and the broader academic community.

Information Systems
John W. Streeter, Director
2323 Anderson Avenue, Suite 215
785-532-6281
E-mail: iso@ksu.edu
helpdesk@ksu.edu (customer support)
www2.iso.ksu.edu
Data and information systems administration for the university are provided by the Office of Information Systems. Services consist of data administration, database administration, systems project planning, application software development, systems integration, operational systems support, systems analysis and applications programming, and a user helpdesk hotline.

Major application systems include student prospect, admissions, student financial assistance, registration, academic progress, employment, financial, property, and related records. Systems and databases are operated on the university’s central mainframe and distributed processors in the client/server environment including database servers, specialized application servers, LAN servers, workstations, and personal computers. Most applications are supported by commercial software.

COBOL and CA-ADS/O are the principal programming languages used in applications development and support on the mainframe. Mainframe database services are provided by CA-IDMS in the OS/390 MVS environment.

Fourth-generation languages and applications development tools such as PeopleTools, PowerBuilder, Oracle Developer/Designer 2000, Edify Electronic Workforce, and CGI/PERL are used in applications development and support in the client/server environment. Distributed databases are Oracle based.

Institutional Advancement
Robert S. Krause, Vice President
122 Anderson Hall
785-532-5942
The vice president for institutional advancement is responsible for the external relations of the university and is the chief student affairs officer. Additionally, the vice president coordinates ongoing activities with the KSU Foundation, K-State Alumni Association, and Department of Intercollegiate Athletics, and external relations with governmental agencies, the Kansas Board of Regents, and other university constituents. The vice president for institutional advancement reports directly to the president and serves as chief spokesperson for the university.

Libraries
Brice Hobrock, Dean of Libraries
Hale Library
785-532-6516
E-mail: webmaster@lib.ksu.edu
www.lib.ksu.edu
Kansas State University libraries provide support for the educational, research, extension, and public services objectives of K-State. The staff is responsible for acquiring, maintaining, and providing access to collections of materials requisite to the university’s program requirements. Librarians at K-State are dedicated to organizing, promoting, and interpreting the collections for the university community and Kansas citizens.

KSU Libraries consists of five libraries: Hale Library; Weigel Library of Architecture, Planning, and Design (Seaton Hall); Math/Physics Library (Cardwell Hall); Fiedler Engineering Library (Fiedler Hall); and Veterinary Medicine Library (Trotter Hall). K-State at Salina’s Library Technology Center is a cooperating library that shares integrated electronic access systems and databases.

KSU Libraries offers state-of-the-art electronic data information retrieval systems for the catalog and databases unique for K-State’s diverse academic areas. The libraries’ website provides information about its collections and services. An extensive section is devoted to electronic information available at K-State.
and around the world. Remote access to the libraries’ electronic resources are available to K-State students.

The reference units, located on the first and second floors of Hale Library, provide traditional reference service as well as computerized information retrieval. Staff members are available to help students, faculty, and others find the information they need.

Specialized collections and the university archives contain a variety of old, rare, and unusual books, manuscripts, and other materials. The archives offer an assortment of published and unpublished material, including photographs, documenting K-State history. The Multicultural Research and Resource Center provides research and instructional services to support K-State’s multicultural curriculum, programs, organizations, and ethnically diverse student population.

Hale Library maintains more than 100 computer terminals for patrons to search, find, and fulfill their information needs. The William R. Love science library is located on the first floor. Other areas in Hale Library providing information or access services include circulation, interlibrary services, government documents, microforms, and reserves. A 24-hour study area is available on the first floor, including the Bookplate Café. Most services available at Hale Library are also available at the branch libraries.

**Police Department**

108 Edwards Hall  
785-532-6412 business  
911 emergency  
E-mail: police@ksu.edu  
www.ksu.edu/police

The University Police Department is responsible for the protection of all properties owned and operated by the state educational institution or its affiliates. This authority is granted under state law. While service to the K-State community is of great concern to the department, the prevention of crime and investigation of all reported crimes is also of prime importance.

The department assists with parking control and enforces traffic regulations. Traffic and parking regulations are established by a student-faculty/staff Traffic and Parking Council, by authority of K.S.A. 74-3211.

The department is responsible for providing physical security on campus property. This includes opening and closing buildings and monitoring security cameras. The department also answers and responds to 33 emergency telephones strategically located throughout the university.

The University Police Department is open 24 hours a day. It provides a contact for emergency repairs and acts as the university operator outside normal business hours. The department has sworn police officers on duty 24 hours a day.

**Postal Service**

**Contract Post Office**  
113 Dykstra Hall  
785-532-6306 (messages only; clerk will return call)

**Central Mail Services**  
Located north of Dykstra Hall  
785-532-7751 (distribution of all interdepartmental mail and metering of departmental outgoing mail)  
E-mail: centralmailservices@ksu.edu  
www.ksu.edu/facilities/mailop.htm

All mail for students must be addressed to their off-campus Manhattan address or residence hall/Greek address. Postage should be applied to this mail, and it should be sent through the United States Postal Service. Manhattan Post Office personnel deliver U.S. mail directly to university buildings and residence halls and pick up outgoing U.S. mail from various locations on the campus.

The Contract Post Office sells stamps, money orders, and other postal supplies: weights, insures, and registers mail; and receives outgoing U.S. mail. A self-service postal unit operated by the U.S. Postal Service is located in the K-State Student Union.

**Student Publications**

Ron Johnson, Director  
103 Kedzie Hall  
785-532-6555  
collegian.ksu.edu/spub

Student Publications Inc. is a nonprofit corporation that publishes the daily student newspaper, the Kansas State Collegian; the student yearbook, the Royal Purple; and the phone book. Student Publications is governed by the Board of Student Publications, composed of five students elected by the student body annually, three students elected by the student staff of Student Publications, two faculty members appointed by the university president, and the director of the A.Q. Miller School of Journalism and Mass Communications.

The Board of Student Publications names an editor in chief and advertising manager of the Collegian three times each year, for fall, spring, and summer semesters. The Royal Purple editor is chosen in the spring for the following year. The editors and advertising managers hire students for staff positions.

The Collegian and Royal Purple each have faculty advisors, but their content is determined and controlled solely by the editors and student staffs.

**Telecommunications Services**

Fred Damkroger, Director  
109 East Stadium  
785-532-7001  
E-mail: telecom@telecom.ksu.edu  
www.telecom.ksu.edu

Telecommunications provides the voice, data, and video transmission capabilities for the university. The department provides approximately 9,000 telephones lines to university departments and 2,000 lines to the student residence halls.

Four PBX switches, linked together by leased lines, connect the main campus in Manhattan, the Foundation Center, and the manufacturing learning center with the Salina campus. Fiber optic cables connect remote modules of the main campus PBX switch and carry data to all academic buildings and residence halls.

The department provides long distance service to students living in the residence halls. An authorization code assigned to each student identifies the caller and ensures proper billing. Voice mail, call waiting, and other advanced features of the system are also available to students in the residence halls. Authorization codes are also available for faculty and staff for personal long-distance calls.
Connections to the state KANS-A-N network provide long-distance service to all departments along with facilities provided by other long-distance carriers.

The campus paging system and all radios on campus are the responsibility of the department. The Office of Telecommunications provides the service for all wiring additions, moves, and changes to all existing and new buildings.

University Press of Kansas

Fred M. Woodward, Director
2501 W. 15th
Lawrence, Kansas 66049–3905
785-864-4154

Kansas State University, in association with the other five Regents’ universities, operates and supports the University Press of Kansas for the purpose of publishing scholarly and regional books on a nonprofit basis. The press is governed by a board of trustees composed of the chief academic officers of the sponsoring institutions.

University Relations

John Fairman, Assistant Vice President for University Relations
122 Anderson Hall
785-532-6269
E-mail: fairman@ksu.edu

University Relations is responsible for licensing activities related to the institution’s name and logos, and coordinates public information for K-State activities and events through University Relations and its four units: Media Relations and Marketing, Photographic Services, Printing Services, and University Publications.

Media Relations and Marketing is the official outlet for print and broadcast news materials relating to K-State policies and administration. It also publishes In-View, the official faculty-staff newsletter.

Photographic Services offers photoprocessing, location and studio photography, and slide reproduction.

Printing Services prints books, brochures, business cards, envelopes, letterheads, posters, and other printed matter. Second- and third-class mailing services are available to all departments and affiliated organizations.

University Publications provides editing, design, and production coordination of enrollment management, recruitment, and informational publications.

International Programs

William L. Richter, Associate Provost for International Programs
304 Fairchild Hall
785-532-5990
Fax: 785-532-6550
E-mail: wrichter@ksu.edu
www.ksu.edu/oip

Building upon several decades of international involvement, K-State provides a range of programs that link the campus with other parts of the world. Many of these are coordinated through individual departments or colleges; others serve the whole university.

The Office of International Programs is the primary central unit responsible for coordinating K-State’s various international programs. The office supervises the Study Abroad Program, the Peace Corps campus representative, and the English Language Program, and it provides a range of services and support to faculty and students. Coordination is assisted by an International Activities Council that is broadly representative of the university.

Study Abroad Programs

Barry H. Micheie, Director
304 Fairchild Hall
785-532-5990
Fax: 785-532-6550
E-mail: sikarraj@ksu.edu
www.ksu.edu/oip/study_abrd
/study_abroad.html

The Study Abroad Program offers a variety of international group study tours as well as exchange options for students in almost 200 locations and on every continent. Available programs range in length from a summer or semester to a full year. K-State participates in two large exchange networks: the International Student Exchange Program (ISEP) and the MAUI-Utrecht Exchange. K-State also has bilateral exchanges with three dozen universities. A cooperative agreement through Mid-America Universities International (MAUI) allows students to participate in programs offered by other MAUI institutions. K-State also has links to such programs such as Council for International Educational Exchange (CIEE) and Semester-at-Sea.

K-State also offers students a wide variety of credit and noncredit learning opportunities abroad through study tours and more extended group abroad programs. Most programs are led by K-State faculty and are coordinated by the study abroad office in cooperation with academic departments. Examples include the Department of Architecture spring semester in Italy, the Spanish summer language program in Mexico, and study tours to Europe, Asia, Africa, and Latin America. The coordinator of group study abroad assists faculty to development programs and counsels students on foreign learning opportunities.

Scholarships for study abroad

Students are encouraged to apply for a range of scholarships administered by the study abroad program.

• Barton-Dobenin Scholarship
• Doris Hays Fenton Memorial Scholarship
• German-Swiss Scholarship
• Catherine Joyce Memorial Scholarship
• Vernon Larson Study Abroad Scholarship
• National Security Education Program
• James B. Pearson Fellowship
• Heather Stewart Memorial Scholarship

Scholarships available through other offices include:

Rhodes, Truman, Marshall
Beth Powers
785-532-6900

Fulbright
Walter Kolonosky
785-532-6760

Modern languages
Carol Miller
785-532-1922

Blue Key
Jerry Weis
785-532-6432

Rotary Ambassador
Marc Johnson International Studies Scholarship
Robert Hudgens (agriculture majors only)
785-532-7034

Roger and Ruth Wolfe International Scholarship
Robert Hudgens (agriculture majors only)
785-532-7034
International Students

See the Admission and International Student Center sections of this catalog.

English Language Program
Mary Wood, Director
205 Fairchild
785-532-7324
www.ksu.edu/elp

The English Language Program offers intensive English courses primarily for international students who plan to enter degree programs at K-State. However, it also accepts students who wish to come for English instruction only.

The program offers three levels of full-time intensive English. It also offers advanced part-time courses specifically for students who need support in English while taking classes in their degree field.

Undergraduate applicants who are academically qualified but don’t yet have the required English proficiency may be offered conditional admission. These students apply to the English Language Program and receive an I-20 form to cover both their English study and the time they will spend earning their degree. They study in the English Language Program until they earn the required TOEFL score or earn the recommendation of the program.

The program also screens the English proficiency of incoming non-native speakers of English. Students with a TOEFL score between 550 and 600 are tested, and some are placed in ENGL 077 Written Communication for International Students or ENGL 078 Oral Communication for International Students.

For other information and a brochure, write the English Language Program at the address above.

International and Area Studies Programs

Bradley Shaw, Director
215 Eisenhower Hall
785-532-1988
Fax: 785-532-7004
E-mail: bradshaw@ksu.edu
www.ksu.edu/ias

Students interested in world affairs may take advantage of several interdisciplinary opportunities. The College of Arts and Sciences offers two secondary majors, international studies and Latin American studies, to under-graduates. For more information, see the Secondary Majors section of this catalog or visit the website.

In addition to a variety of courses that focus directly on international topics, students have the opportunity to work with faculty who have considerable expertise through their own international research and experience. Guest lecturers, visiting scholars, special seminars and conferences provide opportunities for students and faculty to learn of new developments in the international arena and to appreciate the global dimension of activities in our state and nation. Many colleges offer special programs, including group study abroad opportunities. Students may study a variety of foreign languages in support of international studies or to qualify for research and internship opportunities.

For information about ongoing projects, or about scholars who are international area or subject specialists, contact the Office of International Programs, director of international and area studies, or the following:

International Agricultural Programs
Robert Hudgens
785-532-7034

International Trade Studies
Patrick Gormley
785-532-4576

Department of Marketing and International Business
David Andrus
785-532-6010

Department of Modern Languages
Michael Ossar
785-532-6760

International Community Service Program
Carol A. Peak, Director
785-532-5701

International Development Programs

The Office of International Agricultural Programs, the Food and Feed Grains Institute, the International Grains Program, the International Meat and Livestock Program, and other units maintain projects abroad, provide short-term consultants, and provide short-term training for foreign visitors.

K-State is a member of the MidAmerica International Agricultural Consortium and Mid-America Universities International (MAUI), through which collaborative development projects are pursued.

International Agricultural Programs
Robert Hudgens, Assistant Dean, Agriculture
785-532-7034

International Community Service Program
Carol A. Peak, Director
785-532-5701

International Grains Program
Brendan Donnelly, Director
785-532-6161

John Howard, Associate Director
785-532-6161

International Meat and Livestock Program
Scott Schaake
785-532-6533

Janice Swanson
785-532-6533

International Sorghum and Millet Program
Robert Hudgens
785-532-7034

Food and Feed Grains Institute
Roe Borsdorf, Associate Director
785-532-4056

Information Support Services for Agriculture (ISSA)
Donna Schenck-Hamlin, Director
785-532-7452

Mid-America International Agricultural Consortium
Robert Hudgens
785-532-7034

Mid-America Universities International (MAUI)
William L. Richter
785-532-5990

Wheat Research Center
Ron Madl, Director
785-532-7022
## Secondary Majors

K-State offers secondary majors in American ethnic studies, gerontology, industrial and labor relations, international studies, Latin American studies, natural resources and environmental sciences, and women’s studies. Open to students in all colleges, these secondary majors are designed to be taken concurrently with a primary major. Most programs of study will allow students to take both a primary and a secondary major within the normal four-year program, especially because courses applied toward the secondary major may also satisfy requirements for general education or restricted electives.

Program requirements follow a common pattern. Each includes two or more of the following features: an interdisciplinary introductory course (which might also satisfy distribution requirements); a list of electives from which students choose about 18 hours; and an interdisciplinary senior seminar featuring supervised independent study.

Each program has a supervisory committee and a director to whom students may refer for advising.

### American Ethnic Studies

Juanita McGowan, Ph.D., Director  
E-mail: blessing@ksu.edu  
www.ksu.edu/AMETH/  
Professors Finnegam,* McElroy,*  
H. Ottenheimer,* Prins,* Rappport,* and  
Suleiman;* Associate Professors Armagost,*  
D. Benson,* J. Benson,* Cochran,* Exdell,*  
L. Kremer,* Navarrete, A. Pigno, Rodgers,*  
Royce, Sherow,* Verschelden, and Wigfall;*  
Assistant Professors Davy, J. Deans, Griffin,  
Goins, Janette, McGowan, Smith, Watson,  
and Webb;* Emeritus Boyer, Fedder, and  
R. Taylor.

The American ethnic studies program primarily focuses on African Americans, Asian Americans, Hispanic Americans, and Native Americans, but includes the study of other ethnic groups in the United States as well. The courses in the program meet the educational and career needs of students by preparing them to function intellectually in a multietnic, multicultural nation and world.

Students are encouraged to enroll in American ethnic studies courses whether or not they select the option of a secondary major in American ethnic studies.

### Secondary major

Students completing 24 semester hours of course work in a minimum of two departments may earn a secondary major in American ethnic studies. The director assists and advises secondary majors in planning appropriate schedules.

#### Course requirements

**Foundation courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMETH 160</td>
<td>Introduction to American Ethnic Studies</td>
<td>3</td>
</tr>
<tr>
<td>ANTH 200</td>
<td>Introduction to Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>or ANTH 210</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Area courses**

Fifteen hours of area courses are required. The distribution of area courses must include at least two American ethnic groups and at least one general/comparative course. No course can be used to fulfill more than one major requirement.

- A. African American, Asian American, Hispanic/Latino American, and Native American ethnic groups of the United States
- B. Background/ancestral cultures of category A
- C. Any United States ethnic group or the ancestral culture of a United States ethnic group

**Capstone course**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMETH 499</td>
<td>Senior Research Project in American Ethnic Studies</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total credits**

<table>
<thead>
<tr>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>24</td>
</tr>
</tbody>
</table>

### Minor

Students completing 15 semester hours of course work in a minimum of two departments may earn a minor in American ethnic studies. Students pursuing a minor are advised in the American ethnic studies office.

#### Course requirements for the minor

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMETH 160</td>
<td>Introduction to American Ethnic Studies</td>
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</tr>
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</tr>
<tr>
<td>or ANTH 210</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total credits**

<table>
<thead>
<tr>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
</tr>
</tbody>
</table>

### Interdisciplinary courses

- **AMETH 160. Introduction to American Ethnic Studies.** (3) I, II. This course introduces students to the major concepts related to ethnicity and to some of the major American ethnic groups.

- **AMETH 460. Independent Reading and Research in American Ethnic Studies.** (1–3) I, II. S. Guided reading and research on a specific topic of student interest, leading to preparation of a research paper or creative work. Topic and credit to be arranged. Pr.: AMETH 160; at least one other American ethnic studies course and permission of instructor.

- **AMETH 499. Senior Research Project in American Ethnic Studies.** (3) I, II. S. Guided research in American ethnic studies. Students prepare a research paper on a relevant subject of their choice. Each student is responsible for arranging to work with a member of the American ethnic studies faculty. Pr.: AMETH 160.

### AMETH 501. Recitation Leadership.** **(0–3) I, II.  
Integrative review of concepts in American ethnic studies under faculty supervision. Preparation for leading discussions, workshops and reviews in American ethnic studies. Students attend two lecture sessions per week concurrent with AMETH 160, one additional seminar session focused on planning and preparation for recitations, and are responsible for leading discussions in one or more recitation sections in AMETH 160 per week. May be repeated for a maximum of 6 hours credit.


### AMETH 660. Independent Reading and Research in American Ethnic Studies.** (1–3) I, II. S. Advanced reading and research on a specific topic of student interest, leading to preparation of a research paper or creative work. Topic and credit to be arranged. Pr.: Senior or graduate standing and permission of instructor.

### Area courses

- **African American, Asian American, Hispanic American, and Native American**
  - **General**
    - EDCEP 886 Multicultural Counseling
    - EDCEP 455 Teaching in a Multi-Cultural Society
    - EDCEP 733 Curriculum Materials for Ethnic Diversity
    - EDCEP 730 Education of the Disadvantaged
    - ENGL 280 American Ethnic Literature
    - ENGL 655 Readings in American-Ethnic Minority Literature
    - MC 530 Media, Race, and Social Change
    - POLSC 616 Discrimination and the Law
    - PSYCH 557 Psychology of Ethnic Humor
    - SOCIO 570 Race and Ethnic Relations in the U.S.A.
    - THTRE 672 American Ethnic Theatre
  - **African American**
    - ANTH 517 African American Music and Culture
    - ANTH 536 African American Cultures
    - ENGL 395 Topics: Contemporary Afro-American Fiction
    - ENGL 399 Topics in Contemporary African American Literature
    - FSHS 652 Black Families
    - HIST 529 Civil War and Reconstruction
    - HIST 539 African American History
    - HIST 554 History of the South
    - MUSIC 420 History of Jazz
    - MUSIC 424 Jazz in Kansas City and the Southwest
    - MUSIC 425 Topics in Jazz
    - KIN 703 Minority Groups in Sports
    - POLSC 616 Discrimination and the Law
    - SPCII 450 Female Slave Rhetoric
  - **Asian American**
    - ANTH 524 Topics: New Immigrants
    - SPAN 569 Special Studies: Chicano Language and Literature
  - **Native American**
    - ANTH 533 Indians of Kansas
    - ANTH 630 Indigenous People and Cultures of North America
    - ART 662 Southwestern Indian Arts and Culture
    - HIST 537 History of the Indians of North America
    - LING 594 Comanche Texts
  - **Other**
    - B. Background/ancestral cultures of African American, Asian Americans, Hispanic American, and Native American ethnic groups of the United States.
    - **African**
      - ANTH 550 Cultures of Africa
      - ANTH 517 African American Music and Culture
      - ANTH 536 African American Cultures
      - POLSC 626 African Politics
## Latin American
- ANTH 634 Indigenous Peoples and Cultures of Latin America
- ANTH 673 Mesoamerican Archaeology
- GEOG 620 Geography of Latin America
- HIST 560 Latin American Nations
- HIST 561 Colonial Hispanic America
- HIST 562 Modern Mexico
- POLSC 622 Latin American Politics
- SPAN 563 Introduction to the Literature of Spanish America
- SPAN 566 Hispanic American Civilization
- SPAN 752 Contemporary Spanish American Narrative
- SPAN 772 Hispanic World Today

## Native American
- ANTH 570 North American Indian Archaeology
- ANTH 580 Old World Archaeology
- ANTH 685 Race and Culture
- BIOL 320 Economic Botany
- ENGL 460 American Folklore and Folk Literature
- ENGL 580 Selected World Literature
- GEOG 100 World Regional Geography
- GEOG 640 Geography of Europe
- HIST 582 Modern Eastern Europe
- KIN 535 Comparative Social Systems
- SOCIO 435 Sport in Contemporary Society
- POLSC 602 Class, Power, and Public Policy
- POLSC 629 Development Policy and Administration
- PSYCH 535 Social Psychology
- SOCIO 541 Social Differentiation and Stratification

## Asian
- ANTH/ECON/GEOG/HIST/POLSC/SOCIO 505 and 506 Introduction to the Civilizations of South Asia I and II
- ANTH 545 Cultures of India and Pakistan
- GEOG 680 Geography of Asia
- POLSC 511 Contemporary Chinese Politics
- POLSC 623 South Asian Politics
- POLSC 625 Southeast Asian Politics
- POLSC 652 International Politics of South Asia
- SOCI 742 Society and Change in South Asia

## French
- FREN 510 Modern French Culture
- FREN 514 French Civilization

## German
- GRMN 330 German Civilization

## Jewish
- ENGL 280 American Ethnic Literature: Holocaust Literature
- ENGL 515 Literature and Society: Literature of the Holocaust
- HIST 596 Holocaust: The Destruction of the European Jews

## Middle Eastern
- ARCH 601 Topics: Architecture and Urbanism of the Middle East
- POLSC 624 Middle Eastern Politics
- POLSC 653 International Politics of the Middle East

## Russian
- GEOG 650 Geography of Former Soviet Lands
- HIST/ RUSSN 250 Russian Culture and Civilization
- HIST 564 The Russian Revolution and the Soviet System
- HIST 591 History of Russia to 1801
- POLSC 627 Eastern and Central European Politics
- POLSC 630 Politics of Russia and Former Soviet Lands

## Credit and content

All courses regularly offered for American ethnic studies credit have at least 40 percent or a major focus of content concerned with American ethnic groups, their ancestral cultures, or American ethnicity. Instructors and students of courses not regularly included in the American ethnic studies program may petition for credit on the basis of the same criteria.

Examples of specific courses for which the granting of American ethnic studies credit may vary are the following:
- ANTH 420 Ethnography of Language
- SOCIO 541 Wealth, Power, and Privilege
- SOCIO 741 Social Differentiation and Stratification

In addition, departments offer courses on special topics, seminars, pro seminars, honors seminars, and independent studies that may apply for credit.

Relevant K-State-validated courses of transfer students will be accepted for American ethnic studies credit upon validation by the American Ethnic Studies Governance Board.

## Gerontology

Lyn Norris-Baker, Director Galichia Center on Aging 203 Fairchild Hall 785-532-5945 E-mail: gerontology@ksu.edu www.ksu.edu/gerontology

The rapid growth of an older population in the United States is creating an increasing demand for personnel who possess specialized training in gerontology. In a variety of occupations and professions.

The secondary major in gerontology is a 24-hour program of study. It includes two required courses, Introduction to Gerontology and Seminar in Gerontology, and 18 semester hours from the approved list of gerontology electives offered in participating departments. Elective courses must be taken in a minimum of three separate departments.

Along with the secondary major, students can take an emphasis in long-term care administration. This emphasis requires completing the secondary major in gerontology, ACCTG 231 Accounting for Business Operations1, MANGT 420 Management Concepts, an approved 480 clock-hour internship (6 credit hours, GERON or DHE 615), GERON 610 Seminar in Long-Term Care Administration, and courses that cover each of 10 training code areas as defined by the Kansas Board of Adult Care Administration. The adult care codes are listed in the advising guide available at the Center for Aging. With planning, the emphasis can be completed within 27 credit hours and a 6-credit-hour internship. Courses listed below will carry credit in the gerontology studies program and new courses will be added to the program as the curriculum is updated.

### Interdisciplinary courses
- GERON 600. Seminar in Gerontology. (3) II. An inter-disciplinary course organized topically, with students presenting papers on aging-related issues that draw upon the students’ previous and concurrent academic experience.

### Departmental course electives

See the appropriate college sections of this catalog for further description.
Industrial and Labor Relations

Stan Elsea, Management
107 Calvin Hall
785-532-4353

Clive Fullagar, Psychology
469 Bluemont Hall
785-532-6850

www.cba.ksu.edu/cba/underg/indlabor.htm

The secondary major in industrial and labor relations is a 25-hour interdisciplinary program of study, offered jointly by the Department of Management in the College of Business Administration and the Departments of Economics; Psychology; and Sociology, Anthropology, and Social Work in the College of Arts and Sciences. Eighteen of the hours must be taken outside the student’s primary major area.

MANGT/ECON/PSYCH 330 and four additional courses are required as shown in Group I below. In addition, two elective courses must be chosen from each of Groups II and III below.

I. Required courses (16 hours)

MANGT/ECON/
PSYCH 330 Introductory Seminar ............................. 1

MANGT 523 Human Resource Economics .................. 3

MANGT 530 Industrial and Labor Relations .................. 3

MANGT 630 Labor Relations Law .............................. 3

PSYCH 560 Industrial Psychology ............................. 3

II. Restricted electives

Select two courses.

ECON 540 Managerial Economics ............................ 3

MANGT 535 Personnel Law ....................................... 3

MANGT 639 Advanced Labor Relations ...................... 3

PSYCH 559 Psychological Testing ............................ 3

PSYCH 563 Gender Issues in the Workplace ................. 3

III. Group electives

Select two courses total from two different groups.

Group A

MANGT 531 Personnel and Human Resources Management ............ 1

MANGT 639 Advanced Labor Relations ...................... 3

Group B

ECON 620 Labor Economics ..................................... 3

ECON 627 Contemporary Labor Problems ..................... 3

ECON 630 Introduction to Econometrics .................... 3

Group C

PSYCH 559 Psychological Testing ............................ 3

PSYCH 563 Gender Issues in the Workplace ................. 3

Group D

POLSC 616 Discrimination and the Law ....................... 3

SOCI 450 Introduction to Social Interaction ................ 3

SOCI 547 Sociology of Work .................................. 3

SOCIO 570 Race and Ethnic Relations in the USA ........... 3

◆ University general education credit.

International Studies

Bradley A. Shaw, Director
215 Eisenhower Hall
785-532-1988
Fax: 785-532-7004
E-mail: ias@ksu.edu
www.ksu.edu/ias

The international studies program promotes understanding of the international community. The program encourages a substantial distribution of foreign and international course work under the direct, personal guidance of an interdisciplinary faculty committee. Students must enroll in another major before taking international studies as a secondary major.

Students who complete the secondary major in international studies are expected to include the following within their areas of knowledge or competency: speaking capability in a foreign language; basic geographic knowledge of the world; ability to understand and analyze cultures other than their own; some understanding of developmental processes; some understanding of international relations and processes of interaction; and some integration of their program of study into a meaningful and coherent whole.

Requirements

Students must complete the equivalent of four semesters of a modern foreign language. They must also complete 24 hours of course work, distributed as follows:

Geographic knowledge

◆ GEOG 100 World Regional Geography

Cultural understanding

ANTH 200, 201, or 204 Introduction to Cultural Anthropology

International relations

At least one course marked I in the approved course list.

Program integration

DAS 425 Senior Research in International Studies or approved alternative.

During the senior year, the student will write a research paper or complete a project on an international topic. The research may be an honors thesis or design project in one of the participating colleges, or it may involve independent study. Students may enroll in DAS 425 or in an approved alternative course. In all cases, the student must have the permission of a faculty member to supervise and evaluate the work. All students enrolled in Senior Research in International Studies must have their topics approved by the director of the secondary major in international studies.

Electives

The remaining 12 hours may be taken from the approved course listing. No more than 6 hours of the 24 may be applied from a single discipline, and no more than 6 hours may be counted toward both a secondary major in an area studies program and in international

Secondary Majors

Philosophy

◆ PHIL 100 Introduction to Philosophical Problems ............ 3

◆ PHIL 365 Medical Ethics .................................... 3

Psychology

PSYC 518 Introduction to Health Psychology .................. 3

PSYCH 520 Life-Span Personality Development ................ 3

Social work

SOCW 564 Social Work Professional Seminar ................ 3

Sociology

SOCIO 535 Population Dynamics .................................. 3

SOCIO 744 Social Gerontology: An Introduction to the
Sociology of Aging ........................................... 3

Speech

THTR 525 Multicultural Storytelling ........................... 3

THTR 567 Storytelling ......................................... 3

THTR 665 Drama Therapy for Special Populations ............. 3

THTR 760 Principles of Drama Therapy ........................ 4

College of Business Administration

Accounting

◆ ACCT 231 Accounting for Business Operations ............. 3

Finance

FINA 450 Essentials of Finance .................................. 3

Management

MANGT 420 Management Concepts ................................ 3

MANGT 520 Organizational Behavior ............................ 3

MANGT 530 Industrial and Labor Relations ..................... 3

MANGT 531 Personnel and Human Resources Management .................. 3

Marketing

◆ MKTG 400 Marketing ........................................... 3

College of Human Ecology

DHE 615 Long-Term Care Administration Internship ...... 3

Clothing, textiles, and interior design

IDH 651 Designing Supportive Environments .................. 3

IDH 710 Housing/Facility Management ........................ 3

IDH 725 Community Housing Needs ................................ 3

Foods and nutrition

◆ FN 132 Basic Nutrition ....................................... 3

FN 152 Personal Health ........................................... 3

FN 400 Human Nutrition ........................................ 3

FN 520 Women’s Health and Aging ............................ 3

FN 610 Life Span Nutrition ....................................... 3

FN 650 Practicum in Nutrition .................................... 3

FN 718 Physical Health and Aging ................................ 3

Family studies and human services

FSHS 300 Problems in FSHS ...................................... 3

FSHS 510 Human Development and Aging ..................... 3

FSHS 525 Estate Planning for Families ........................ 3

FSHS 654 Death and the Family ................................ 2–3

FSHS 704 Seminar in Family Studies and Human Services .................. 3

FSHS 708 Topics in Family Studies and Human Services ........ 2–3

FSHS 770 Economics of Aging ................................... 3

FSHS 845 Adult Development and Aging ....................... 3

Hotel, restaurant, institution, management and dietetics

HRM 475 Field Experience in Hospitality Management .......... 4

1 Required for long-term care administration emphases, but no credit as gerontology elective in secondary major.

2 Required for long-term care administration emphasis.

3 Center on Aging approval required for gerontology credit.

4 Project approval from Center on Aging required.

5 Credit as long-term care administration elective only.

6 University general education credit.
students. Students are encouraged to take courses in more than one college, and are required to consult with the international studies director on the design and coherence of their international studies program.

Courses listed below are representative of those for which students may receive credit in international studies. Alternative courses may be approved by petition to the program director. New program options are being planned. Note that often appropriate courses are offered under categories such as “topics,” “special studies,” “problems,” or “seminar.” For the current list of approved courses and new program developments, call or write the director, or view the list at the international and area studies website.

**Interdisciplinary course**

DAS 425. Senior Research in International Studies. (3) I, II. A research paper or project on an international topic. Pr.: Completion of 15 hours of course work in international studies secondary major.

**Departmental electives**

**College of Agriculture**

GENAG 505. Comparative Agriculture. 1–4
AGEC 415. Global Agricultural Economy, Hunger, and Poverty. 3
AGEC 623. International Agricultural Trade I. 3
FOR 643. Agroforestry. 2

**College of Architecture, Planning, and Design**

ARCH 655. Foreign Seminar. var.

**College of Arts and Sciences**

Anthropology

ANTH 220. Introduction to Linguistic Anthropology. 3
ANTH 505. Introduction to the Civilization of South Asia I. 3
ANTH 506. Introduction to the Civilization of South Asia II. 3
ANTH 508. Male and Female. 3
ANTH 510. Kinship and Marriage. 3
ANTH 511. Cultural Ecology and Economy. 3
ANTH 512. Political Anthropology. 3
ANTH 536. African American Cultures. 3
ANTH 554. Cultures of India and Pakistan. 3
ANTH 550. Cultures of Africa. 3
ANTH 604. Culture and Personality. 3
ANTH 618. Religion in Culture. 3
ANTH 633. Gender, Power, and International Development. 3
ANTH 634. Indigenous Peoples and Cultures of Latin America. 3
ANTH 673. Mesoamerican Archaeology. 3
ANTH 685. Race and Culture. 3

Art

ART 628. Foreign Studies in Art History. 1–6
ART 630. Foreign Studies in Studio Art. 1–6

Economics

ECON 505. Introduction to the Civilization of South Asia I. 3
ECON 506. Introduction to the Civilization of South Asia II. 3
ECON 507. The Japanese Economy. 3
ECON 536. Capitalism and Socialism. 3
ECON 681. International Trade. 3
ECON 682. Economics of Underdeveloped Countries. 3

Geography

GEOG 200. Human Geography. 3
GEOG 300. Geography of Tourism. 3
GEOG 440. Geography of Natural Resources. 3

GEOG 450. Geography of Economic Behavior. 3
GEOG 505. Introduction to the Civilization of South Asia I. 3
GEOG 506. Introduction to the Civilization of South Asia II. 3
GEOG 620. Geography of Latin America. 3
GEOG 640. Geography of Europe. 3
GEOG 650. Geography of Former Soviet Lands. 3
GEOG 715. World Population Patterns. 3
GEOG 720. Geography of Land Use. 3
GEOG 730. World Agricultural Systems. 3
GEOG 760. Human Impact on the Environment. 3

History

HIST 303. Latin American History, and Civilization. 3
HIST 505. Introduction to the Civilization of South Asia I. 3
HIST 506. Introduction to the Civilization of South Asia II. 3
HIST 507. China Since 1644. 3
HIST 508. Introduction to the Modern East Asia. 3
HIST 509. Japan Since 1590. 3
HIST 543. The U.S. and World Affairs, 1776–Present. 3
HIST 544. History of U.S.–Soviet Relations Since 1917. 3
HIST 560. Latin American Nations. 3
HIST 562. Modern Mexico. 3
HIST 573. Twentieth-Century Europe. 3
HIST 574. Europe since World War II. 3
HIST 577. European Diplomatic History Since Napoleon. 3
HIST 582. Eastern Europe since 1914. 3
HIST 591. The Russian Empire. 3
HIST 592. Twentieth-Century Russia. 3

Mass communications

MC 725. International Communications. 3

Modern languages

FREN 502. French Literature in Translation. 3
GRMN 502. German Literature in Translation. 3
RUSIN 504. Russian Literature in Translation: The 19th Century. 3
SPAN 505. Spanish Literature in Translation. 3
MLANG 507. European Literature in Translation. 3
RUSIN 508. Russian Literature in Translation: The Soviet Period. 3

Political science

POLSC 333. World Politics. 3
POLSC 505. Introduction to the Civilization of South Asia I. 3
POLSC 506. Introduction to the Civilization of South Asia II. 3
POLSC 541. International Relations. 3
POLSC 543. American Foreign Policy. 3
POLSC 545. The Politics of Developing Nations. 3
POLSC 621. West European Politics. 3
POLSC 622. Latin American Politics. 3
POLSC 623. South Asian Politics. 3
POLSC 624. Middle Eastern Politics. 3
POLSC 625. Southeast Asian Politics. 3
POLSC 626. African Politics. 3
POLSC 627. Eastern and Central European Politics. 3
POLSC 628. Comparative Security Establishments. 3
POLSC 629. Administration in Developing Nations. 3
POLSC 630. Politics of Russia and the Former Soviet Union. 3
POLSC 631. Comparative Civil-Military Relations. 3
POLSC 642. International Conflict. 3
POLSC 645. International Politics of Europe. 3
POLSC 647. International Law. 3

POLSC 649. International Defense Strategies. 3
POLSC 651. International Organization. 3
POLSC 652. International Politics of South Asia I. 3
POLSC 653. International Politics of South Asia II. 3
POLSC 654. International Politics of Africa. 3
POLSC 754. Professional Diplomat and Foreign Policy Formation. 3
POLSC 756. International Political Economy. 3

Sociology

SOCIO 505. Introduction to the Civilization of South Asia I. 3
SOCIO 506. Introduction to the Civilization of South Asia II. 3
SOCIO 507. Political Sociology of Latin America. 3
SOCIO 535. Population Dynamics. 3
SOCIO 618. Religion in Culture. 3
SOCIO 633. Gender, Power, and International Development. 3
SOCIO 635. The Socioeconomic and Environmental Impacts of NAFTA. 3
SOCIO 738. Inter-American Migration. 1
SOCIO 742. Society and Change in South Asia. 3

Women’s studies

WOMST 380. Women and Global Change. 3

**College of Business Administration**

FINAN 554. International Financial Management. 3
MANGT 690. International Management. 3
MKTG 544. International Marketing. 3

**College of Human Ecology**

FN 702. Nutrition in Developing Countries. 3

**Latin American Studies**

Bradley A. Shaw, Director
215 Eisenhower Hall
785-532-1988
Fax: 785-532-7004
E-mail: ias@ksu.edu
www.ksu.edu/ias

The secondary major in Latin American studies provides opportunities for students to examine issues related to Latin America from a variety of perspectives. This interdisciplinary approach is designed to help students understand the systematic nature of political, socioeconomic, technological, and environmental problems in Latin America and the value systems of the people involved.

The program allows students to work with specialists in the humanities and social sciences, and to benefit from the expertise and experience of scientists and engineers who are engaged in research or development projects related to Latin America. Students who complete the secondary major will be qualified to pursue graduate work in Latin American studies. The curriculum will enhance student qualifications for employment in research, economic development, social action, trade, and diplomacy related to Latin America.

A student from any college may choose the secondary major in Latin American studies to complement course work in his or her major.
Natural Resources and Environmental Sciences

John Harrington, Jr., Director
201 Dickens Hall
785-532-6727
www.ksu.edu/nres

The natural resources and environmental sciences secondary major prepares students to apply broadly-based scientific knowledge to the use, management, sustainability, and quality of soil, air, water, mineral, biological, and energy resources. The NRES program offers a timely and relevant academic emphasis to broaden the environmental perspective students receive in their primary major.

Government, corporate, and public concerns about natural resource and environmental issues abound. These concerns translate into career opportunities for individuals with interdisciplinary training on how humanity affects global functions.

Because natural resource and environmental issues tend to be so extensive and complex, they exceed the scope of any single discipline. Students in the NRES secondary major study environmental issues from a wide base of academic viewpoints. Involvement with students and professors from other disciplines adds skills typically required in environmental careers. Enroll by appointment with the director or by electronic form on the webpage

Requirements

I. Entry requirements

Students must successfully complete the following courses to become eligible to pursue the NRES secondary major. One course in the entry or block elective requirements must qualify as a life science course.

a. Four basic science courses (or their more advanced equivalent), and

MATH 100 College Algebra

B. CHM 110 General Chemistry or CHM 210 Chemistry I

PHYS 113 General Physics or PHYS 115 Descriptive Physics, or PHYS 101 and PHYS 103 The Physical World and lab.

ECO 110 Principles of Microeconomics or

ECO 120 Principles of Macroeconomics

b. Two of the following basic NRES courses. These courses must be from different departments and total a minimum of 6 credits.

AGRO 305 Soils

AGRO 335 Environmental Quality

BIOL 198 Principles of Biology

BIOL 210 General Botany

CE/BAE 551 Hydrology

FOR 285 Introduction to Forestry

FOR 375 Introduction Natural Resource Management

GEOG 220 Environmental Geography I

GEOG 440 Geography Natural Resources

GEOG 100 Earth in Action

GEOL 105 Oceanography

GEOL 115 Environmental Geology

GEOL 125 Natural Disasters

II. Block elective requirements

From the following lists, students must successfully complete a minimum of 5 courses (15 hours minimum) from at least four departments. One course must be taken from each of the designated areas (natural, applied, and social sciences/humanities), two courses must be numbered 500 or greater, and three courses must have a prerequisite. These lists are continuously being revised. See the director for the most recent version.

Natural science courses

AGRO 305 Soils

AGRON 515 Soil Genesis and Classification

BIOL 433 Wildlife Conservation

BIOL 529 Fundamentals of Ecology

BIOL 612 Introduction to Limnology

BIOL 687 Microbial Ecology

GEOG 221 Environmental Geography II

GEOG 535 Fundamentals of Climatology

GEOL 305 Earth Resources

GEOL 399 The Mountain Environment

GEOL 506 Geology and Environment

GEOL 511 Geological Time

GEOL 520 Geomorphology

GEOL 711 Water Resource Geochem.

GEOL 611 Hydrogeology

LAR 322 Environmental Issues and Ethics

Applied science courses

AGRON 330 Weed Management

AGRON 335 Environmental Quality

AGRON 501 Range Management

AGRON 635 Soil Conservation and Management

AGRON 645 Soil Microbiology

AGRON 746 Physical Properties of Soil

ATM 558 Soil Erosion/Sed. Pollution

ATM 653 Irrigation Practices

ATM 661 Water and Waste in the Environment

BAE 521 Energy in Biological Systems

BAE 530 Natural Resources Engineering

BAE 651 Air Pollution Engineering

BAE 690 Non-Point Pollution Engineering

BIOG 705 Irrigation and Drainage

BIOL 303 Ecology of Environmental Problems

BIOL 664 Wildlife Management

BIOL 696 Fisheries Management

CE/BAE 551 Hydrology

CE 552 Hydraulic Engineering

CE 563 Environmental Fundamentals

CE 565 Waste and Wastewater Engineering

CE 766 Wastewater Engineering/Biological Processes

CHE 650 Hazardous Waste Engineering Seminar

CHE 715 Biochemical Engineering

EVET 230 Environmental Chemistry and Toxicology

EVET 270 Hazardous Waste Management

GEOG 705 Remote Sensing of Environment

GEOL 730 Petroleum Geology

GEOL 605 Exploration Geophysics

NRES 575 Management of Water Resources

Social science/humanities courses

AGEC 525 Natural Resources and Environmental Economics

ECON 527 Environmental Economics

ENGL 680 Environment in American Literature

GEOG 440 Geography Natural Resources

GEOG 718 Geography of Public Lands

GEOG 720 Geography of Land Use

GEOG 725 Geography of Water Resources

GEOG 730 World Agricultural Systems

GEOG 761 Geographic Information Systems

GEOG 780 Environmental History

HIST 511 Environmental History

HIST 563 Global Environmental History

LAR 720 Public Lands and Natural Resource Law

LAR 741 Environmental Law

LAR 758 Land Resource Information Systems

LAR 759 Land Resource Evaluation

PHILO 595 Environmental Ethics
Women’s Studies

Jacqueline D. Spears, Director

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The women’s studies program focuses on women, whose changing roles and expectations are the most profound and widespread social phenomenon of our time.

Courses in women’s studies examine various aspects of women’s lives, including not only the barriers and prejudices that still hold women back but also women’s achievements. Some courses focus on the nature of sex differences and gender roles. Others focus on the interrelationships among women, gender roles, and the major institutions which shape our society. Humanities courses explore images and achievements of women in a wide range of creative media. History and anthropology discuss interrelationships of women and men in various cultural contexts across time and around the world.

Women’s studies is direct preparation for many careers that serve, counsel, or communicate about women. A secondary major in women’s studies combines especially well with such majors as journalism, any form of liberal professional field.

Course requirements

To complete the secondary major, a student must take two required courses (WOMST 105 Introduction to Women’s Studies and WOMST 405 Senior Seminar in Women’s Studies), and 18 semester hours in elective courses from the Colleges of Arts and Sciences, Education, or Human Ecology, for a total of 24 semester hours. Courses in the women’s studies program also may serve to meet general education and major requirements, and interdisciplinary courses may be counted as either humanities or social sciences.

Minor

The minor in women’s studies consists of 15 credits: WOMST 105 Introduction to Women’s Studies; WOMST 405 Senior Seminar (or a WOMST course at or above the 500 level approved by director); and three WOMST approved electives from two different disciplines.

Graduate certificate

Open to students in M.A., M.S., Ph.D., and professional programs at our university, the certificate consists of 12 hours of graduate level courses in women’s studies and/or gender. Interested students should contact the director, 3 Leasure Hall, for more information.

Interdisciplinary courses

WOMST 105. Introduction to Women’s Studies. (3) I, II. A systematic introduction to women’s studies as an academic discipline, drawing research from humanities, social science, education, human ecology, and management to analyze images of women, status of women, sex differences, gender roles and stereotypes, patterns of success, women and relationships, current controversial issues affecting women, and feminism as a social and historical movement. An academic perspective on issues of equality and justice for women, emphasizing scholarship on how women perceive their own lives.

WOMST 380. Women and Global Social Change. (3) I, alternate falls. This course explores contemporary approaches that help meet the needs of women and their families in different parts of the world, including the Plains region. Students will learn how approaches to social change in the Third World influence women in North America, and how First World women relate to women’s movements and organizations in the Third World. Pr.: ENGL 100 or 110.

WOMST 395. Studies in Gender and Society. (3) on sufficient demand. Interdisciplinary examination of the way that gender structures society. Focus might be on girlhood, women and social change, women in revolution, etc. Can be repeated once with change of content. Pr.: ENGL 100 or 110.

WOMST 405. Senior Seminar in Women’s Studies. (3) I. An intercollegiate, interdisciplinary course organized topically with students presenting papers which draw upon previous and concurrent academic experience and which approach a given topic with a consistent focus on the role of women. Provides supervised independent study and subsequent discussion, allowing students to integrate and order their perceptions about the unique roles, problems, and contributions of women. Pr.: Introduction to Women’s Studies and at least 6 hours of women’s studies courses.

WOMST 450. The Stories of a Young Girl. (3) I. An interdisciplinary examination of female adolescence, focusing in particular on the way it is depicted in literature. Pr.: ENGL 100 or 110.

WOMST 500. Topics in Women’s Studies. (1–3) I, II. A rubric under which a variety of courses are offered, including Women and Science; Women and Religion; Women and Law; Women and Leadership.

WOMST 505. Independent Study in Women’s Studies. (1–3) I, II. Independent, interdisciplinary, supervised studies in an area of women’s studies which does not fall within the boundaries of a traditional department. May be repeated once for credit with change of topic. Pr.: Junior standing, consent of instructor(s), and approval of women’s studies director.

WOMST 506. Approaches to Women’s Studies. (3) I. Interdisciplinary examination of the interlocking dynamics of race, class, sexuality, and gender. Focus will be on contemporary womanist and feminist theoretical and methodological approaches to addressing how race, class, sexuality, and gender inform women’s experiences. Experiential exercises and activism projects will be a key component of the course. For students with a strong interest and/or background in women’s studies, especially secondary majors, minors, and graduate students.

WOMST 510. The History and Politics of Family Violence. (3) Intersession. Explores the history of family or domestic violence in America as a social, cultural, legal, and public policy issue from the colonial period to the present. Stress is placed upon the cultural roots and evolution of domestic law. The development of state-controlled social welfare agencies as well as the emergence of the “battered women’s movement” is particularly emphasized.

WOMST 605. Gender: An Interdisciplinary Overview. (3) II. Advanced interdisciplinary overview of theory and scholarship on women and gender from disciplines in social sciences, humanities, and professions focusing on human beings. For advanced women’s studies students and graduate students.

WOMST 700. Advanced Topics in Women’s Studies. (1–3) In-depth theoretical and empirical analysis of the scholarly works relating to an interdisciplinary topic in women’s studies. For students who have a basic knowledge of women’s studies and/or the topic area.

College of Arts and Sciences

Anthropology

ANTH/ SOCIO 508 Male and Female: Cross-Cultural Perspectives

ANTH 633 Gender, Power, and International Development

Art

ART 654 Women in Art

English

ENGL 395 A rubric under which a variety of courses are offered, including American Women Writers

ENGL 525 Women in Literature

ENGL 660 Shakespeare, Gender, and Performance

ENGL 670 Topic: Women in the 18th Century

ENGL 680 Topic: Asian American Literature

ENGL 695 A rubric under which a variety of courses are offered, including Women and Popular Culture

ENGL 720 Shakespeare Comedy and Gender

ENGL 730 Restoration and 18th-Century Drama

ENGL 740 Feminist Literary Theory

ENGL 850 Gender and Power in Shakespeare and the Renaissance

History

HIST 512 Women in European History

HIST 540 Women in America, 1600 to the Civil War

HIST 542 Women in America, Civil War to the Present

HIST 551 History and Politics of Family Violence

HIST 980 Topic: Gender in American History

HIST 984 Topic: Gender in American History

Kinesiology

KIN 598 Women and Sports

KIN 796 Gender Issues and Sports and Exercise

Mass communication

MC 612 Women and the Media

Modern languages

FREN 503 French Literature in Translation (when offered as Women in African Literature)

Music

MUSIC 220 Women in Music

MUSIC 390 Women by Women Composers
Secondary Majors

Philosophy
PHILO 135 Introduction to Social and Political Philosophy
PHILO 525 Social Political Thought (when offered as Women in Western Thought)
PHILO 560 Philosophy of Feminism

Political science
POLSC 606 Gender and Politics
POLSC 799 Seminar in Political Science (when offered as Women and Law)

Psychology
PSYCH 540 Psychology of Women
PSYCH 543 Women and Mental Health Issues
PSYCH 563 Gender Issues in the Workplace

Social work
SOCWK 543 Women and Mental Health Issues
SOCWK 580 Women’s Perspectives on Peace and War
SOCWK 610 Topics in Social Work (when offered as Violence Against Women or Women and Peace)

Sociology
SOCIO 545 The Sociology of Women
SOCIO 633 Gender, Power, and International Development
SOCIO 665 Women and Crime
SOCIO 670 Diversity and Social Interaction in the Workplace

Speech and theatre
SPCH 505 Rhetoric of Female Slave Narratives
SPCH 630 Topics in Rhetoric and Communication (when offered as Feminism and Rhetoric) or Women and Political Campaign Communication
THTRE 782 Women in Theatre

College of Education
Educational administration
EDADM 786 Topics in Education (when offered as Programming for Women’s Concerns)

Foundations and adult education
EDACE 750 Women, Education, and Work

Curriculum, instruction, and policy studies
EDCIP 735 Curriculum Materials for Nonsexist Teaching

College of Human Ecology
Foods and nutrition
FN 520 Women’s Health and Aging

Human development and family studies
FSHS 300 Problems in Family Studies and Human Services (when offered as The Mature Woman: Middle Age and Later Years)
FSHS 350 Family Relationships and Gender Roles
FSHS 600 Economic Status of Women
FSHS 708 Topics in Family Studies and Human Services (when offered as The Legal Rights of Women)
FSHS 865 Human Sexuality

Also offered every year are intersession courses and special topics courses in a variety of disciplines such as women and science fiction; gender and ethnicity in Jewish American novels; women in Central America.
Agriculture

Marc A. Johnson, Dean and Director of the Kansas Agricultural Experiment Station and the Kansas Cooperative Extension Service
114 Waters Hall
785-532-7137

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The College of Agriculture offers 15 bachelor of science degree programs, 10 master of science programs, nine programs leading to the Ph.D., and a pre-veterinary medicine program. The programs and options provide flexibility to meet the needs of students who will enter varied careers in the food chain and related agribusinesses.

The profession

Professional agriculture is the application of the physical, biological, and social sciences and the principles of management to food production, preservation and processing, crop and livestock marketing, culture of flowers and ornamentals, life processes of plants and animals, natural resources management, economic development, and related fields.

Faculty

More than 95 percent of the instructional faculty of the College of Agriculture have Ph.D. degrees. All are actively involved in research and publish their findings regularly in scientific journals. They work closely with extension specialists. This integration of teaching, research, and extension helps ensure that courses are current and relevant.

Facilities

Effective instruction in the application of basic sciences to modern agricultural industries requires land, buildings, livestock, and equipment. More than 4,000 acres of land are used for experimental work and for instruction.

A feed mill, flour mill, and bakery include modern equipment from eight countries. Well-equipped drafting rooms are used by milling students. Greenhouses and field plots provide plants for horticulture courses.

Modern animal industry and dairy and poultry buildings contain some of the latest equipment for teaching and research in nutrition, genetics, and food processing (meat, milk, eggs). Livestock of many breeds, plus various soil types, field crops, fruits, vegetables, and ornamentals, are used in teaching and research.

Professional programs

Agribusiness—B.S., M.A.B.
Agricultural economics—B.S., M.S., Ph.D.
Agricultural education—B.S.
Agricultural communications and journalism—B.S.
Agricultural technology management—B.S.
Agronomy (crops and soils)—B.S., M.S., Ph.D.
Animal sciences and industry—B.S., M.S., Ph.D.
Bakery science and management—B.S.
Entomology—M.S., Ph.D.
Feed science and management—B.S.
Food science—M.S., Ph.D.
Food science and industry—B.S.
Genetics—M.S., Ph.D.
Grain science—M.S., Ph.D.
Horticultural therapy—B.S.
Horticulture—B.S., M.S., Ph.D.
Milling science and management—B.S.
Park management and conservation—B.S.
Plant pathology—M.S., Ph.D.
Pre-veterinary medicine—three years
Recreation and park administration—B.S.

Internships and cooperative education

Internships and co-op programs throughout the state and nation are available with agribusiness firms and agencies and in production agriculture to gain on-the-job experience. Specific internship and co-op requirements vary among departments and interdepartmental programs. Students may earn academic credit and money for approved internships and co-op experiences. The number of internships and co-op programs in the College of Agriculture is growing as companies seek to attract K-State graduates.

Extracurricular activities

Leadership, communication, and interpersonal skills are essential for today’s agriculture graduate. K-State offers many opportunities to become involved on campus through departmental clubs, service organizations, student government, agricultural competition teams, and much more. Each contributes to greater personal and professional development.

Scholarships

All students applying for College of Agriculture scholarships must complete the K-State scholarship application. File it electronically at www.ksu.edu/sfa or obtain an application from your high school counselor, community college financial aid office or the College of Agriculture, Office of Academic Programs, 117 Waters Hall.

By completing the university’s scholarship application, you become eligible for all university, college, and departmental scholarships for which you are qualified. Scholarship applications should be submitted by November 1 to receive priority consideration by the university and by February 1 to be considered by the College of Agriculture.

General Requirements

Selection of a major

Students usually select a curriculum or major when they enter the college. They are provided academic advisors in their major fields. Students enroll in general agriculture if they want to enter some part of professional agriculture but are not yet ready to identify a particular major. They are assigned an academic advisor in the academic programs office or an advisor in one of the academic departments. These students are urged to choose majors before the end of the freshman year.

The curriculum or major may be changed at almost any time and with relative ease, though a change after the sophomore year may delay graduation.

Electives permit adaptation of the program to the student’s goals. The student should work with an advisor to develop the most beneficial and effective academic program.

Many students work part time at K-State laboratories, greenhouses, and farms. This experience adds greatly to students’ learning and understanding.

Selection of an option

Most major fields of study in agriculture provide for selection of groups of courses known as options. Some typical options include:

Business and industries

Students who wish to emphasize business, marketing, and management related to agribusiness firms may select an option in business and industries. Course work includes classes in business administration and economics.

Production/technical

Those who plan to enter farming, ranching, horticultural production, or other technical positions in agriculture or agribusiness may select a production/technical option. Study in one of these options allows students to gain more depth in the technical aspects of their majors.
Suggested courses

Suggested humanities and social science electives
(Maximum of 3 credit hours may be taken from participatory courses)
(must be taken from more than one department):
American ethnic studies—any course
Architecture, planning, and design—any course in history or appreciation of architecture or environmental design
Anthropology—any course
Art—courses in appreciation and theory Dance—any course
Economics—above ECON 110 Principles of Macroeconomics
English—any except courses in composition
Geography—any except GEOG 220 Environmental Geography
Geography I and GEOG 221 Environmental Geography II History—any course
Family studies and human services—any course
Modern languages—any course
Music—any course in theory or appreciation of music
Philosophy—any course
Political science—any course
Psychology—any course
Sociology, anthropology, and social work—any course
Theatre—any course
Women’s studies—any course

Suggested additional communications courses
AGCOM 400  Agricultural Business Communications ........................................ 3
AGCOM 410 Agricultural Student Magazine ......................................................... 3
ENGL 300 Expository Writing III ........................................................................ 3
ENGL 516 Written Communications for the Sciences ............................................. 3
SPCH 311 Business and Professional Speaking .................................................. 3
SPCH 321 Public Speaking II ............................................................................. 3
SPCH 325 Argumentation and Debate ................................................................ 3
SPCH 326 Small Group Discussion Methods ..................................................... 3
SPCH 726 Seminar in Persuasion ......................................................................... 3
MC 400 News and Feature Writing .................................................................. 3
MKTG 442 Personal Selling .................................................................................. 3
EDSEC 706 Teaching Adults in Extension ......................................................... 3

Program Choices

General agriculture
Students who are undecided regarding the selection of a major in agriculture may want to enroll in general agriculture. Courses taken in this area are selected with the help of an advisor to meet basic requirements and expose students to potential areas of study in agriculture through introductory course work in one or more departments. Examples of course selections for first semester follow:

Example I
ENGL 100 Expository Writing I ................................................................. 3
GENAG 101 Ag Orientation ......................................................................... 1
ASI 102 Principles of Animal Science ...................................................... 3
ASI An ASH Lab ..................................................................................... 1
MATH 100 College Algebra ........................................................................ 3
HORT 256 Human Dimensions of Horticulture .................................. 3
AGCOM 110 Introduction to Ag Communications .................................. 1

Example II
AGEC 120 Agricultural Economics and Agribusiness ........................................ 3
GENAG 101 Ag Orientation ......................................................................... 1
CHM 110 General Chemistry .................................................................... 3
and
CHM 111 General Chemistry Lab ............................................................. 1
or
CHM 210 Chemistry I ............................................................................... 4
ENGL 100 Expository Writing I ................................................................. 3
GRSC 100 Principles of Milling ................................................................ 3

Example III
GENAG 101 Ag Orientation ......................................................................... 1
ECON 110 Principles of Macroeconomics ............................................... 3
EDSEC 300 Introduction to Agricultural Education .............................. 3
AGRON 220 Crop Science ........................................................................ 4
PSYCH 110 General Psychology ................................................................. 3
AS 302 Introduction to Food Science ......................................................... 3

Various foundation and agriculture courses can be substituted in the examples above, depending on the student’s interest.

Natural resource management
Students interested in natural resource management can pursue programs in park management and conservation; recreation and park administration; range management; and soil and water science.

Majors in park management and conservation and recreation and park administration can be earned in the Department of Horticulture, Forestry, and Recreation Resources.

Range management and soil and water science options are available through the Department of Agronomy.

These programs provide training for individuals interested in interpretation and application of ecological principles to environmental problems involving natural resources. Each program contains courses in the social sciences and humanities to help students become sensitive to the interactions between humans and their environmental surroundings.

Courses in the physical and biological sciences help students understand and solve environmental problems, and courses in communications assist them in interpreting, conveying, and employing solutions.

Pre-veterinary medicine program
Students who satisfactorily complete the pre-veterinary medicine program and the first two years of the curriculum in veterinary medicine will be eligible for a bachelor of science degree in the College of Agriculture. Pre-veterinary medicine requirements may also be completed in the College of Arts and Sciences.

GENAG 101 Ag Orientation ......................................................................... 1
ENGL 100 Expository Writing I ................................................................. 3
ENGL 200 Expository Writing II ................................................................. 3
SPCH 105 Public Speaking I ............................................................... 2
CHM 210 Chemistry I ............................................................................... 4
CHM 230 Chemistry II ............................................................................. 4
CHM 350 General Organic Chemistry .................................................... 3

University General Education

The College of Agriculture university general education program assures that all undergraduate programs provide breadth through the completion of at least 18 semester hours of approved courses/experiences, of which one-third of those credits will be at the 300 level or higher.

To ensure breadth, university general education courses are required in at least four of the following areas (a course may be used in only one category):

• Economics
• Social sciences
• Humanities
• Communications (e.g., writing or verbal intensive courses)
• Quantitative sciences (e.g., statistics, mathematics)
• Biological sciences (e.g., biology, botany)
• Physical sciences (e.g., chemistry, geology, physics)
• Professional college courses: architecture, agriculture, business, education, human ecology, engineering, etc. Acceptable courses will be determined by each department and approved by the dean’s office.

Only one agriculture course can be used to meet general education requirements. The agriculture course must be from outside the student’s departmental major, and it may only be used as a free or restricted elective in the curriculum.

Departments within the college may specify which of the eight areas their students can use to satisfy university general education requirements. The program is designed to take advantage of the strong tradition of excellence in advising to determine the specific university general education courses that the best suited to each individual.

Transfer students will follow the university general education policy in effect for this population. See the Admissions section of this catalog for details.

In course descriptions, university general education courses are marked with a ●. For more information about university general education requirements, see the Degrees section of this catalog. For a current list of approved university general education courses:

www.ksu.edu/registrar/enroll/gened.html
Dual degrees/dual majors

The agribusiness complex of industries (processing, preservation, distribution, and retailing of farm-produced food, and manufacturing and sale of farm equipment, feeds, and agricultural chemicals) employs a variety of professionally trained personnel. The type of education required varies with the nature of the work performed. A dual degree or a dual major may be appropriate, depending on the student’s occupational objectives.

Dual degrees may be earned by a student who desires a B.S. degree in some discipline in agriculture along with a B.S. degree in some other college at K-State. To earn a dual degree, the student must meet the requirements for each degree.

Dual majors are completed by students who wish to complete two different programs of study in agriculture while earning a bachelor of science degree in agriculture. This approach allows the student to select two majors to give greater depth and breadth to the educational program. The student is required to fulfill the requirements for both majors and earn a bachelor of science degree in agriculture.

Secondary majors

Certain departmental courses have been approved for credit toward secondary majors in gerontology, international studies, and natural resources and environmental sciences. A listing of approved courses may be found in the Secondary Majors section of this catalog.

Natural resources/environmental sciences secondary major

See the Secondary Majors section of this catalog.

Minors

To pursue a minor in the College of Agriculture, students must: (1) file a declaration of intent to pursue a minor with the minor-granting department, and (2) consult with an advisor in the minor-granting department prior to enrolling in the last three courses used to satisfy minor requirements.

Minors may be earned in agribusiness, agricultural economics, agricultural technology management, agronomy, animal sciences and industry, entomology, food science, horticulture, bakery science, feed science, cereal chemistry, and plant pathology. See departmental listings for more information.

Agriculture honors program

Students who have attained a cumulative GPA of 3.5 or higher in 12 or more completed hours at Kansas State University will be invited to participate in the College of Agriculture Honors Program, typically at the end of their sophomore year. Community college transfers will be invited into the program following their first semester if they have met the GPA requirement.

The program provides honors students with greater curriculum flexibility, which encourages breadth and depth of study in one or more specific areas. It also exposes honors students to various areas of interest in agriculture. Each student in the program has a committee of three faculty members who assist the student in developing a program of study and in planning independent research activities.

Students seeking to enroll in the program will meet with the honors committee member from the department involved and, with an advisor, develop an honors curriculum tailored to the student’s particular goals. The student, with advice from the advisor, honors committee member, and other faculty member(s), will prepare a short proposal outlining the honors project. This proposal must be approved by the honors advisory committee of the College of Agriculture.

The honors advisory committee will review the proposals for possible scholarship funding priority. These honors project scholarships will be used exclusively for materials and supplies necessary for the completion of the student’s honors project.

Students will enroll in the agriculture honors program (GENAG 000) each semester. Students will also enroll for up to 8 credits in a “special problems” course in the appropriate department to receive credit for the honors project. In the senior year, students will enroll in GENAG 515 Honors Seminar for the presentation of their projects.

Completion of the honors project requires presentation of a summary of the project in an honors seminar and a report written in a style suitable for publication in a refereed journal in an appropriate field.

Agricultural Economics

Daniel Bernardo,* Head
Barry L. Flinchbaugh,* Extension State Leader
Arlo Biere,* Undergraduate Program Coordinator

Agribusiness

Bachelor of science in agribusiness

127 semester hours

Agribusiness is the study of the business and economics of agribusiness firms. Aspects unique to agribusiness are the risks and uncertainties of agricultural production, the heavy reliance on natural resources, the uniqueness of the institutions that govern food and agriculture, the competitive structures within the agribusiness sector, the technology of commercial agriculture and food processing, and the global dimensions of food and agriculture.

The agribusiness curriculum emphasizes agribusiness courses in agricultural economics and foundation courses in business administration.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Suggested schedule for first two years

First semester

ENGL 100 Expository Writing I ...................... 3
MATH 100 College Algebra ......................... 3
AGEC 105 Agricultural Economics and Agribusiness Orientation .......... 1
(open and required for incoming freshmen only)

Agricultural or food science elective* .................. 3-4
SOCIO 211 Introduction to Sociology ............... 3

Second semester

AGEC 120 Agricultural Economics and Agribusiness .................. 3
MATH 205 Calculus and Linear Algebra .............. 3
SPCH 105 Public Speaking IA ...................... 2
PSYCH 110 General Psychology .................... 3
Natural science elective** ........................... 4

* sufficient for publication in a referred journal in an appropriate field.
Agricultural economics

Bachelor of science in agriculture 127 semester hours

Agricultural economics is the study of the economic factors affecting agricultural production, food consumption, commodity marketing, farm management, natural resource use and management, agricultural finance and agricultural trade.

Students must complete university general education requirements as specified by the College of Agriculture. See College of Agriculture General Requirements section.

Farm management option

This option includes coursework in livestock and crop production, in agricultural technology and management, and in agricultural economics applied to the management of the farm, ranch, or commercial feedlot.

The suggested schedule for the first two years is the same as that for the agribusiness degree except that AGRT 102 and a laboratory science course, and AGEC 200 Field and Ranch Management replaces AGEC 318 Food and Agribusiness Management. The additional requirements are below.

Agricultural economics electives (including at least one numbered 600 or above) 15

Agricultural economics electives (open to honor students only) 15

Quantitative option

This option requires additional mathematics, statistics, and computer science to prepare the student for advanced studies in agricultural economics.

Requirements for the first two years are the same as for the agribusiness degree except MATH 220, 221, and 222 are required instead of MATH 205. Additional requirements are below.
Agriculture minor

Prerequisites (in addition to any prerequisites required for specific AGEC courses taken):
MATH 205 Calculus and Linear Algebra
ECON 110 Principles of Microeconomics
AGEC 120 Agricultural Economics and Agribusiness or
ECON 120 Principles of Microeconomics

At least 9 credit hours from list below, (including at least number 598 or above) or
AGEC 308 Farm and Ranch Management
AGEC 318 Food and Agribusiness Management
AGEC 410 Agricultural Policy
AGEC 415 The Global Agricultural Economy, Hunger, and Poverty
AGEC 416 Agricultural Law and Economics
AGEC 420 Commodity Futures
ECON 510 Intermediate Macroeconomics
AGEC 513 Agricultural Finance
AGEC 515 Food and Agribusiness Marketing
ECON 598 Commodity Futures
AGEC 520 Market Fundamentals and Futures/Options Trading
AGEC 525 Natural Resource and Environmental Economics
AGEC 590 Agricultural Economics and Agribusiness Honors Problems
AGEC 598 Farm Management Strategies
AGEC 599 Food and Agribusiness Management Strategies
AGEC 605 Price Analysis and Forecasting
AGEC 610 Current Agricultural and Natural Resource Policy Issues
AGEC 623 International Agricultural Trade
AGEC 632 Agribusiness Logistics
AGEC 680 Risk Management
AGEC 712 Linear Programming Application
ECON 631 Principles of Transportation

Total including first two years

Agricultural economics minor

Prerequisites (in addition to any prerequisites required for specific AGEC courses taken):
MATH 205 Calculus and Linear Algebra
ECON 110 Principles of Microeconomics
AGEC 120 Agricultural Economics and Agribusiness or
ECON 120 Principles of Microeconomics

At least 9 credit hours from list below, (including at least number 598 or higher)
AGEC 308 Farm and Ranch Management
AGEC 318 Food and Agribusiness Management
AGEC 410 Agricultural Policy
AGEC 415 The Global Agricultural Economy, Hunger, and Poverty
AGEC 416 Agricultural Law and Economics
AGEC 420 Commodity Futures
ECON 510 Intermediate Macroeconomics
AGEC 513 Agricultural Finance
AGEC 515 Food and Agribusiness Marketing
ECON 598 Commodity Futures
AGEC 520 Market Fundamentals and Futures/Options Trading
AGEC 525 Natural Resource and Environmental Economics
AGEC 590 Agricultural Economics and Agribusiness Honors Problems
AGEC 598 Farm Management Strategies
AGEC 599 Food and Agribusiness Management Strategies
AGEC 605 Price Analysis and Forecasting
AGEC 610 Current Agricultural and Natural Resource Policy Issues
AGEC 623 International Agricultural Trade
AGEC 632 Agribusiness Logistics
AGEC 680 Risk Management
AGEC 712 Linear Programming Application
ECON 631 Principles of Transportation

Agricultural economics courses

AGEC 105. Agricultural Economics and Agribusiness Orientation
AGEC 305. Introduction to agricultural economics and agribusiness programs, activities, resources, and careers. Required of all freshmen in agricultural economics or agribusiness at K-State.

AGEC 120. Agricultural Economics and Agribusiness
AGEC 120. I, II. A course applied to agricultural economics and agribusiness programs, activities, resources, and careers. Required of all freshmen in agricultural economics or agribusiness at K-State.

AGEC 202. Small Business Operations
AGEC 202. I, II. Opportunity to be involved in the planning and starting of a small enterprise, including identification of the enterprise; the planning, development, and marketing of a small enterprise; the management and financing of a business; and the implementation of a business plan. Pr.: Junior standing.

AGEC 220. Grain and Livestock Marketing Systems
AGEC 220. I, II. Study of the institutional and policy factors that influence the price of agricultural commodities and the role of the commodity exchanges. Pr.: ECON 110 or ECON 120.

AGEC 308. Farm and Ranch Management
AGEC 308. I. Decision-making process; cost concepts, farm records and financial management, budgeting, time value of money, and introduction to whole farm/ranch planning. Two hours rec. and two hours lab. a week. Pr.: AGEC 120 or ECON 120.

AGEC 318. Food and Agribusiness Management
AGEC 318. I. A study of marketing, production, risk, human resource management, and financial management in agriculture and agribusiness firms. Pr.: AGEC 120.

AGEC 410. Agricultural Policy
AGEC 410. I, II. The legal framework for decision-making by farm firms, families, and individuals; liabilities, real and personal property, contracts, uniform commercial code, organization of farm firms, intergovernment property transfers, water law, fence law, federal and state regulatory power, insurance, income tax, and social security. Three hours rec. a week. Pr.: ECON 110 and junior standing.

AGEC 420. Commodity Futures
AGEC 420. I, II. This course is designed to introduce students to the purpose, operation, and use of commodity futures and options markets. The objectives are to: (1) understand why futures exchanges and commodity futures contracts exist; (2) understand and be able to forecast basic strategies; (3) understand hedging and be able to design hedging strategies for various commodity producers and users; (4) understand both put and call options and their potential use in a commodity risk management program; and (5) understand the usefulness and shortcomings of fundamental and technical analysis. Pr.: AGEC 120.

AGEC 441. Agricultural Economics and Agribusiness Seminar
AGEC 441. Seminar. Pr.: Consent of instructor. Five hours. Approved and supervised work-study programs in various areas of agribusiness. Project reports required. Pr.: Junior standing and prior department approval.

AGEC 450. Agricultural Economics and Agribusiness Problems
AGEC 450. I, II. Pr.: Consent of instructor. Two hours rec. a week. Pr.: ECON 105, AGEC 120 or ECON 120, and MATH 100.

AGEC 500. Production Economics
AGEC 500. I, II. Pr.: Consent of instructor. Two hours rec. a week. Pr.: AGEC 120 or ECON 120; and MATH 205.

AGEC 505. Agricultural Market Structures
AGEC 505. I, II. Pr.: Consent of instructor. Two hours rec. a week. Pr.: ECON 120 or ECON 120; and MATH 205.

AGEC 513. Agricultural Finance
AGEC 513. I, II. Analysis of capital investments, interpretation of financial statements, capital structure considerations, and farm real estate pricing. Three hours rec. a week. Pr.: AGEC 308 or AGEC 318 and ACCTG 231.

AGEC 515. Food and Agribusiness Marketing
AGEC 515. I, II. A broad view of marketing; food markets and consumption; marketing institutions and their role; competition, and marketing costs; functional and organizational issues; market marketing regulations; commodity marketing. Three hours rec. a week. Pr.: AGEC 120 or ECON 120.

AGEC 520. Market Fundamentals and Futures/Options Trading
AGEC 520. I, II. Theory and application of economic principles to marketing problems in agriculture. Pricing of agricultural output and productive services under various forms of economic organization and competition; regional specialization, location, and trade; determinants of economic change; evaluation of economic and consumer welfare. Three hours rec. a week. Pr.: ECON 110 and AGEC 500.

AGEC 531. Agricultural Finance
AGEC 531. I, II. Analysis of capital investments, interpretation of financial statements, capital structure considerations, and farm real estate pricing. Three hours rec. a week. Pr.: AGEC 308 or AGEC 318 and ACCTG 231.

AGEC 551. Agricultural Economics and Agribusiness Problems
AGEC 551. I, II. Pr.: Consent of instructor. Two hours rec. a week. Pr.: AGEC 120 or ECON 120; and MATH 205.

AGEC 552. Agricultural Economics and Agribusiness Problems
AGEC 552. I, II. Pr.: Consent of instructor. Two hours rec. a week. Pr.: AGEC 120 or ECON 120; and MATH 205.

AGEC 553. Agricultural Finance
AGEC 553. I, II. Analysis of capital investments, interpretation of financial statements, capital structure considerations, and farm real estate pricing. Three hours rec. a week. Pr.: AGEC 308 or AGEC 318 and ACCTG 231.

AGEC 555. Food and Agribusiness Marketing
AGEC 555. I, II. A broad view of marketing; food markets and consumption; marketing institutions and their role; competition, and marketing costs; functional and organizational issues; market marketing regulations; commodity marketing. Three hours rec. a week. Pr.: AGEC 120 or ECON 120.

AGEC 552. Market Fundamentals and Futures/Options Trading
AGEC 552. I, II. Theory and application of economic principles to marketing problems in agriculture. Pricing of agricultural output and productive services under various forms of economic organization and competition; regional specialization, location, and trade; determinants of economic change; evaluation of economic and consumer welfare. Three hours rec. a week. Pr.: ECON 110 and AGEC 500.

AGEC 551. Agricultural Economics and Agribusiness Problems
AGEC 551. I, II. Pr.: Consent of instructor. Two hours rec. a week. Pr.: AGEC 120 or ECON 120; and MATH 205.

AGEC 550. Production Economics
AGEC 550. I, II. Pr.: Consent of instructor. Two hours rec. a week. Pr.: AGEC 120 or ECON 120; and MATH 205.
Agricultural Economics and Agribusiness Seminar. (Var.) Seminars of special interest will be offered upon sufficient demand in selected areas relating to agricultural economics and agribusiness.

AGEC 590. Agricultural Economics and Agribusiness Honors Problems. (2, 4) I, II, S. Problems course for College of Agriculture honors projects. Pr.: College of Agriculture honors program participant and consent of honors project advisor.

AGEC 598. Farm Management Strategies. (3) I. A study of management concepts, tools, and decision strategies applied to farm firms. Alternative measures of farm business performance, as well as planning and evaluation techniques for an uncertain environment, are examined. Pr.: AGEC 120, AGEC 308, AGEC 490 and AGEC 513.

AGEC 599. Food and Agribusiness Management Strategies. (3) II. This course integrates the risk, production, marketing, and financial management strategies of agribusiness firms. Special attention is given to the application of economic theory and quantitative analysis to business decision-making processes. In addition to case studies, a variety of analytical techniques will focus on both market and commodity option pricing, and price forecasting. Three hours rec. a week. Pr.: AGEC 318, AGEC 400, AGEC 513 or FINAN 450, AGEC 515.

AGEC 605. Price Analysis and Forecasting. (3) II. The analysis of selected agricultural prices; application of regression analysis to price analysis, the role of futures markets and market efficiency, optimal hedging strategies, commodity option pricing, and price forecasting. Three hours rec. a week. Pr.: STAT 330 or 351; AGEC 490, AGEC 505 or ECON 520.

AGEC 610. Current Agricultural and Natural Resource Policy Issues. (3) II. Current issues in agricultural and natural resource policy from divergent perspectives. Classroom discussion, debate, writing assignments, and student presentations. Current events are analyzed and synthesized from both economic and noneconomic perspectives. Topics may include environmental issues, international agricultural development, the politics of farm programs, and the relationship between technology, agriculture, and society. Pr.: AGEC 505 and either AGEC 525 or AGEC 410.

AGEC 623. International Agricultural Trade. (3) II. Applied economics of agricultural trade. Emphasis on why trade occurs, current agricultural trade patterns, the effects of agricultural policy on trade and the institutions of trade. Pr.: AGEC 505.

AGEC 632. Agribusiness Logistics. (3) I. Planning for efficient use of transportation, storage and processing facilities in the handling of raw materials and products for agribusiness firms, controlling shipments and inventory in coordination with warehouse and handling operations, and scientific selection of routes, schedules, and equipment. Pr.: ECON 110 and junior standing.

AGEC 641. Agricultural Economics and Agribusiness Seminar. (Var.) Seminars of special interest will be offered upon sufficient demand in selected areas relating to agricultural economics and agribusiness. Pr.: Junior standing and consent of the instructor.

AGEC 680. Risk Management. (3) II. An introduction to agriculture, futures, derivatives, and other financial instruments as tools for risk management. Topics would include arbitrage, asset pricing, cash flow analysis, efficient markets, insurance, leverage, portfolio analysis, risk, and valuation. Tools of risk management will be applied to case and real time agricultural commodity examples. Pr.: AGEC 520 and AGEC 513.

AGEC 712. Linear Programming Applications in Agricultural Economics. (3) II. Application of linear programming and related topics for decision analysis in agricultural firms. Pr.: AGEC 500.

AGEC 740. Seminar in Agricultural Economics. (Var.) Seminar on methods of economic analysis will be offered upon sufficient demand. Pr.: Consent of instructor.

AGEC 750. Agricultural Economics and Agribusiness Problems. (Var.) I, II, S. Pr.: Junior standing and consent of the instructor.

### Agricultural Education

Advisor—Harbstreit
E-mail: sre@ksu.edu

**Agricultural Education**

Bachelor of science in agriculture 134 semester hours

Agricultural education involves the broad study of agriculture including a core of course work in agricultural economics, agronomy, animal science, agricultural technology management, and horticulture.

Agricultural education is designed for students who wish to meet requirements to teach agriculture in a public school setting or work in other areas where education and teaching are integral (i.e. extension, agribusiness, etc.). Graduates in this option meet Kansas State Board of Education licensure requirements. An area of occupational emphasis in agribusiness, agricultural production, agricultural technology management, horticulture, or natural resources is available.

Twelve weeks during the second semester of the senior year are devoted to full-time student teaching. On-campus courses meet during the first four weeks of the semester.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

**First semester**

- ENGL 100 Expository Writing I ........................................ 3
- EDSEC 300 Introduction to Agricultural Education ................. 1
- ARCH 301 Appreciation of Architecture or Other 300-level humanities course* ........................................ 3
- MATH 100 College Algebra .................................................. 3
- ASI 102 Principles of Animal Science .................................... 3
- GENAG 101 Agriculture Orientation ...................................... 1
- AGEC 120 Principles of Agricultural Economics .................... 3
- AGRON 102 Soils ............................................................... 4
- CHM 111 General Chemistry ............................................... 3
- CHM 112 General Chemistry Lab ........................................... 1
- SPCH 105 Public Speaking .................................................. 2
- ATM 160 Introduction to Agriculture Systems ......................... 3
- HORT 201 Introduction to Horticulture or AGRON 220 Crop Science .................................................. 4

**Second semester**

- CHM 111 General Chemistry ............................................... 3
- SPCH 105 Public Speaking .................................................. 2
- ATM 160 Introduction to Agriculture Systems ......................... 3
- HORT 201 Introduction to Horticulture or AGRON 220 Crop Science .................................................. 4

**Third semester**

- Agronomy or Horticulture elective ........................................ 3
- STAT 320 Elements of Statistics .......................................... 3
- BIO 198 Principles of Biology .............................................. 4
- ENGL 120 Expository Writing II ......................................... 3
- ACCTG 231 Accounting for Business Operations ..................... 3
- EDSEC 300 Introduction to Agricultural Education .......... 1
- CHM 111 General Chemistry ............................................... 3
- SPCH 105 Public Speaking .................................................. 2
- ATM 160 Introduction to Agriculture Systems ......................... 3
- HORT 201 Introduction to Horticulture or AGRON 220 Crop Science .................................................. 4

**Fourth semester**

- AGRON 305 Soils ............................................................... 4
- ASI 300 Principles Livestock Feeding or ASI 500 Genetics ............ 3
- Agriculture elective ....................................................... 3
- IMSE 250 Introduction to Manufacturing Processes and Systems .......... 2
- IMSE 251 Manufacturing Processes Lab .................................. 1
- ENGL 234 Humanities: Modern or Other humanities course* .......... 3
- Restricted social sciences elective ...................................... 3

**Fifth semester**

- GEOG 100 World Regional Geography or Other social science course* .......... 3
- AGEC 308 Farm and Ranch Management .................................. 3
- EDSEC 620 Principles and Philosophies of Vocational Education .......... 3
- Literature or language course* ........................................... 3
- ATM elective ................................................................. 2
- Agriculture elective ....................................................... 3
- Agriculture elective ....................................................... 2

**Sixth semester** (Block I)

- EDCEP 315 Educational Psychology ..................................... 3
- EDSP 323 Exceptional Student in the Secondary School .......... 2
- EDSEC 376 Core Teaching Skills and Lab ................................ 3
- HIST 251 History of the U.S. to 1877 or Other history course** .......... 3
- AGEC 318 Food and Agribusiness Management .......................... 3
- Agriculture elective ....................................................... 3

**Seventh semester** (Block II)

- EDSEC 400 Leadership and Professional Development .................. 1
- EDSEC 477 Middle and Secondary Reading ............................. 2
- EDSEC 500 Methods of Teaching Agriculture .......................... 2
- EDSEC 503 Teaching Adults in Agriculture ................................ 1
- EDSEC 505 Field Experience in Agricultural Education ................. 1
- EDSEC 520 Content and Reading Methods Lab ......................... 1
- EDSEC 621 Program Planning in Agricultural Education ............... 3
- EDCP 455 Teaching in a Multicultural Society ......................... 1
- EDCP 525 Interpersonal Relations in the School ......................... 1
- EDSEC 615 Laboratory and Safety Techniques in Teaching Agriculture .... 3

**Eighth semester** (Block III)

- EDSEC 586 Teaching Participation and Professional Development Seminar .......... 12

**TOTAL** 134

*Denotes university general education courses.

**Humanities (9 hours)**
(1) Must meet the following restrictions:

- Any course offered in the Department of Philosophy (except PHIL 110 or 420) .................................. 3
- SPCH 320, 330 or 430 ...................................................... 3
- Any course in a modern language........................................ 3
- ENGL 230, 231, 233, or 234 .............................................. 3
- Any Department of English literature course (except ENGL 355) .................. 3
- Department of Modern Languages literature course .................. 3
- Any nonperformance appreciation class in the Departments of Art, Music, Speech (theater or dance courses) .................................. 3
- University general education approved courses from the College of Architecture ......... 3
Faculty—Chung,* Clark,* Koelliker,* Maghirang,* Mankin,* Schrock,* Slocum,* Spillman,* Steichen,* and Zhang.*

**Social sciences (9 hours)**
(Must meet the following restrictions)

- Any course from the Department of History ............. 3
- Restricted social science electives ....................... 6
- Courses in the Departments of Anthropology, Economics, Geography, History, Political Science, Psychology, or Sociology

Global non-western culture requirement:
At least 3 credit hours are required from social science electives that address cultures outside the Western tradition (excludes those dealing primarily with the Greek, Roman, Western European, or North American experiences)

Agricultural Technology Management

Bachelor of science in agriculture

Agricultural technology management emphasizes the application and integration of agricultural/technical sciences, agricultural engineering, systems, and business to manage human and natural resources in the production and processing of food and agricultural products. It prepares men and women for technical management positions in food and agricultural industries that require an understanding of both technology and management. Agricultural technology management graduates are typically employed in technical sales, service, and management in agricultural production operations, agribusiness and food and feed processing industries, government agencies, and companies.

Courses are designed to apply physical science concepts and problem solving to food and agricultural systems. Supporting courses provide a foundation of mathematics, chemistry, business, and computer and communication skills. Technical electives are available to develop a degree program that meets personal career objectives.

The curriculum is administered by the Department of Biological and Agricultural Engineering and leads to the bachelor of science degree in agriculture with a major in agricultural technology management.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Engineering equipment fee

The engineering fee is in addition to the normal university fees. Beginning in fall 2001 students enrolling in ATM courses will be assessed $14 per credit hour plus a university technology fee of $1 per credit hour.

John Deere Dealership Management Program

John Deere Company and the Department of Biological and Agricultural Engineering have teamed to develop and offer a program that results in a degree in agricultural technology management with a business management emphasis. In addition to a formal education at K-State, students in this program receive mentoring from a John Deere professional and hands-on experiences in approved John Deere dealerships.

Agricultural technology management curriculum

**General requirements.......................................................................................... 64**

<table>
<thead>
<tr>
<th>Course ID</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 101</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 105</td>
<td>Public Speaking 1A</td>
<td>2</td>
</tr>
<tr>
<td>GENAG 101</td>
<td>Ag. Orientation</td>
<td>1</td>
</tr>
<tr>
<td><strong>ECON 110</strong></td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>CIS 101</td>
<td>Introduction to Information Technology</td>
<td>1</td>
</tr>
<tr>
<td>CIS 102</td>
<td>Introduction to PC/Spreadsheet</td>
<td>1</td>
</tr>
<tr>
<td>CIS 103</td>
<td>Introduction to Microcomputer</td>
<td>1</td>
</tr>
<tr>
<td>CIS 104</td>
<td>Introduction to PC/Word Processing</td>
<td>1</td>
</tr>
<tr>
<td>ME 212</td>
<td>Engineering Graphics</td>
<td>2</td>
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<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
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<tr>
<td>MATH 150</td>
<td>Plane Trigonometry</td>
<td>3</td>
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<tr>
<td>MATH 205</td>
<td>General Calculus and Linear Algebra</td>
<td>3</td>
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<tr>
<td>CHM 110</td>
<td>General Chemistry I</td>
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</tr>
<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
<td>4</td>
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<tr>
<td><strong>ACCTG 231</strong></td>
<td>Accounting for Business Operations</td>
<td>3</td>
</tr>
<tr>
<td><strong>BIOL 198</strong></td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>AGRON 305</td>
<td>Soils</td>
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<tr>
<td>IMSE 250</td>
<td>Production Processes</td>
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<td>IMSE 251</td>
<td>Production Processes Lab</td>
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<tr>
<td>Computing technology elective*</td>
<td></td>
<td>3</td>
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<tr>
<td>Communication elective**</td>
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<td>3</td>
</tr>
<tr>
<td>Humanities and/or social sciences electives**</td>
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<td>9</td>
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</table>

**Select one:**

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<tr>
<th>Course ID</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>AECG 490</td>
<td>Computer Applications in Agricultural Economics and Agribusiness</td>
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<tr>
<td>AGRON 455</td>
<td>Computer Applications in Agronomy</td>
<td>3</td>
</tr>
<tr>
<td>ASI 490</td>
<td>Microcomputer Applications in Animal Science and Industry</td>
<td>3</td>
</tr>
<tr>
<td>CIS 112</td>
<td>Advanced Personal Computing</td>
<td>3</td>
</tr>
<tr>
<td>CIS 200</td>
<td>Fundamentals of Computer Programming</td>
<td>4</td>
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<tr>
<td><strong>CIS 411</strong></td>
<td>Global Information System</td>
<td>3</td>
</tr>
</tbody>
</table>

**Select from the approved list under general requirements for the College of Agriculture in the K-State Undergraduate Catalog.**

Agricultural technology management required courses ........................................................................ 15

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATM 020</td>
<td>Assembly (every semester)</td>
<td>0</td>
</tr>
<tr>
<td>ATM 160</td>
<td>Introduction to Agricultural Systems and Technology</td>
<td>3</td>
</tr>
<tr>
<td>ATM 450</td>
<td>Sensors and Controls for Agricultural and Biological Systems</td>
<td>3</td>
</tr>
<tr>
<td>ATM 511</td>
<td>Agricultural Building Systems</td>
<td>3</td>
</tr>
<tr>
<td>ATM 571</td>
<td>Functional Components of Machines</td>
<td>3</td>
</tr>
<tr>
<td>ATM 558</td>
<td>Soil Erosion and Sediment Pollution Control</td>
<td>3</td>
</tr>
</tbody>
</table>

Agricultural technology management electives ........................................................................... 15

<table>
<thead>
<tr>
<th>Course ID</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATM 330</td>
<td>Production Machinery Systems</td>
<td>3</td>
</tr>
<tr>
<td>ATM 335</td>
<td>Production Machinery Systems Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

**Free electives.................................................................................................................. 6**

**Agricultural and food science electives............................................................................. 27**

(Twelve hours, including six hours 400 and above, must be concentrated in one of the following four subject matter areas. At least 6 hours must be from the agribusiness and management elective area. At least 6 hours must be in either the plant, natural resource, and environmental sciences; animal science; or food and feed processing areas. Other courses may be selected with advisor's consent.)

Agriculural and food science electives

**ECON 200** | Introduction to Economic Analysis | 3 |
| **ECON 300** | Intermediate Macroeconomics | 3 |
| **ECON 330** | International Trade | 3 |
| **ECON 340** | Introduction to Finance | 3 |
| **IMSE 550** | Industrial Management | 3 |
| **MANG 300** | Business Law I | 3 |
| **MANG 420** | Management Concepts | 3 |
| **MKTG 400** | Marketing | 3 |
| **MKTG 450** | Consumer Behavior | 3 |

**ECON 200** | Accounting for Investing and Financing | 3 |
| **AGEC 120** | Agricultural Economics and Agribusiness | 3 |
| **AGEC 525** | Natural Resource and Environmental Economics | 3 |
| **MKTG 450** | Consumer Behavior | 3 |

**Select from the approved list under general requirements for the College of Agriculture in the K-State Undergraduate Catalog.**

Biological, natural resource, and environmental sciences

**ATM 451** | Water Resources and Hydrology | 2 |

**BAE 551** | Hydrology | 2 |

**ATM 460** | Internship in Agricultural Technology Management | 1-3 |
| **ATM 500** | Agricultural Chemical Application Systems | 3 |
| **ATM 540** | Introduction to Food Engineering | 3 |
| **ATM 541** | Introduction to Food Engineering Laboratory | 1 |
| **ATM 651** | Grain and Forage Handling Systems | 3 |
| **ATM 653** | Water Management and Irrigation Systems | 3 |
| **ATM 661** | Water and Waste in the Environment | 3 |
| **ME 699** | Hydraulics | 3 |
| **AGRON 655** | GIS and Site Specific Agriculture | 3 |

**BAE 551** | Hydrology | 2 |

**AGRON 220** | Crop Science | 3 |

**AGRON 330** | Weed Management | 3 |
| **AGRON 335** | Environmental Quality | 3 |
| **AGRON 375** | Soil Fertility | 3 |
| **AGRON 385** | Soil Fertility Lab | 2 |
| **AGRON 501** | Range Management | 3 |
| **AGRON 520** | Grain Production | 3 |
| **AGRON 550** | Forage Management and Utilization | 3 |
| **AGRON 551** | Forage Management and Utilization Lab | 1 |
| **AGRON 630** | Principles of Crop Improvement | 3 |
| **AGRON 635** | Soil Conservation and Management | 3 |
| **ASI 500** | Genetics | 3 |
| **BIO1 303** | Ecology of Environmental Problems | 3 |
| **BIO1 330** | Public Health Biology | 3 |
| **BIO1 455** | General Microbiology | 4 |
| **BIO1 500** | Plant Physiology | 4 |
| **BIO1 513** | Physiological Adaptation of Animals | 3 |
| **BIO1 529** | Fundamentals of Ecology | 3 |
| **BIO1 612** | Introduction to Limnology | 3 |
| **CHM 125** | Environmental Science | 3 |
| **ENTOM 250** | A Chemistry Perspective | 3 |
| **ENTOM 300** | Insects and People | 3 |
| **GEOG 220** | Economic Entomology | 3 |
| **GEOG 305** | Environmental Geography I | 3 |
| **GEOG 305** | Earth Resources | 3 |
| **GEOG 506** | Environmental Studies | 3 |
| **HORT 201** | Introduction to Horticulture Science | 3 |
| **PLPH 300** | Microbes, Plants and The Human Perspective | 3 |
| **PLPH 500** | Principles of Plant Pathology | 3 |
To earn an undergraduate minor in ATM, students are required to complete a minimum of 15 credit hours consisting of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>ASI 655</td>
<td>Principles of Livestock Feeding</td>
<td>3</td>
</tr>
<tr>
<td>ASI 512</td>
<td>Grain and Forage Handling Systems</td>
<td>3</td>
</tr>
<tr>
<td>ASI 305</td>
<td>Fundamentals of Food Processing</td>
<td>3</td>
</tr>
<tr>
<td>ASI 405</td>
<td>Fundamentals of Milk Processing</td>
<td>3</td>
</tr>
<tr>
<td>ASI 315</td>
<td>Range Livestock Nutrition and Management</td>
<td>2</td>
</tr>
<tr>
<td>ASI 350</td>
<td>Range Management</td>
<td>3</td>
</tr>
<tr>
<td>AGRON 501</td>
<td>Range Management</td>
<td>3</td>
</tr>
<tr>
<td>AGRON 550</td>
<td>Forage Management and Utilization</td>
<td>3</td>
</tr>
<tr>
<td>AGRON 551</td>
<td>Forage Management and Utilization</td>
<td>3</td>
</tr>
</tbody>
</table>

**Agricultural technology management courses**

ATM 020. Assembly. (0-0-3) I. Presentation of professional problems and practices by students, faculty, and professionals associated with agricultural and technology. One hour REC. a month.

ATM 160. Introduction to Agricultural Systems and Technology. (3) I. Introduction to engineering principles associated with the design and operation of production systems with respect to regulatory, environmental, and resource management. Three hours rec. a week. Two hours rec. and three hours lab a week. Pr.: AGRON 305.

ATM 460. Internship in Agricultural Technology Management. (1-3) I. Intern programs in various areas of agricultural technology management. One hour of credit for each four weeks of supervised and evaluated off-campus work experience with cooperating employers. Written report required. A maximum of 3 hours may be applied to ATM courses.

ATM 500. Agricultural Chemical Application Systems. (3) I. The use of hydraulic principles as they relate to liquid chemical application systems including pumps, controllers, and spray nozzles. Principles of fertilizer and granular application systems, safe storage, handling, and disposal of pesticides and fertilizers. New technologies in agricultural chemical application systems—field mapping, variable rate technology. Two hourslec. and two hours lab a week. Pr.: ATM 160 or PHYS 115; and CHEM 110 and 111 or CHEM 210.

ATM 511. Agricultural Building Systems. (3) II. Concepts and fundamentals related to agricultural building systems including structural materials, beam and column strength, environmental control for plants and animals, farmstead layouts, crop storage, and livestock and plant production facilities. Three hours rec. a week. Pr.: ATM 160 or PHYS 113 or 115.

ATM 515. Problems in Agricultural Technology Management. (Var.) I, II. Problems in the application of technical principles to agricultural technology management. Pr.: Approval of instructor.

ATM 540. Introduction to Food Engineering. (3) I. Material and energy balances with application to food processing. Fluid flow and heat transfer in food processing. Thermodynamic properties and laws. Conc. enrollment in ATM 541 is urged. Three hours rec. a week. Pr.: PHYS 113 or 115, BIOCH 120 or CHM 190, MATH 210 or 205.

**Agronomy**

D. B. Mengel, * Head
D. M. Ransom, * Assistant Head—Teaching
D. A. Whitney, * Extension State Leader

Agriculture

Agronomy

Bachelor of science in agriculture

24 semester hours

Agronomy includes crop, soil, weed, range, and environmental sciences. Students in agronomy have diverse interests, including crop production and physiology; crop breeding; soil management, fertility, and conservation; soil and water quality; physical and chemical properties of soils; forages; and range management.

Requirements

Students majoring in agronomy are required to complete the following courses, plus those in the option that the student selects.

ENGL 100 Expository Writing I .................. 3
ENGL 200 Expository Writing II ............... 3
SPCH 105 Public Speaking IA ................. 3
MATH 101 College Algebra ...................... 3
AGRON 220 Crop Science ....................... 4
AGRON 305 Soils .................................. 4
AGRON 455 Computer Applications in Agronomy

◆ CHM 210 Chemistry I .......................... 4
◆ CHM 230 Chemistry II ........................ 4
Organic/biochemistry ......................... 3–5
◆ BIOL 198 Principles of Biology .......... 4
◆ BIOL 210 General Botany ..................... 4
Physics ............................................ 4
Social sciences/humanities electives ....... 3–9
Communications elective ...................... 3
All options except soil and water science require
GENAG 101 Ag Orientation .................... 1
◆ ECON 110 Principles of Macroeconomics 3

*Agromony majors must include 18 credit hours of university general education courses, with at least 6 credit hours numbered 300. At least one university general education course must be taken in each of the following categories: (a) biological and physical sciences, (b) communications, social sciences, and humanities, (c) agriculture, and (d) free electives.

Options

Additional courses required for specific option:

Business and industry option

AGRON 330 Weed Management .................. 3
AGRON 333 Environmental Quality .......... 3
AGRON 360 Crop Growth and Development 3
AGRON 375 Soil Fertility ........................ 3
AGRON 385 Soil Fertility Lab ................... 2
AGRON 405 Internship in Agronomy ......... 3
Agronomy electives ........................................ 9

◆ BIOL 308 Farm and Ranch Management 3
◆ ASI 102 Principles of Animal Science .... 3
◆ ASI 318 Fundamentals of Nutrition ........ 3
◆ ATM Elecutive ................................. 3
◆ ATM 330 Production Machine Systems ..... 3
◆ ATM 335 Production Machine Systems Lab 3
◆ ENTOM 300 Economic Entomology ........ 3

Two of the following:

AGRON 645 Soil Microbiology .................. 4
ASi 500 Genetics .................................. 3
BIOL 529 Fundamentals of Ecology .......... 3
◆ GEOL 100 Earth in Action .................... 3
◆ GEOG 535 Fundamentals of Climatology 3
Electives ........................................... 14–16

Range management option

MATH 150 Plane Trigonometry .................. 3
BIOL 300 Plant Pathology ....................... 4
BIOL 529 Fundamentals of Ecology .......... 3
BIOL 531 Taxonomy of Flowering Plants .... 3
ENTOM 300 Economic Entomology .......... 3
◆ GEOL 100 Earth in Action .................... 3
AGRON 501 Range Management ............... 3
AGRON 515 Soil Genesis and Classification 3
AGRON 560 Field Identification of Range and
Pasture Plants .................................. 1
AGRON 660 Range Research Techniques .... 3
AGRON 670 Range Management Problems ... 3
AGRON 681 Range Ecology .......................... 3
AGRON 762 Range Grasses ........................ 2

◆ ASI 615 Range Livestock Management .... 2

Crop consulting option

AGRON 330 Weed Management .................. 3
AGRON 360 Crop Growth and Development 3
AGRON 375 Soil Fertility ........................ 3
AGRON 385 Soil Fertility Lab ................... 2
AGRON 405 Internship in Agronomy ......... 3
AGRON 716 Herbicide Interactions ............ 3
AGRON 720 Weed Ecology ....................... 3
◆ AEC 120 Agricultural Econ/Agribusiness 3
◆ ECON 120 Principles of Microeconomics 3
ENTOM 300 Economic Entomology .......... 3
◆ ENTOM 312 General Entomology .......... 2
ENTOM 313 General Entomology Lab .......... 1
ENTOM 612 Insect Pest Diagnosis ............. 2

Electives ........................................... 14–17

Science option

AGRON 330 Weed Management .................. 3
AGRON 360 Crop Growth and Development 3
AGRON 375 Soil Fertility ........................ 3
AGRON 385 Soil Fertility Lab ................... 2
Agronomy electives .................................. 9

◆ PLPTH 500 Plant Pathology ................... 3
◆ ASI 500 Genetics .................................. 3
◆ GEOL 100 Earth in Action .................... 3
BIOL 500 Plant Physiology ...................... 4
CHM 350 General Organic Chemistry ........ 3
CHM 371 Chemical Analysis .................... 3
◆ STAT 340 Biometrics .......................... 3
MATH 150 Plane Trigonometry ................ 3
MATH 220 Analytic Geometry and Calculus 4
PHYS 114 General Physics .......................... 4
ENTOM 300 Economic Entomology ........... 3
Electives ........................................... 16

Soil and water science option

MATH 150 Plane Trigonometry .................. 3
MATH 220 Analytic Geometry/Calculus ....... 4
◆ STAT 340 Biometrics .......................... 3
BIOL 303 General Ecology/Environmental Problems 3
BIOL 500 Plant Physiology ...................... 4
BIOL 529 Fundamentals of Ecology .......... 3
◆ GEOL 100 Earth in Action .................... 3
GEOL 103 Geology Laboratory ................. 1
Natural Resources Environmental Economics 3
◆ LAR 322 Environmental Issues and Ethics 3
◆ AEC 120 Agricultural Econ/Agribusiness 3
◆ ECON 120 Principles of Microeconomics 3
AGRON 335 Crop Growth and Development 3
AGRON 375 Soil Fertility ........................ 3
AGRON 385 Soil Fertility Lab ................... 2
AGRON 515 Soil Genesis and Classification 3
AGRON 603 Soil and Environmental Chemistry 3
AGRON 635 Conservation and Management 3
AGRON 645 Soil Microbiology .................. 4
AGRON 746 Physical Properties of Soils ...... 3

Two of the following courses:

CE/AGE 551 Hydrology ............................ 2
GEOL 508 Fundamentals of GIS ............... 2
GEOL 520 Geomorphology ...................... 2
◆ GEOG 535 Fundamentals of Climatology 3
GEOG 705 Remote Sensing Environment .... 3
GEOG 725 Geography of Water Resources .... 3
PHYS 114 General Physics .......................... 4
Electives ........................................... 15–20

◆ Denotes university general education courses.

Research center, laboratory, and greenhouse facilities are used by the Department of Agronomy for both research and instruction.

Agronomy minor

Students enrolled in any primary undergraduate major will be admitted as a candidate for the agronomy minor program upon filing a notice of intent with the department’s teaching office. Admission must be completed prior to
enrollment in the final 9 hours of course work to receive certification of the minor. Upon filling for admission, an agronomy advisor will be assigned to assist students in selecting course work.

To earn an undergraduate minor in agronomy, students are required to complete 16 or 17 credit hours consisting of the following courses:

- **AGRON 305** soils ............................................. 4
- **AGRON 220** Crop Science ............................ 4 or
- **AGRON 501 Range Management ................. 3

An additional 9 hours of agronomy courses numbered 300 or greater selected by the student in consultation with an agronomy advisor.

**Agronomy courses**

- **AGRON 220. Crop Science.** (4) I. II. Principles underlying practices used in the culture of corn, grain sorghum, wheat, and soybeans. Required course for majors in agronomy and others interested in crop production. Three hourslec. and two hours lab a week. Not open to students with credit in HORT 201.
- **AGRON 305. Soils.** (4) I. II. Fundamental chemical, physical, and microbial properties of soils, their formation, fertility, and management. Three hourslec. and two hours lab a week. Pr.: CHM 210.
- **AGRON 315. Properties of Soil.** (1) I. II. Soil development and classification and the nature of soil physical properties. Three hourslec. and two hours lab a week for first five weeks of the semester. Not open to agriculture majors.
- **AGRON 320. Seed Technology.** (1) I. An introductory course to prepare students for the anticipated expansion of the seed industry resulting from the impact of biotechnology and identity preservation. Basic concepts of seed quality, purity, vigor testing, and quality assurance will be emphasized. Two hourslec. and two hours lab a week.
- **AGRON 330. Weed Management.** (3) I. II. For those interested in crop production, crop protection, and agricultural education. Considers the origin of weeds, their relations to crops, and control systems emphasizing cultural practices and herbicides. Includes weed identification. Two hourslec. and two hours lab a week.

**AGRON 335. Environmental Quality.** (3) I. An examination and survey of topics in environmental quality. Includes classification of soil, air, and water pollutants and their interaction with the environment, including the human food chain. Discussion of remediation techniques, risk assessment, and environmental legislation. Three lectures a week. Pr.: CHM 210.

- **AGRON 340. Grain Grading.** (2) I. Procedures for grading grains, emphasizing soybeans, corn, wheat, and sorghum. Identification and evaluation of kernel damage and other conditions determining grades of these grains. Four hours lab a week.
- **AGRON 350. Plant and Seed Identification.** (2) II. Identification of crops and weeds by seed and vegetative characteristics. Analysis of seed samples for impurities. Four hours lab a week.
- **AGRON 360. Crop Growth and Development.** (3) I. Comparative growth and development of warm- and cool-season monocot and dicot crops. Environmental influences on growth and development processes and management techniques to minimize stresses. Three lec. a week. Pr.: AGRON 220 and 305.
- **AGRON 375. Soil Fertility.** (3) I. Detailed information on the plant nutrition, soil fertility, and fertilizer management of the essential macro- and microelements. The influence of numerous soil biological, physical, and chemical properties on plant nutrient availability to crops will be emphasized. Three hourslec. a week. Pr.: AGRON 220 and 305.
- **AGRON 385. Soil Fertility Laboratory.** (2) I. Detailed information on (1) the chemical methods utilized in routine soil testing and plant analysis, (2) field soil sampling techniques, (3) fertilizer recommendations, and (4) fertilizer response functions. Soil chemistry and computer laboratory exercises are designed to reinforce the theoretical principles presented in lectures. One hourlec. and two hours lab a week. Pr.: AGRON 375 or conc. enrollment.
- **AGRON 400. Undergraduate Topics in Agronomy.** (1–3) I. II. Special topics in agronomy not completely treated in other courses. Pr.: Consent of instructor.
- **AGRON 405. Internship in Agronomy.** (1–3) I. Intern programs in various areas of agronomy. One hour credit for each four weeks of supervised and evaluated work experience with cooperating employers. A maximum of 3 hours may be applied to a B.S. in agronomy. May be repeated once for elective credit if second internship is different from the first. Pr.: AGRON 220 and 305.
- **AGRON 415. Soils Judging.** (1) I. Techniques employed in writing descriptions of soil morphology and in classifying soils for intercollegiate soils judging. Six hours lab a week for the first half of the semester. Pr.: AGRON 305. May be repeated to a maximum of 2 hours.
- **AGRON 420. Field Course in Weed Science.** (1) I. A laboratory and field course pertaining to weed identification, sprayer calibration, herbicide action, and herbicide performance. Pr.: AGRON 330 or equiv.
- **AGRON 450. Crops Team.** (2) I. II. Grading, seed and plant identification, and seed analysis. Studies lead to participation in intercollegiate crops contest. Four hours lab per week.
- **AGRON 455. Computer Applications in Agronomy.** (3) I. II. Application of computer technology to plant and soil science. Emphasis on use of current software in managing data and knowledge useful to crop production. Three hourslec. a week. Pr.: AGRON 220 and 305.
- **AGRON 501. Range Management.** (3) I. II. Fundamental ecological principles of production, conservation, and use of grasslands. Application of these fundamental principles to range management. Three hours rec. a week.
- **AGRON 515. Soil Genesis and Classification.** (3) I. Study of the factors and processes of soil formation, classification of soils according to their properties, and use of soil survey information. Required field trips. Two hoursrec. and three hours lab a week. Pr.: GEOL 100 and AGRON 305 or consent of instructor.
- **AGRON 520. Grain Production.** (3) I. An upper-level course for those planning a career in the Central Plains. Pest control, limiting factors, and planting factors will be considered in view of climatic conditions and crop plant growth habit. From this, a crop production strategy will be developed for each crop. Pr.: AGRON 220 and 375.
- **AGRON 550. Forage Management and Utilization.** (3) I. II. Production and utilization of forage crops. Development of forage programs for livestock production, including pasture and stored forages. Three hours rec. a week. Pr.: AGRON 220 and junior standing.
- **AGRON 551. Forage Management and Utilization Laboratory.** (1) I. II. Identification of forage species, techniques for estimating forage quality, forage physiology, and field trips. One-two hour lab a week. Pr.: Completion of or conc. enrollment in AGRON 550.
- **AGRON 560. Field Identification of Range and Pasture Plants.** (1) I. In odd years. Identification of range pastures through exposure to them in their natural environment. Pr.: AGRON 220 or BIOL 210 or consent of instructor.
- **AGRON 599. Agronomy: The Profession.** (1) I. An overview of occupations, responsibilities, and challenges for the professional agronomist. Discussion of current topics and important issues in crops and soils, range management, and soil and water resources.

**Undergraduate and graduate credit**

- **AGRON 600. Crop Problems.** (Var. I.) II. Studies may be chosen in: genetics, crop improvement, forages, ecology, weed control, plant physiology, or crop production.
- **AGRON 605. Soil and Environmental Chemistry.** (3) II. A study of inorganic and organic chemistry of soils with a detailed examination of the various soil chemical phases. Includes discussions of mineral solubility, electrochemical and adsorption phenomena, acidity, salinity, and fertility. Emphasis is placed on chemical cycling of plant nutrients and important soil components. Three hours rec. a week. Pr.: AGRON 375 or AGRON 305 and CHM 230.
- **AGRON 615. Soil Problems.** (Var. I.) II. Studies may be chosen in: chemistry, physics, conservation, fertility, genetics, morphology, or classification.
- **AGRON 638. Principles of Crop Improvement.** (3) II. Basic plant breeding techniques used to genetically improve crops for use by man and procedures to increase, distribute, and maintain breeding stocks and varieties. Twolec. and one two-hour lab a week. Pr.: AGRON 220 and ASI 315.
- **AGRON 635. Soil Conservation and Management.** (3) I. Principles, mechanisms, and prediction of water and wind erosion. Influence of soil erosion on soil productivity and environmental quality. Conservation management technologies for erosion control and protection of soil productivity. Legislation and land-use planning for soil conservation. Course requires microcomputer skills. Two hours rec. and 1 three-hour lab a week. Pr.: AGRON 305.
- **AGRON 645. Soil Microbiology.** (4) I. The nature and function of soil microorganisms in the soil ecosystem. The role of soil microbial activity to soil organic matter, mineral transformations, plant nutrition, and environmental quality. Three hours rec. and two hours lab a week. Pr.: AGRON 305 or BIOL 455.
- **AGRON 655. Site Specific Agriculture.** (3) I. Introduction to site analysis and management of agricultural and environmental resources using geographic information systems (GIS) technology. Emphasis on collecting, displaying, and analyzing spatial or geographic data. Three hours rec. and one lab a week. Pr.: AGRON 501 and STAT 320.
- **AGRON 670. Range Management Problems.** (Var.) I. II, S.
- **AGRON 681. Range Ecology.** (3) II. In even years. Application of ecological principles to range ecosystem management. Study of plant-soil-plant interactions with rangelands, and discussion of plant succession, environmental influences, and ecological concepts. Two hoursrec. and one lab credit consisting of field trips to representative range areas. Pr.: AGRON 501 and BIOL 529.
- **AGRON 716. Herbicide Interactions.** (3) II. In even years. A study of systems and physiological processes in plants and soils as they affect herbicide activity, and are affected by herbicides. Research methodology and literature will also be discussed and evaluated. Pr.: AGRON 330 and BIOL 500 or equiv.
- **AGRON 728. Weed Ecology.** (3) I. In odd years. A study of weed ecology topics including weed/crop interference, weed growth and development, herbicide resistance, biological control, and ecological approaches to weed management. Threelec. a week. Pr.: AGRON 330.
- **AGRON 746. Physical Properties of Soils.** (3) II. The properties of soils as affected by their physical environment, including water content, water potential, temperature, aeration, flocculation-dispersion, and soil compaction. Three hours rec. a week. Pr.: AGRON 305.
- **AGRON 762. Range Grasses.** (2) I. In even years. Field and laboratory study of range and pasture plants, with special emphasis on grasses and their distinguishing character-
AGRON 770. Plant Genetics. (3) I. Concepts and application of basic genetic principles in higher plants. Probability, linkage, chromosome aberrations, aneuploidy analysis, gene transfer in wide crosses, tissue culture and crop improvement, and genetics of disease resistance. Three hours rec. a week. Pr.: ASI 500.

AGRON 780. Orientation to Field Crop Breeding. (3) S. in odd years. A field-oriented course emphasizing the practical aspects of plant breeding and improvement of agronomic and horticultural crops. Operation, funding, and organization of the plant breeding program at Kansas State University and commercial breeding companies. Field tours included.

AGRON 790. Range Management Planning. (3) II, biennial. An introductory course designed to familiarize students with range management principles and practices useful in maximizing production from rangelands. Two hours rec. a week and one lab credit including field trips to ranch operations. Pr.: AGRON 501.

Animal Sciences and Industry

Jack G. Riley,* Head
Curtis L. Kastner,* Research Coordinator
John F. Smith, State Leader Extension
David A. Nichols, Teaching Coordinator


In addition to classrooms, office space, and laboratories located in Weber and Call Halls, the department maintains several animal and poultry units within easy access to the campus that house the beef and dairy cattle, horses, swine, sheep, and poultry used for teaching and research.

Students in animal sciences and industry must complete university general education requirements as specified by the College of Agriculture. See the College of Agriculture General Requirements section.

General requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>ASI 102</td>
<td>Principles of Animal Science</td>
<td>3</td>
</tr>
<tr>
<td>ASI 105</td>
<td>Animal Sciences and Industry</td>
<td>1</td>
</tr>
<tr>
<td>ASI 106</td>
<td>Dairy/Poultry Science</td>
<td>1</td>
</tr>
<tr>
<td>ASI 580</td>
<td>Animal Sciences &amp; Industry Seminar</td>
<td>1</td>
</tr>
<tr>
<td>ACCTG 231</td>
<td>Accounting for Business Operations</td>
<td>3</td>
</tr>
<tr>
<td>AGEC 308</td>
<td>Farm and Ranch Management*</td>
<td>3</td>
</tr>
<tr>
<td>Humanities and/or social sciences electives**</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

*AGEC 308 may be substituted for ACCTG 231 in the production–management option only.

**To be selected from the approved list in consultation with advisor.

Options

Additional courses required for specific options:

Animal products option

ASI 302 Introduction of Food Science | 3
ASI 455 Microbiology | 4
MATH 100 College Algebra | 3
BIOCH 265 Introductory Organic and Biochemistry | 5
PHYS 115 Physics for Science | 5
Agriculture electives | 4–8
Agricultural economics or business electives | 4–6
Communication electives | 3

Mathematics/statistics/computer science electives | 3

ASI 318 Fundamentals of Nutrition | 3
ASI 350 Meat Science | 3
ASI 405 Fundamentals of Milk Processing | 3
ASI 607 Food Microbiology | 4
ASI 690 Principles of HACCP | 2
ASI 695 Quality Assurance of Food Products | 3

Select 18 hours from the following:

ASI 305 Fundamentals of Food Processing | 3
ASI 315 Livestock and Meat Evaluation | 3
ASI 361 Conversion of Farm Animals to Carcasses | 2
ASI 370 Principles of Meat Evaluation | 2
ASI 395 Principles of Meat Grading, Specifications, and Evaluation | 2
ASI 430 Food Products Evaluation | 3
ASI 500 Genetics | 3
ASI 533 Animal Physiology | 4
ASI 599 Animal Science Internship | 1–3
ASI 605 Fresh Meat Operations | 2
ASI 608 Dairy Foods Processing and Technology | 3
ASI 610 Processed Meat Operations | 2
ASI 640 Poultry Products Technology | 3
ASI 671 Meat Selection and Utilization | 2
ASI 777 Meat Technology | 4
ATM 540 Introduction to Food Engineering | 3
ATM 541 Laboratory Exercises | 1

Select one of the following:

ASI 515 Beef Science | 3
ASI 524 Sheep Science | 3
ASI 535 Swine Science | 3
ASI 621 Dairy Cattle Management | 3
ASI 645 Poultry Management | 3
ASI 694 Food Plant Management | 3

Business option

AGEC 120 Agricultural Economics and Agribusiness | 3
MATH 100 College Algebra | 3
ASI 300 Genetics | 3
ASI 333 Anatomy and Physiology | 3
ACCTG 241 Accounting for Investing and Financing | 3

Agricultural electives | 6–12
Business electives | 6
Agricultural economics electives | 9–12
Mathematics/statistics/computer science electives | 3
Communication electives | 3
ASI 318 Fundamentals of Nutrition | 3
ASI 320 Principles of Feeding | 3
ASI 400 Farm Animal Reproduction | 4

Select one of the following:

ASI 350 Meat Science | 3
ASI 361 Conversion of Farm Animals to Carcasses | 2
ASI 601 Physiology of Lactation | 3
ASI 315 Livestock and Meat Evaluation | 3
ASI 405 Fundamentals of Milk Processing | 3
ASI 607 Food Microbiology | 4
ASI 640 Poultry Products Technology | 3

Select two of the following:

ASI 515 Beef Science | 3
ASI 521 Horse Science | 3
ASI 524 Sheep Science | 3
ASI 535 Swine Science | 3
ASI 621 Dairy Cattle Management | 3
ASI 645 Poultry Management | 3

Communications option

MATH 100 College Algebra | 3
ASI 300 Genetics | 3
ASI 333 Anatomy and Physiology | 3

Select one of the following:

ASI 350 Meat Science | 3
ASI 361 Conversion of Farm Animals to Carcasses | 2
ASI 601 Physiology of Lactation | 3

Select two of the following:

ASI 315 Livestock and Meat Evaluation | 3
ASI 405 Fundamentals of Milk Processing | 3
ASI 524 Animal Breeding Principles | 3
MC 235 Mass Communications in Society | 3
MC 305 Radio-Television and Society | 3
MC 400 News and Feature Writing | 3
ASI 400 Principles of Feeding | 3
ASI 601 Conversion of Farm Animals to Carcasses | 2
ASI 601 Physiology of Lactation | 3

Animal sciences and industry

Bachelor of science in agriculture 126 semester hours

Courses in the department give instruction in selection, breeding, feeding, management, and marketing of beef and dairy cattle, horses, poultry, sheep, and swine, as well as instruction in the processing and use of the products these animals and birds provide. Options of study are available in animal products, business, communications, production-management, and science/pre-vet.
Animal sciences and industry minor
An academic minor in animal sciences and industry can be earned by completing a minimum of 15 hours of credit with the ASI designation. A minimum of two courses must be at the 300 level or above. An additional two courses must be at the 500 level or above. The courses that comprise the minor will be determined by an advisor in the Department of Animal Sciences and Industry and the student.

Animal sciences and industry courses

ASI 102. Principles of Animal Science. (3) I, II. Basic principles which apply to animal agriculture; survey of the industries related to economically efficient production of red meat. Evaluation of breeding livestock on visual appraisal and performance records. A study of growth and the effects of nutrition, environment, and hormones on growth patterns. Breeds of livestock and performance programs will be studied. One hour lec. and four hours lab a week. Pr.: ASI 106 and 105; or consent of instructor.

ASI 300. Principles of Livestock Feeding. (3) I, II. Practical application of nutritional principles to the feeding of livestock; feedstuffs; ration formulation and practical feeding problems. Three hours lec. a week. Pr.: ASI 102 and 105.

ASI 385. Wool Grading and Evaluation. (3) I, II. An introduction to the evaluation of wool, including a comparison of the live animal and carcass evaluation. Three hours lab a week. Pr.: ASI 325 and 106.

ASI 310. Poultry and Poultry Product Evaluation. (2) I. Applied knowledge of physical and anatomical characteristics for evaluating poultry for egg and meat production. Evaluation of ready-to-cook poultry products as well as eggs and dressed carcasses, broken-out appearance according to the latest USDA standards. Two two-hour labs a week. Pr.: ASI 106.

ASI 315. Livestock and Meat Evaluation. (3) I, II. Evaluation of slaughter livestock and their carcasses as related to economically efficient production of red meat. Evaluation of breeding livestock on visual appraisal and performance records. A study of growth and the effects of nutrition, environment, and hormones on growth patterns. Breeds of livestock and performance programs will be studied. One hour lec. and four hours lab a week. Pr.: ASI 106 and 105; or consent of instructor.

ASI 318. Fundamentals of Nutrition. (3) I, II. Elements of comparative nutrition of farm animals. Three hours rec. a week. Pr.: CHM 110.

ASI 320. Principles of Feeding. (3) I, II. Application of basic nutrition principles to the feeding of beef cattle, sheep, and swine; feedstuff evaluation; nutrient requirements; ration formulation and practical feeding problems. Two hours rec. and two hours lab a week. Pr.: ASI 318.

ASI 325. Conformation and Performance Appraisal of Horses. (2) I. Evaluation of conformation and athletic performance of horses. The use of records in selection and the influence of heredity, environment, and training on conformation and performance is addressed. Student will learn to give an oral justification of their evaluations. Four hours lab a week.

ASI 326. Advanced Horse Evaluation. (2) I. In-depth study of horse conformation and performance horse evaluation. Theories from various equine disciplines are covered with emphasis placed on interpreting horse industry standards, and abilities to communicate those ideals effectively. One hour lec. and three hours lab a week. Pr.: ASI 325.

ASI 330. The Horse as A Window to the World. (3) I. A general education course using the horse as an organizing theme for exploration of many of the aspects of evolution, comparative physiology, economics, ethics, multiculturalism, and esthetics. Designed for students in any major.

ASI 340. Principles of Meat Science. (2) I, II. An overview of the meat industry for off-campus students using a videotaped format. Food science and animal science majors cannot substitute this course for ASI 350. Pr.: A course in biology is recommended.

ASI 345. Beginning Horse Training and Management. (2) I. Inherited and learned behavior of the horse. Development of methods to communicate with the horse. Emphasis on handling and safety techniques. Opportunities to observe and practice advanced training techniques used in saddling and riding. Four hours lab a week.

ASI 350. Meat Science. (3) I, II. An introduction to the red meat industry relating the fundamental properties of muscle structure, chemistry, and physiology to meat quality, composition, processing, nutritional value, and marketing. The laboratory will demonstrate the conversion of animals to meat and by-products, and meat processing technology. Two hours lec. and two hours lab a week. Pr.: BIOG 198.

ASI 361. Conversion of Food Animals to Carcasses. (2) I. A student participation course. Live animals into meat and by-products. Interrelates all phases of modern slaughter techniques, inspection, and related operations. Pr.: Sophomore standing.

ASI 370. Principles of Meat Evaluation. (2) I. The use of subjective and objective standards to evaluate beef, lamb, and pork carcasses and wholesale cuts for both quality and yield of edible portion as they relate to value and consumer acceptance.

ASI 385. Wool Grading and Evaluation. (1) I. A study of factors determining the commercial grades of wool and the desirability of their qualities of sheep, practice in judging, and grading wool. Three hours lab a week. Pr.: ASI 102.

ASI 395. Meat Grading, Specifications, and Evaluation. (2) I. Advanced study in the evaluation of carcasses, wholesale cuts, and retail cuts of beef, lamb, and pork. Application
tion of grade standards and specifications to beef, lamb, and pork carcasses and subprimal cuts. Three hours lab a week. Pr.: ASI 370.

ASI 396. Dairy Cattle Judging. (2) II. An introduction to the principles of evaluating dairy cattle on the basis of their physical, hereditary, and production characteristics. Students will have the opportunity to evaluate the official dairy cow uniform score card. Training includes preparation and presentation of oral defense on one’s placing of four cow classes. Pr.: ASI 102 and 106.

ASI 399. ASI Quadrathlon. (0–1) I, II. Active participation in the ASI Quadrathlon involving oral presentations, written exams, practical application of animal knowledge, and a quiz bowl. Fifteen hours for presentations will be designated each spring. No more than 2 credits earned in this course may apply towards graduation.

ASI 400. Farm Animal Reproduction. (4) I. Basic reproductive anatomy and physiology of cattle, pigs, poultry, and sheep during the first half of the semester provides a solid basis for reproduction management topics which occupy the second half of the course. Three hours rec. and three hours lab a week. Pr.: ASI 102.

ASI 401. Artificial Insemination in Swine. (1) II. Methods and objectives of artificial insemination in pork production including physiology of sperm production; semen collection, evaluation and preservation; estrous cycles and estrus detection; and collection and interpretation of data associated with artificial insemination. Three hours lab a week. Pr.: ASI 400.

ASI 405. Fundamentals of Milk Processing. (3) I. A study of fundamentals of processing, quality assurance, inspection, and marketing of fluid milk and related products in a modern market milk enterprise. Two hours lec. and one three-hour lab a week. Pr.: BIOL 198.

ASI 420. Advanced Dairy Cattle Judging. (1) I. Three hours lab a week. Pr.: ASI 396.

ASI 422. Livestock Sales Management. (0–1) I, II. On sufficient demand. Hands-on experience in the planning, promotion, and production of a purebred livestock sale. Pr.: Junior standing.

ASI 430. Food Products Evaluation. (3) I. Fundamentals of sensory evaluation of dairy, poultry products, meat, and other agricultural food products. Study of taste, smell, texture, visual appearance, and other senses related to organoleptic evaluation and its application to the food processing industry. Introduction to sensory testing methods, including sampling techniques and test forms. Two hours lec. and two hours lab a week. Pr.: ASI 302.

ASI 445. Advanced Horse Training and Management. (2) II. Students will further develop skills acquired in ASI 345. Students will learn how to utilize advanced training practices and applications to enhance the training and performance of horses. Four hours lab a week. Pr.: ASI 345.

ASI 450. Principles of Livestock Selection. (2) I. Origin, development, characteristics, and adaptation of different breeds of livestock, with special emphasis on the selection of market and breeding animals. Four hours lab a week. Pr.: ASI 315.

ASI 470. Form and Function in Livestock. (2) I. A detailed study of animal form and type; influence of type related to function; special training in presenting orally the relative merits of beef cattle, sheep, swine, and horses. Pr.: ASI 450.

ASI 490. Microcomputer Applications in Animal Sciences and Industry. (3) I, II. Applications of microcomputer techniques to the solutions of problems in animal science and related food industries. Includes use of existing software packages for break even analysis, animal identification and health records, feed ration analysis, farm/ranch accounting, and genetics. Credit cannot be earned for both ASI 410 and ASI 490. Current trends in farm computer use (hardware and software) will also be covered. Two hours lec. and two hours lab a week. Pr.: Junior standing.


ASI 501. Food Chemistry. (3) II. An in-depth coverage of the chemical structures of major food components and the chemical reactions occurring during storage and processing. Two hours lec. and three hours lab a week. Pr.: CHM 350 and BIOCH 521.

ASI 503. Topics in Comparative Pathology. (1–3) I, II, S. Selected topics in diseases of laboratory animals, wildlife, and fish for emphasis on veterinary students. Pr.: BIOL 198.

ASI 504. Equine Reproduction Management. (2) II. Theory and practical applications of breeding and breeding techniques of the horse. Includes basic reproductive physiology of the stallion and mare, demonstration and practice in semen collection and processing, teasing in terms, natural and artificial breeding techniques, management, and record keeping. Six hours lab a week. Pr.: ASI 400 and senior standing.

ASI 505. Food Science: Chemistry and Application. (3) I, II. Composition, structure, and properties of foods. Chemical interactions affecting texture, color, flavor, and stability during processing and storage. Two hours rec. and three hours lab a week. Pr.: CHM 350 and BIOCH 521 and 522.


ASI 512. Bovine Reproductive Technologies. (2) I. Reproductive technologies used in management of cattle including the physiological cycle, embryo viability, and fetal development. Practical training in reproductive management technique. One hour lec. and five hours lab a week. Pr.: ASI 400, senior standing, and consent of instructor.

ASI 515. Beef Science. (3) I, II. A comprehensive course covering all phases of the beef cattle industry. Practical application of nutrition, breeding, physiology of reproduction, risk management, merchandising, and related areas. Special emphasis on management systems of raising, growing, and finishing beef cattle. Pr.: Senior standing.

ASI 521. Horse Science. (3) I. A study of the horse industry in the U.S., breed profiles, anatomy and evaluation, nutrition reproduction, growth and development, health, exercise physiology, facilities and equipment, business considerations. Three hours lec. a week. Pr.: Junior standing.

ASI 524. Sheep Science. (3) I. Application of scientific management principles to the sheep industry. Breeding, reproduction, nutrition, health, housing, marketing, and management of sheep production units of varying sizes. Two hours lec. and two hours lab a week. Pr.: Junior standing.

ASI 533. Swine Science. (3) I, II. Application of basic scientific principles to the economical production of pork. Recommendations are made in breeding, reproduction, nutrition, health, housing, marketing, and management of swine production units of varying sizes. Two hours lec. and two hours lab a week. Pr.: Senior standing.

ASI 540. Principles of Animal Disease Control. (3) I. A study of the factors that influence animal health and disease control. For students majoring in agriculture and other fields. Three hours lec. a week. Pr.: ASI 533.

ASI 550. Animal Sciences and Industry Seminar. (1) I. Open only to senior students majoring in animal sciences and industry. One hour rec. a week.

ASI 595. Contemporary Issues in Animal Science and Agriculture. (3) II. The development and management of current issues affecting animal agriculture and science in three primary areas of the field: (1) the ethical and political aspects of issues; and (3) the development of expertise based on objective assessment. Current issues such as animal welfare/rights, environment, genetic engineering, etc., will be studied in conjunction with students with practical learning experiences. Pr.: Junior standing.

ASI 599. Animal Science Internship. (1–6) I, S. Industry work-study experiences in beef cattle, sheep, dairy cattle, swine, horse, or poultry production operations or in animal food products plants. Pr.: Permission of supervising faculty member.

ASI 601. Physiology of Lactation. (3) I. Anatomy and embryonic development of the mammary gland, physiology of lactation, milk constituents, and management practices that alter quality and quantity of milk. Contemporary milking practices and mastitis control. Two hours lec. and two hours lab a week. Pr.: ASI 400 and 533.

ASI 603. Food Science Internship. (1–6) I, S. Supervised professional field experience in food science. Pr.: Consent of supervising instructor. Same as FN 603.

ASI 605. Fresh Meat Operations. (2) I. Provides information and exposure to fresh meat operations, including: fabrication, yields, cost, quality assurance, packaging, marketing of fresh meat and by-products. One hour lec. and three hours lab a week. Pr.: ASI 350.

ASI 607. Food Microbiology. (4) I. This course deals with the identification, enumeration, and characterization of bacteria, yeast, and mold associated with foods and food processing. Effects of physical and chemical agents on microorganisms will be studied. Microbiological problems in food spoilage, food preservation, food fermentation, and foodborne diseases will be discussed. Two hours lec. and two two-hour labs a week. Pr.: BIOL 455.

ASI 608. Dairy Foods Processing and Technology. (3) II. The fundamental technologies used to process high-quality dairy foods using freezing, heat membrane, and pressure technologies. Changes in milk chemistry, microbiology, and structure will be emphasized. Processing of butter, soft and hard cheeses, concentrated milks, ice cream, and yogurt. Two hours lec. and one three-hour lab a week. Pr.: BIOL 455.

ASI 610. Processed Meat Operations. (2) II. An intensive course in processed meats, relating the science, technology, and quality control of curing, smoking, and sausage manufacture. One hour rec. and two hours lab a week. Pr.: ASI 350.

ASI 620. Livestock Production and Management. (2) II. Student involvement in laboratory exercises related to practical livestock production and management. One hour rec. and four hours lab a week. Pr.: Appropriate ASI course (515, 521, 525, or 535).

ASI 621. Dairy Cattle Management. (3) II. Integration of biologic and economic aspects of dairy production with dairy farm organization, planning, and analysis. Field trips, diary farm analysis and case studies will be used to supplement lec. material. Two hours rec., two hours lab a week. Pr.: ASI 102 and 106, senior standing.

ASI 640. Poultry Products Technology. (3) I, II. In odd years. Emphasis on the technical problems that exist between production and consumer during the processing and marketing of poultry meat and egg products. A study of the microbiology of shell eggs, meat, and manufactured products and the basic principles of quality assurance. Food manufacturing and product development are discussed. Three hours lec. a week. Pr.: ASI 106.

ASI 645. Poultry Management. (3) I, II. In odd years. A detailed study of the production and management practices involved in commercial poultry and game bird enterprises. Two hours rec. and one three-hour lab a week. Pr.: ASI 102, 106, and junior standing.

ASI 655. Behavior of Domestic Animals. (3) I. Behavior associated with domestication. Effects of selective breeding, physical and social environments, and developmental stage on socialization, aggressive behavior, sexual behavior, productivity, and training of domestic animals. Physiology of behavior and abnormal behavior considered briefly. Two hours lec. and two hours lab a week. Pr.: BIOL 198 and junior standing.


ASI 671. Meat Selection and Utilization. (2) I. Emphasis on meat cut selection criteria and identification, grades, fabricated meat, institutional cuts, specification writing,
preservation, and meat preparation. One hour lec.-rec. and two hours lab a week. Pr.: CHM110 and CHM 111.

ASI 675. Monogastric Nutrition. (1) An overview of the nutritional principles involved with feeding nonruminants. Topics will include digestive anatomy and the metabolism of carbohydrates, lipids, amino acids, vitamins, and minerals. Three hours lec. a week for 5 weeks. Pr.: ASI 320.

ASI 676. Avian Nutrition. (1) In even years. Nutritional requirements of game birds, caged birds, exotics, and commercial poultry. Interactive discussion will be emphasized. Three hours lec. a week for 5 weeks. Pr.: ASI 675.

ASI 678. Equine Nutrition. (1) In odd years. Equine digestive anatomy and physiology. Nutrient requirements of the equine as they relate to growth, work, reproduction, and lactation, as well as the relationship of nutrition to disease and environment. Practical management considerations and current equine nutrition research will be reviewed. Three hours lec. a week for five weeks. Pr.: ASI 675.

ASI 679. Swine Nutrition. (1) A study of the nutrient requirements of swine for various stages of production. Discussion of the interrelationships among nutrition and other factors (environment, management, and health) that affect performance. Three hours lec. a week for five weeks. Pr.: ASI 675.

ASI 680. Ruminant Nutrition. (1) II. Advanced study of nutritional management of different species of ruminant livestock. Topics covered include ruminal function, post-ruminal digestion and absorption, utilization of key nutrients, and discussion of select metabolic disorders. Three hours lec. a week for 8 weeks. Pr.: ASI 680.


ASI 682. Formulation of Livestock and Poultry Diets. (1) E Diet formulation for major species of livestock and poultry. Major topics include hand formulation of diets; ingredient/nutrient cost comparisons; dry matter manipulation; computerized diet formulation; developing specifications for diets, supplements, basal mixes, and premixes; projecting animal performance; and feed labeling. Three hours lec. per week for five weeks. Pr.: ASI 675 or ASI 680.


ASI 684. Nutrition of Feedlot Cattle. (1) II. Nutritional management of growing and finishing beef cattle maintained under confined feeding conditions. Utilization of cereal grains and byproducts in the production of beef. Major topics include nutrient requirements, feed processing, growing-finishing systems, feed additives, metabolic disturbances, and nutrient management. Three hours lec. per week for five weeks. Pr.: ASI 680.

ASI 685. Silage Technology. (1) I. A study of silage fermentation, nutrient conservation, aerobic deterioration process; factors affecting silage quality; and chemical analyses used to evaluate silage. Discussion of techniques used in silage research and assigned readings within the silage literature. Three hours lec. a week for five weeks. Pr.: ASI 680.

ASI 690. Principles of HACCP. (2) II. A comprehensive study of the Hazard Analysis and Critical Control Point System and its application in the food industry. Two hours lec. a week. Pr.: BIOL 198 and CHM 100.

ASI 694. Food Plant Management. (3) I. The integration of food science knowledge in managing a food processing operation to produce high quality food products. Two hours lec. and two hours lab a week. Pr.: Senior standing.

ASI 695. Quality Assurance of Food Products. (3) I. The role of the integrated quality assurance program in maintaining standards and quality of dairy and food products and ingredients. Tests and techniques for evaluating quality and sanitation and for compliance with regulatory requirements. Two hours rec. and one three-hour lab a week. Pr.: One course in bacteriology, chemistry, or physiological sciences.

ASI 710. Physiology of Reproduction in Farm Animals. (3) I, in odd years. This course offers an in-depth study of the physiological aspects of reproduction in farm animals including endocrine interrelationships controlling reproductive cycles and gamete production. Periodic demonstrations deal with specialized reproductive anatomy of farm animals, experimental techniques used in animal reproduction, and contemporary animal production practices. Three hours lec. a week. Pr.: ASI 400.

ASI 713. Rapid Methods and Automation in Microbiology. (2) Spring intersession. Rapid methods and automation is a dynamic area in applied microbiology dealing with the study of improved methods in the isolation, detection, characterization, and enumeration of microorganisms and their products in clinical, food, industrial, and environmental samples. The knowledge and techniques of this course are useful for students interested in medical, food, industrial, and environmental microbiology for early detection of beneficial as well as harmful microorganisms in their work.

ASI 720. Anaerobic Bacteriology. (2) II, in even years. Study of anaerobic bacteria, anaerobiosis, description of anaerobic techniques, and physiology and biochemistry of anaerobes of natural environment including gastrointestinal tract, and of veterinary, medical, and industrial importance. Two hours lec. a week. Same as BIOL 720. Pr.: BIOL 455.

ASI 725. Food Analysis. (3) I. Principles, methods, and techniques necessary for quantitative, instrumental, physical, and chemical analyses of food and food products for off-campus students using an audio/video taped format. The analytical principles will be related to standards and regulations for food processing. Two hours lec. and three hours lab a week. Pr.: ASI 501.

ASI 727. Chemical Methods of Food Analysis. (2) I. Methods for quantitative, physical, and chemical analyses of foods and food products. Analytical techniques covered will include spectroscopy, chromatography, mass spectrometry, immunochemistry, and atomic absorption. The analyses will be related to standards and regulations for food processing. Meets during first half of semester. Three hours lec. and three hours lab a week. Pr.: ASI 501 or FN 501.


ASI 740. Research and Development of Food Products. (3) I. A study of the research and development of new product food development from concept to store shelves will be covered, including market screening; focus groups; idea generation; prototype development; ingredient functionality and interactions; statistical designs for product development; processing; packaging; scale-up of operations; regulatory issues; labeling; physical, chemical, microbiological, and sensory evaluations; quality control procedures; and HACCP plans. Two hours lec. and six hours lab a week. Pr.: ASI 302 and ASI 501.

ASI 749. Advanced Animal Breeding. (3) II. Application of genetic principles to livestock improvement. Selection methods, mating systems, heritability estimates, and methods of analyzing genetic data. Three hours lec. a week. Pr.: ASI 500 and three hours in statistics.

ASI 777. Meat Technology. (4) II. Meat composition, meat product safety and spoilage, quality assurance, meat processing techniques, sausage and formed products, color, packaging, plant planning and organization, field trip. Three hours lec. and three hours lab a week. Pr.: ASI 350 and 361; senior or graduate standing.

ASI 791. Advanced Application of HACCP Principles. (3) II. Application of control parameters and methodology at critical control points, validating and auditing the effectiveness of critical control points, critical limits, monitoring tools, corrective action procedures, recordkeeping and verification procedures in addressing biological, chemical, and physical hazards that may be present in food products. Three hours lec. a week. Pr.: BIOL 455 and ASI 690.

ASI 799. Graduate Internship in Animal Sciences and Industry. (1–4) I.S. In-depth work-study experiences in beef cattle, sheep, dairy cattle, swine, horse, or poultry production operations or in animal food products plants. Pr.: Permission of supervising faculty member.

Communications

R. R. Furbee, Head
Professors Atkinson, Brandsberg, Erpelding, Frank, and Terry; Associate Professors Baker, Boone, Furbee, and Ward; Assistant Professors Brick, and Flores; Instructor Ballou; Emeriti Professors Burke, Graham, Medlin, Thomas, Titus, Unruh, and Warner; Associate Professors Buchanan, Dexter, Jorgenson, McGlashon, Peck, and Wright; Assistant Professors Kuehn, Nelson, and Tennant.

www.oznet.ksu.edu/dp_journ/welcome.htm

Agricultural communications and journalism

Bachelor of science in agriculture 127 semester hours

The agricultural communications and journalism major prepares students for various communications positions in public relations, newspaper, magazine, radio-television, advertising, marketing, and agricultural information. Students in the major have opportunities to work with radio facilities, desktop publishing equipment, cameras, and photo scanning equipment. The major focuses on helping students establish industry ties.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section. Students majoring in the curriculum take the following courses:

General requirements

ENGL 100 Expository Writing I ............................ 3
ENGL 200 Expository Writing II .......................... 3
SFC 100 Public Speaking IA ............................... 2
GENAG 101 Ag Orientation .................................. 1
MATH 100 College Algebra .................................. 3
ECON 110 Principles of Macroeconomics ............ 3
ECON 200 Principles of Microeconomics ............ 3
Chemistry I ....................................................... 4
CHM 210 Physical Methods of Food Analysis .......... 3
CHM 110 General Chemistry II ......................... 3
CHM 111 General Chemistry Lab .......................... 1
Humanities and/or social sciences ........................ 12

Departmental requirements

Students must complete a total of 30 credit hours in agricultural courses. Area requirements are:

Agriculture core

AGCOM 410 Agricultural Student Magazine .......... 3
AGCOM 4410 Introduction to Agricultural Communications .......................................................... 1
AGRON 305 Agricultural Student Magazine .......... 3
Select any four required courses from the following:

AGRON 305 Soils ....................................................... 4
Agriculture

MC 565 Law of Mass Communications .............. 3
These 18 hours are required of all students. Enrollment in study one area of agriculture in depth. The student will take Journalism

MC 595 Mass Communications Research ........... 3
Agricultural electives

MC 400 News and Feature Writing ..................... 3

Required:

BIOL 320 Economic Botany .................................. 3
Physical science

ASI 102 Principles of Animal Science .............. 3

◆ AGRON 335 Environmental Quality .................. 3
Business administration and agricultural economics

◆ AGEC 120 Agricultural Economics and

Required:

Agricultural electives

Agribusiness ................................................. 3

BIOL 625 Animal Parasitology .............................. 4

◆ MC 235 Mass Communication in Society .................. 3

Students may choose any other courses in the College of Agriculture to complete the 30 hours of agriculture.

◆ MC 400 News and Feature Writing ...................... 3

Journalism

◆ MC 440 Editing and Design .............................. 3

Students must complete a minimum of 30 hours in journalism and mass communications courses. Maximum journalism hours allowed is 36.

◆ MC 500 Advanced News and Feature Writing .... 3

Journalism core

◆ MC 565 Law of Mass Communications ............... 3

These 18 hours are required of all students. Enrollment in all skills courses requires a minimum of 2.5 GPa based on completion of at least 30 hours at the 100 level or above.

◆ MC 595 Mass Communications Research ............ 3

Journalism electives

One of the following:

The following courses are required:

◆ ASI 302 Introduction to Food Science ................. 3

Agricultural specialization

◆ BIOL 500 Genetics ....................................... 3

In consultation with the advisor, the student will decide to study one area of agriculture in depth. The student will take two courses above the introductory level (advanced courses are defined as those with a prerequisite in that agriculture department).

◆ BIOL 210 General Botany .................................. 4

Agricultural electives

One of the following:

◆ ASI 301 Principles of Biology ............................. 4

Journalism students must complete a minimum of 30 hours in journalism and mass communications courses. Maximum journalism hours allowed is 36.

◆ BIOL 320 Economic Botany .............................. 3

Journalism core

◆ BIOL 201 Organismic Biology ............................ 3

These 18 hours are required of all students. Enrollment in all skills courses requires a minimum of 2.5 GPa based on completion of at least 30 hours at the 100 level or above.

◆ BIOL 303 Ecology of Environmental Problems ....... 3

One of the following:

◆ BIOL 320 Economic Botany .............................. 3

Statistics and computer science

Select one of the following:

◆ BIOC 110 Biochemistry and Society ..................... 3

Select one course from the following:

◆ BIOC 265 Introduction to Organic and

and Computer language lab (200 level) ...................... 2

Biochemistry .......................... 3

◆ STAT 340 Biometrics 1 .................................... 3

CEIS 101–104 Introduction to Personal Computing ... 3

◆ STAT 350 Business and Economic Statistics I ........ 3

CEIS 200 Fundamentals of Computer

◆ STAT 330 Elementary Statistics for the Social

Programming .............................................. 2

Sciences ................................................. 3

and

◆ ASI 490 Microcomputer Applicators in Animal

Computer language lab (200 level) ...................... 2

Science and Industry .................................... 3

Statistics and computer science

Select one of the following:

◆ BIOC 521 General Biochemistry .......................... 3

Select one course from the following:

◆ CHM 320 Chemistry II .................................... 4

◆ BIOC 110 Biochemistry and Society ..................... 3

◆ CHM 350 General Organic Chemistry ................. 3

◆ BIOC 265 Introduction to Organic and

◆ CHM 351 Organic Chemistry I .............................. 3

Biochemistry .......................... 3

◆ GEOG 200 Environmental Geography 1 .............. 4

◆ GEOG 100 Earth in Action ............................... 3

◆ GEOG 200 Environmental Geography 1 .............. 4

◆ GEOG 265 Animal Parastology ............................. 4

Entomology

Sonny Ramasawmy,* Head

Professors Baker, Bauernfeind, Beeman,* Broce,* Brooks, Cress,* Hagstrum, Harvey,* Higgins, Howard, Marsh, Mock,* Muller, Nechols, Reese,* Sloderbeck, Smith, Throne, and Wilde;* Associate Professors Arthur, Buschman,* Charlton, Dover,* Dowdy,* Flinn,* and Kambhampti,* and Lord; Assistant Professors Campbell, Oppert, Whiles, Wright de Malo, Zhu, and Zolenerovich; Emeriti: Professors Blocker, Elzinga, Depew, Gates, Hopkins, Horber, Mills, and Thompson.

Sonny Ramasawmy,* Head

E-mail: entomology@ksu.edu www. oznet.ksu.edu/entomology/

Entomology is the study of insects and related arthropods. Applied entomology stresses their relations to plants and animals, including humans. Courses fall into two groups: broad, general courses suitable for any student; and professional courses that provide training for research, teaching, and administration in colleges, experiment stations, health services, government agencies, industry, foundations, and private practice.

Students majoring in other fields may have a special interest in entomology as part of their curriculum. Courses 300 or 312 and 313 or 314 or 305 are recommended.

Entomology minors

The Department of Entomology offers an undergraduate academic minor in entomology. This minor enables students to diversify their educational experience and provides a group of core courses that complement other academic programs, especially those in related agricultural disciplines such as horticulture, animal science, grain science, and agronomy, or in biology. To pursue a minor in entomology students must: (1) file a declaration of intent to pursue the minor and (2) consult an entomology advisor prior to taking the last three courses used to satisfy the minor requirements. Advisors not only ensure that requirements of the minor are met but also tailor course work to the interests, educational aims, and employment goals of the individual student.

General requirements

At least 15 credit hours as outlined below.

The following courses are required:

ENTOM 710 Insect Taxonomy .................................. 3

Select one of the following:

ENTOM 312 General Entomology ............................ 3

or

ENTOM 313 General Entomology Lab .................... 1

or

ENTOM 300 Economic Entomology .......................... 3

or

ENTOM 320 Horticultural Entomology ....................... 3

or

ENTOM 305 Livestock Entomology ........................... 2

At least 9 credit hours from Block A and/or Block B are also required. Courses offered outside the Department of Entomology (Block B) can count toward the minor if they are requirements/electives of specific curricula or if prior approval is obtained from the minor advisor.

Block A: Entomology courses

ENTOM 620 Insecticides: Property, and Law ............. 2

ENTOM 692 Insect Ecology .................................... 2

ENTOM 706 External Insect Morphology ................... 3

ENTOM 767 Insect Pest Management ........................ 3

ENTOM 799 Problems in Entomology: .................... 1–3

Insect Behavior

Insect Ecology .................. 3

Insect Genetics .......................... 3

Insect Physiology .................. 3

Biocontrol .............................................. 3

Insect Control by Host

Plant Resistance .................. 3

Insects of Stored Products .................. 3

Seminor: Special Topics .................. 1

Block B: Courses offered by other departments

The following, or other minor advisor-approved courses may count toward the minor.

BIOL 455 General Microbiology ............................. 4

BIOL 529 Fundamentals of Ecology ...................... 3

BIOL 612 Introductory Limnology .......................... 4

BIOL 625 Animal Parastology .............................. 4
Entomology minors

A minor in entomology can be obtained in conjunction with any major field of study and students are encouraged to do so. The following degree programs, however, lend themselves particularly well to an entomology minor.

Animal sciences and industry

Entomology minor

In addition to fulfilling the requirements for undergraduate students majoring in animal sciences and industry, students receiving a minor in entomology must take the following courses:

- ENTOM 312 General Entomology .............................. 2
- ENTOM 313 General Entomology Lab ...................... 1
- ENTOM 799* Problems in Entomology .......................... 1–3

* See under General Requirements for complete course listing.

Horticulture degree

Entomology

In addition to fulfilling the requirements for undergraduate students majoring in Horticulture, students receiving a minor in Entomology must take the following courses:

- ENTOM 320 Horticultural Entomology ................................ 3
- ENTOM 312 General Entomology .................................. 2
- ENTOM 767 Insect Pest Management .............................. 3
- ENTOM 799* Problems in Entomology .......................... 1–3

* See general requirements for complete course listing.

Entomology courses

ENTOM 250. Insects and People. (3) II. Intended for undergraduate nonmajors as part of the university general education curriculum. The focus will be on the global impact of insects on human concerns, such as the role of insects as disease vectors, agricultural pests, and pollinators. The students will look at the world from a non- anthropocentric viewpoint, educating them about the overwhelming abundance and diversity of insects and about their differences from ourselves. Two hours lec. and one-one hour interactive session a week.

ENTOM 300. Economic Entomology. (3) II. Classification, life histories, habits, and principles of control of important economic insects. For agriculture majors. Two hours lec. and two hours lab a week.

ENTOM 305. Livestock Entomology. (2) I. Biology and behavior of insects and other pests attacking livestock, poultry, pets, and wildlife. Current recommendations for control are discussed. For students interested in livestock production, feeding, dairy, and poultry science, and pre-veterinary medicine, as well as other agricultural curricula. Two hours lecture-demonstration a week.

ENTOM 306. Livestock Entomology Laboratory. (1) I. One two-hour lab a week.

ENTOM 312. General Entomology. (2, 3) II. I. A basic study of insects and related arthropods, their structure, physiology, behavior, and relations to plants and animals, including man. Two hours rec. a week.

ENTOM 313. General Entomology Laboratory. (1) I. Identification, food preferences, and habitat preferences of the common insects. Two hours a week.

ENTOM 320. Horticultural Entomology. (3) I. Biological principles and management considerations for insect and related arthropods affecting horticulture. Practical application of classification and life history information for accurate recognition, monitoring, and pest management decisions. Control tactics, and conservation of beneficial species. Two hours lec. and two hours lab a week.

Undergraduate and graduate credit

ENTOM 612. Insect Pest Diagnosis. (2, 1) Odd years. Diagnosis of plant damage by insects and mites, recognition of harmful insects and mites and beneficial insects. Emphasis on field crop pests but pests of other crops will be considered if there is sufficient interest. One hour lec. and two hours lab a week. Pr.: ENTOM 314 or 710.

ENTOM 620. Insecticides: Properties and Laws. (2, 1) Even years. Introduction to insecticides as arthropod control agents, including their classification, formulation, properties, mode of action, metabolism, resistance, benefits and environmental impact, and federal and state laws that regulate the development, sale, use, and storage of insecticides. Two hours lec. a week. Pr.: CHM 110.

ENTOM 635. Introduction to Plant Resistance to Pests. (2) I. Even years, during first half of semester. Basic concepts of the biology, ecology, genetics, and breeding for pest resistance in plants. Four hours lec. and two hours lab a week. Pr.: ENTOM 300 or PLPTH 500 or ENTOM 312 and 313, and one course in plant or animal genetics. Same as PLPTH 635.

ENTOM 680. Aquatic Entomology. (3) I. Odd years. Biology and ecology of aquatic insect orders and families, their roles in aquatic ecosystems, relationships to people, and use as sensitive biomonitoring agents to detect ecological disturbances. Labs teach sampling techniques and use of keys to identify aquatic insects to family and selected genera. Two hours lec. and two hours lab a week. Pr.: ENTOM 312 or 313; or BIOL 201.

ENTOM 692. Insect Ecology. (2) II. Even years. Abiotic and biotic factors underlying the distribution and abundance of insects and how to measure them. How these factors affect population processes, life history adaptation, and community structure, especially in agricultural systems. Emphasis on basic concepts, experiments, and methods. One hour lecture and two hours lab per week. Pr.: BIOL 540 or ENTOM 312 or equivalent.

ENTOM 706. External Insect Morphology. (3) I. Even years or on sufficient demand. External form and structure of insects with emphasis on the functional aspects of present structure. Structure of insects and related arthropods including, where possible, successive evolutionary stages. Differences between leading theories are discussed. Designed for beginning graduate students and advanced undergraduates. One hour lec. and six hours lab a week. Pr.: ENTOM 300 or 312 and 313.

ENTOM 710b. Insect Taxonomy. (3) II. Even years. Laboratory study of insect order and family group identification. Proper preparation and maintenance of adult insect collections. Lecture stresses the principles of systematic, legal principles of nomenclature, and the phylogeny of insects and their near relatives. For beginning graduate and advanced undergraduate students. One hour lec. and six hours lab a week. Pr.: ENTOM 300 or 312 and 313. ENTOM 706 recommended but not required; insect collection desirable.


ENTOM 767. Insect Pest Management. (3) I. Even years. A presentation of the items necessary to consider in order to develop a sound pest management program, from identification of a problem to recommendations made to growers for dealing with a pest. Two hours lec. and one lab a week. Pr.: ENTOM 300 or ENTOM 312.

ENTOM 799. Problems in Entomology. (Var.) I, II, S. For nonthesis or nondissertation studies. Work in various fields of entomology. Pr.: Consent of instructor.
Food science and industry
Bachelor of science in food science and industry
126 semester hours

This curriculum deals with all aspects of the food industry—both theoretical and practical—from producing raw materials through processing and packaging to marketing finished foods. The curriculum balances fundamental principles and practical applications of food science within a flexible program that permits students to tailor education to personal career goals. Students choose between two options, science or food business and operations management for their degree. The program is certified by the Institute of Food Technologists.

Scholarships are available through the Institute of Food Technologists and the College of Agriculture. Incoming freshman should contact the food science chair in November–December for IFT scholarship forms.

Imaginative and well-trained people are needed in research and product development to create new and innovative products and processes. Some graduates work with producers to improve the quality of raw materials. Persons trained in HACCP and food safety, microbiology, quality assurance, and sensory analysis are needed to help food processors meet more stringent consumer and government requirements. Others are involved in selling, merchandising, advertising, or managing food operations. Government regulatory agencies also hire food scientists to assure public health, nutrition, and food labeling. If students have foreign language capabilities, international food industry jobs are available.

Very important to the student’s course of study is the flexibility of professional electives that the student selects by consultation with their academic advisor. This gives the student an opportunity to design a personalized, well-rounded curriculum. Often students can obtain a minor in such areas as business, cereal chemistry, economics, agribusiness, agricultural technology management, and leadership just by careful selection of required minor courses.

The nature of the courses required in this curriculum is very compatible with course requirements of students interested in pre-veterinary medicine and other pre-professional curricula such as medicine, dentistry, pharmacy, and nursing. A B.S. in Food Science provides excellent training for these students and offers them other job opportunities if needed.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

General requirements
ENGL 105 Expository Writing I .................. 3
ENGL 200 Expository Writing II ................. 3
SPCH 105 Public Speaking I ..................... 3 or
SPCH 106 Public Speaking I ..................... 3
Additional communications courses 2–3
Social science and humanities 12
MATH 100 College Algebra ....................... 3
BIOL 198 Principles of Biology ................... 4
BIOJ 455 General Microbiology ................... 4
CHM 210 Chemistry I ................................. 4
CHM 230 Chemistry II .............................. 4
ASI 302 Introduction to Food Science .......... 3
ASI 305 Fundamentals of Food Processing .... 3
ASI 607 Food Microbiology .......................... 4
FN 400 Human Nutrition .......................... 3
GENAG 500 Food Science Seminar ............. 1

Options
Science option
Additional requirements:
MATH 220 Analytical Geometry and Calculus I .... 4
MATH 221 Analytical Geometry and Calculus II .... 4
STAT 320 Elements of Statistics .................. 3 or
STAT 340 Biometrics I ............................... 3
STAT 350 Business Economic Statistics I ......... 3
CHM 350 General Organic Chemistry 3
and
CHM 351 General Organic Chemistry Lab ....... 2
BIOCH 521 General Biochemistry .................. 3
BIOCH 522 General Biochemistry Lab ............ 2
PHYS 115 Descriptive Physics ........................ 4
ASI 501 Food Chemistry ................................ 3
ASI 727 Chemical Methods of Food Analysis .... 3
FN 728 Physical Methods of Food Analysis ....... 3
ATM 540 Introduction to Food Engineering Technology ........................................ 3
ATM 541 Food Engineering Technology Lab ....... 1
ASI 694 Food Plant Management ................... 3
ASI 695 Quality Assurance of Food Production ... 3

Professional electives ................................ 21 (6 hours must be processing electives)

Unrestricted electives ................................. 8–11

Food business and operations management option
Additional requirements:
MATH 205 General Calculus and Linear Algebra .... 3
STAT 350 Business Economic Statistics I ........ 3
BIOCH 265 Introduction to Organic/ Biochemistry .... 5
ASI 694 Food Plant Management ................... 3
ASI 695 Quality Assurance of Food Products ..... 3

Professional electives .................................. 42 (6 hours must be processing electives) (Must minor in business or agribusiness)

Unrestricted electives ................................. 9–11

Professional electives—food science
ASI 315 Livestock and Meat Evaluation .......... 3
ASI 430 Food Products Evaluation ................. 3
ASI 490 Micro Computer Applications ............ 3
ASI 603 Food Science Internship .................. var.
ASI 640 Poultry Products Technology .......... 3
ASI 690 Principles of HACCP ....................... 2
ASI 713 Rapid Methods and Automation in Microbiology ........ 2
ASI 740 Research and Development of Food Products 4
ASI 791 Advanced Applications of HACCP Principles .............. 3

FN 701 Sensory Analysis of Foods .................. 3
GENAG 630 Food Science Problems ................. var.
**GRSC 602 Cereal Science ......................... 3
GRSC 631 Food and Feed Plant Sanitation ......... 4
GRSC 642 Quality of Feed and Food Ingredients .... 3
STAT 341 Biometrics II .............................. 3

Professional electives—food processing
**Minor in cereal chemistry
Must take 4 courses with ** plus 3–4 hours of selected courses
ASI 350 Meat Science ................................ 3
ASI 361 Conversion of Food Animals to Carcasses .... 2
ASI 370 Principles of Meat Evaluation .............. 2
ASI 395 Meat Grading, Specifications, and Evaluation .... 2
ASI 405 Fundamentals of Milk Processing ......... 3
ASI 605 Fresh Meat Processing .................... 2
ASI 608 Dairy Food Processes and Technology ........ 3
ASI 610 Processed Meats Operations ............... 2
ASI 671 Meat Selection and Utilization ............ 2
ASI 777 Meat Technology ............................ 4
**GRSC 100 Principles of Milling .................. 3
**GRSC 505 Cereal and Feed Analysis ............. 3
**GRSC 625 Flour and Dough Testing .............. 3
GRSC 635 Baking Science I ......................... 2
GRSC 636 Baking Science II Lab .................. 2
GRSC 737 Baking Science II ........................ 2

Professional electives—nutrition
FN 500 Public Health Nutrition .................. 3
FN 550 Nutrient Metabolism ................................ 3
FN 610 Lifespan Nutrition .......................... 3
FN 630 Clinical Nutrition ........................... 4
FN 635 Nutrition and Exercise .................... 3

Professional electives—technology
*Minor in agriculture technology management
* Additional ATM minor hours 12
* ATM 160 Introduction to Agricultural Systems and Technology ................. 3
* ATM 540 Introduction to Food Engineering ........ 3
* ATM 541 Introduction to Food Engineering Lab .... 1
* ATM 571 Functional Components of Machines ....... 3
* ATM 651 Grain and Forage Handling Systems ....... 3
* ATM 661 Water and Waste in Environment .......... 3
GRSC 610 Electricity and Control for Milling Processes ................. 3
IMSE 373 Computer Applications in Industrial Engineering .................................. 2
ME 212 Engineering Graphics I ..................... 2
ME 560 Engineering Economics .................... 3

Professional electives—business
Minor in agribusiness—See requirements in Agricultural Economics section
***Minor in business
***ACCTG 231 Accounting Business Operation .... 3
***ACCTG 241 Accounting Investment and Finance .... 3
***MANGT 420 Management Concepts .................. 3
***MKTG 400 Marketing ................................ 3
***FINA 450 Introduction to Finance ................. 3
AGCOM 400 Communications ........................ 3
AGEC 120 Agricultural Economics and Agribusiness ................. 3
AGEC 220 Grain and Livestock Marketing Systems ...... 3
AGEC 318 Agricultural Policy ............................. 3
AGEC 420 Commodity Futures ............................. 3
AGEC 505 Agricultural Market Structures ................. 3
AGEC 515 Food and Agribusiness Marketing .......... 3
CIS 101 Introduction to Information Technology .... 1
CIS 102 Introduction to PC Spreadsheet Applications ............. 1
CIS 103 Introduction to PC Database Applications ......... 1
CIS 104 Introduction to PC Word Processing ............. 1
ECON 120 Principles of Microeconomics ............. 3
GRSC 630 Management Applications in the Grain Processing Industries .......................... 3
GRSC 630 Introduction to Total Quality Management ....... 3

Agriculture 67
MANGT 421 Introduction to Operations Management 3
MANGT 390 Business Law I 3
MANGT 530 Industrial and Labor Relations Management 3
MANGT 531 Personnel and Human Resource Management 3
MKTG 450 Consumer Behavior 3
MKTG 541 Retailing 3
MKTG 542 Sales Management 3
MKTG 545 Marketing Channels 3

Leadership minor
(6 hours qualify as professional electives)
EDADL 212 Introduction to Leadership Concepts 2
EDADL 502 Practicum in Leadership Studies 3
EDADL 502 Leadership for the 21st Century 3
Plus 12 hours, 3 hours from each of:
•Foundations/basic skills for leadership
•Ethics
•Theories of leadership/organizational behavior
•Societal and organizational applications of leadership

General Agriculture

Lawrence H. Erpelding, Associate Dean
Kevin J. Donnelly, Assistant Dean
Jackie McClaskey, Assistant Dean

www.ag.ksu.edu

General agriculture courses
GENAG 101. Ag Orientation. (1) I. Objectives, organization, and procedures of the College of Agriculture and the university are studied. Historical developments and projected trends in agriculture and the application of basic sciences to agriculture are presented. Required of freshmen in agriculture.

GENAG 200. Topics in Agriculture. (0–3) On sufficient demand. Selected issues in agriculture. May be repeated with change in topics.

GENAG 390. Agricultural Employment. (1) I. Assist the agriculture student in developing a career blueprint; understanding job markets and techniques to obtain employment including recruitment/placement services, resume construction, personal interviewing, and job offer evaluation and analysis; and monitoring involved in career planning.

GENAG 450. Leadership and Ethics in Agriculture. (3) III. The study of leadership styles, characteristics and techniques, ethical and philosophical issues of leadership, and personal evaluation and development will be a focus. Current controversial and multidimensional topics facing the agricultural leader will be explored with an emphasis on moral and philosophical debates. Issues regarding professional ethics and decision making will also be an emphasis. Three hours rec. a week. Pr.: Course work or experience in leadership and agriculture.

Undergraduate and graduate credit
GENAG 500. Food Science Seminar. (1) I. Review of recent developments in the food science industry and in food science research. Food science literature and intradepartmental research will provide source material. Required of all food science undergraduates in agriculture.

GENAG 505. Comparative Agriculture. (1–4) Inter session. A travel-study program which is intended to acquaint students with agriculture of other countries and other parts of the U.S. and how it differs from Midwest-Great Plains agriculture relative to climate, crops, soils, livestock practices, marketing, and cultural attitudes toward agriculture. Pr.: Consent of instructor.

GENAG 515. Honors Presentation. (1) I, II. Presentation of completed teaching or extension activity, research project, or demonstration project. Pr.: Successfully completed honors proposal and permission of honors advisor.

GENAG 528. Natural Resources/Environmental Sciences Project (NRES). (3) I, II. A comprehensive project in NRES. Requires integration of information and understanding acquired in NRES secondary major courses. Students must prepare and present written and oral reports. Three hours rec. a week. Pr.: All writing and oral communication courses required for major. Pr.: or conc.; 15 hours of approved courses in NRES secondary major. Cross-listed with DAS 582 and DEN 582.

GENAG 630. Food Science Problems. (1–3) I, II, S. Research or related work with others, or a literature search. Written reports are required. Any field of food science for which the student has adequate background. Pr.: ASI 302 and junior standing.

GENAG 780. Current Topics in Agriculture. (1–3) On sufficient demand. Selected topics studied to provide an in-depth understanding of current agricultural issues. May be repeated with change in topics. Pr.: Completion of calculus degree.

Grain Science and Industry

Brendan Donnelly, Head
Professors Behnke*, Donnelly, Eustace, Fairchild, Haque, Kloepfenstein, MacRitchie, Seib,* Walker,* and Wetzel,* Adjunct Professors Chung*, Koeltzow, Lookhart,* and Small; Associate Professors Bhadriraju, Flores, and Herrman;* Adjunct Associate Professors Seitz,* Assistant Professors Accasio (temporary), Brent,* Gwirtz, Okot-Koibet, Sun,* Tilley,* Adjunct Assistant Professors Rogers* and I.Y. Zayas; Instructor Willyard; Senior Scientist McCluskey; IGP Program Administrator Howard; Emeriti: Professors Balding, Deyoe, Hahn, Hoseney, Johnson, McEllhiney, Ponte, Schoeff, Ward, and Wilcox; Associate Professor Wingfield; Instructor Pudden.

www.oznet.ksu.edu/dp_grsi

The Department of Grain Science and Industry offers three curricula: a bachelor of science in bakery science and management; a bachelor of science in feed science and management; and a bachelor of science in milling science and management. In the baking science curriculum, options are available in cereal chemistry or production management.

In the milling science curriculum, an option may be selected in administration, chemistry, or operations. The feed science curriculum has specialization electives emphasizing administration or engineering. This department also participates in the food science and industry curriculum.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Bakery science and management
Bachelor of science in bakery science and management
128 semester hours

Cereal chemistry option
Foundation course requirements ........................................... 34–36

*ACCCT 231 Accounting for Business Operations .................. 3
*BIOL 198 Principles of Biology ........................................... 4
*CHEM 210 Chemistry I ..................................................... 4

*CHEM 230 Chemistry II .................................................. 4

*CHEM 220 Chemical Principles I ....................................... 5

*CHEM 250 Chemical Principles II ..................................... 5

*ECON 110 Principles of Macroeconomics .......................... 3

*AGEC 120 Agricultural Economics or Agribusiness .............. 3

*ECON 120 Principles of Microeconomics .......................... 3

*ENGL 100 Expository Writing I ........................................ 3

*ENGL 200 Expository Writing II ........................................ 3

*ENGL 516 Written Communication for the Sciences .............. 3

*AGCOM 400 Agricultural Business Communication ............... 3

GENAG 101 Agricultural Orientation .................................... 1

SPECH 106 Public Speaking ................................................. 3

Basic and applied sciences ................................................... 56–58

ASI 305 Fundamentals of Food Processing ............................ 3

or

ASI 501 Food Chemistry ................................................... 3

ASI 318 Fundamentals of Nutrition ....................................... 3

or

*FN 132 Basic Nutrition ................................................... 3

or

FN 400 Human Nutrition .................................................. 3

ASI 607 Food Microbiology ................................................ 4

ATM 540 Introduction to Food Engineering Technology .......... 3

*BIOCH 265 Introductory Organic and Biochemistry .............. 5

or

BIOCH 321 General Biochemistry ....................................... 3

BIOL 455 General Microbiology ......................................... 4

CHM 374 Chemical Analysis ................................................ 4

CHM 500 General Physical Chemistry .................................. 3

or

CHM 585 Descriptive Physical Chemistry ............................ 3

CHM 531 Organic Chemistry I ............................................ 3

CHM 532 Organic Chemistry Lab ........................................ 2

CHM 550 Organic Chemistry II .......................................... 3

MATH 220 Analytic Geometry and Calculus I ....................... 4

MATH 221 Analytic Geometry and Calculus II ...................... 4

PHYS 213 Engineering Physics I .......................................... 5

PHYS 214 Engineering Physics II ........................................ 5

*STAT 320 Elements of Statistics ........................................ 3

or

*STAT 340 Biometrics ....................................................... 3

Departmental courses ......................................................... 31

GRSC 100 Principles of Milling ........................................... 3

GRSC 505 Cereal and Feed Analysis ...................................... 3
GRSC 591  Commercial Feed and Food Manufacturing Internship ................................... 2
GRSC 602  Cereal Science ..................................... 3
GRSC 625  Flour and Dough Testing ................................ 3
GRSC 630  Management Applications in the Grain Processing Industries ........... 4
GRSC 635  Baking Science I ..................................... 2
GRSC 636  Baking Science Lab .................................... 2
GRSC 651  Food and Feed Product Protection .................................. 4
GRSC 670  Bakery Layout .......................................... 1
GRSC 701  Practicum in Bakery Technology .................................. 2
GRSC 737  Baking Science II ....................................... 2
GRSC 738  Baking Science Lab ...................................... 1
Creatives exercises ......................................................... 12
Free and university general education electives ... 3–8
+Recommended electives to strengthen a program include statistical process control, HACCP, communications, food processing, business, sensory analysis and food science courses, and GRSC 505, 610, and 720.
Note: Assumes incoming students have requisite chemistry, pre-calculus math, and computer skills. Chemistry courses can be selected to meet requirements for the minor in chemistry.

Production management option
128 semester hours

Foundation course requirements ........................................37
◆ ACCCTG 231 Accounting for Business Operations ........... 3
◆ BIOL 198 Principles of Biology .................................... 3
◆ CHEM 210 Chemistry II ........................................... 4
◆ CHEM 230 Chemistry II ........................................... 4
◆ ECON 110 Principles of Macroeconomics ................... 3
◆ AGEC 120 Agricultural Economics and Agribusiness .......... 3
or
◆ ECON 120 Principles of Microeconomics ....................... 3
ENG 100 Expository Writing I ...................................... 3
ENG 200 Expository Writing II ..................................... 3
ENG 516 Written Communication for Sciences ................... 3
or
AGCOM 400 Agricultural Business Communications .......... 3
GENAG 101 Agricultural Orientation ................................ 1
MANGT 420 Management Concepts .................................. 3
SPCH 106 Public Speaking ............................................. 3

Basic and applied sciences ........................................... 39–42
ASI 305 Fundamentals of Food Processing .......................... 3
or
ASI 501 Food Chemistry ............................................. 3
ASI 318 Fundamentals of Nutrition .................................... 3
or
◆ FN 132 Basic Nutrition ............................................. 3
or
FN 400 Human Nutrition ............................................. 3
ASI 607 Food Microbiology ........................................... 4
ATM 540 Introduction to Food Engineering Technology ........ 3
◆ BIOCH 265 Introduction to Organic and Biological Chemistry ...... 5
or
CHEM 350 General Organic Chemistry ................................ 3
and
BIOCH 521 General Biochemistry .................................... 3
BIOL 455 General Microbiology ..................................... 4
MATH 220 Analytic Geometry and Calculus I .................. 4
ME 212 Engineering Graphics ....................................... 2
or
ENVD 205 Graphics I (Secure permit in $212D) ....................... 2
PHYS 113 General Physics I .......................................... 4
and
PHYS 114 General Physics II ........................................ 4
PHYS 213 Engineering Physics I ..................................... 5
and
PHYS 214 Engineering Physics II ................................... 5
◆ STAT 320 Elementary Statistics .................................. 3
or
◆ STAT 340 Biometrics .................................................. 3

Departmental courses .................................................... 28
GRSC 100 Principles of Milling ....................................... 3
GRSC 591 Internship ................................................... 2
GRSC 602 Cereal Science ............................................. 3
GRSC 625 Flour and Dough Testing ................................... 3
GRSC 630 Management Applications .................................. 3
GRSC 635 Baking Science I ........................................... 2
GRSC 636 Baking Science Lab ......................................... 2
GRSC 651 Food and Feed Product Protection ...................... 4
GRSC 670 Bakery Layout .............................................. 1
GRSC 701 Practicum in Bakery Technology ......................... 2
GRSC 737 Baking Science II .......................................... 2
GRSC 738 Baking Science Lab ......................................... 1
Business electives (choose a minimum of 15 hours) ... 15
◆ ACCCTG 241 Accounting Investment and Finance .......... 3
◆ ACCCTG 331 Accounting Processes and Controls ........... 3
ECON 530 Money and Banking ..................................... 3
FINAN 450 Introduction to Finance ................................... 3
FINAN 470 Financial Analysis and Valuation .................... 3
IME 501 Industrial Management .................................... 3
MANGT 300 Introduction to Total Quality Management .......... 1
or
DEN 300 Introduction to Total Quality Management ................ 1
MANGT 530 Industrial Relations .................................... 3
MANGT 531 Personnel Human Resource Management ........... 3
or
◆ ECON 523 Human Resource Economics ....................... 3
MANGT 630 Labor Relations Law .................................... 3
or
◆ MKTG 400 Marketing ............................................... 3
◆ MKTG 542 Sales Management ..................................... 3
Free and university general education electives ... 6–10
+Recommended electives to strengthen a program include statistical process control, HACCP, communications, food processing, business, sensory analysis and food science courses, and GRSC 505, 610, and 720.
Note: Assumes incoming students have requisite chemistry, pre-calculus math, and computer skills.

Feed science and management
Bachelor of science in feed science and management
126 semester hours

Freshman
Fall semester
GENAG 101 Ag Orientation ........................................... 1
GRSC 100 Principles of Milling ....................................... 3
◆ CHM 210 Chemistry I ............................................. 4
ENG 100 Expository Writing I ...................................... 3
MATH 100 College Algebra .......................................... 3
G 212D) ................................................ 2
PHYS 113 General Physics I ........................................... 4
or
◆ BIOL 198 Principles of Biology .................................... 4
MATH 150 Plane Trigonometry ....................................... 3
SPCH 105 Public Speaking 1A ....................................... 2
Social science electives ................................................. 3
Sophomore
Fall semester
ENG 100 Expository Writing I ...................................... 3
◆ AGEC 120 Agricultural Economics and Agribusiness ........ 3
Required courses* .................................................. 9
Spring semester
GRSC 110 Flow Sheets .................................................. 2
◆ ECON 110 Principles of Macroeconomics ....................... 3
Social science electives ............................................... 6
Required courses* .................................................. 6
Junior
Fall semester
GRSC 661 Qualities of Feed and Food Ingredients ................. 3
Required courses* .................................................. 12
Spring semester
GRSC 505 Cereal and Feed Analysis .................................. 3
GRSC 651 Food and Feed Protection .................................. 4
GRSC 510 Feed Technology I ......................................... 4
Required courses* .................................................. 6
Senior
Fall semester
GRSC 591 Commercial Feed and Food Manufacturing Internship .... 2
GRSC 750 Feed Technology II ....................................... 4
GRSC 655 Cereal Food Plant Design and Construction ........... 3
Required courses* .................................................. 6
Spring semester
GRSC 610 Electricity and Control for Milling Processes ........... 3
GRSC 630 Management Applications .............................. 3
Required courses* .................................................. 11

*Including specialization and unrestricted electives

Required courses
AGEC 220 Grain and Livestock Marketing Systems .............. 3
AGEC 420 Commodity Futures ....................................... 3
MATH 205 General Calculus and Linear Algebra ............. 3
PHYS 111 General Physics I .......................................... 4
PHYS 114 General Physics II ........................................ 4
STAT 320 Elements of Statistics .................................... 3
CIS 101–104 Introduction to Personal Computing (or equivalent) .... 3
ENGL 516 Written Communication for the Sciences ............. 3
◆ ACCCTG 231 Accounting for Business Operations ........... 3
◆ BIOCH 265 Introduction to Organic Biochemistry ........... 5
ASI 318 Fundamentals of Nutrition .................................... 3

Specialization and unrestricted electives
GENAG 390 Agricultural Employment ................................ 1
GRSC 720 Extrusion Processes in Food and Feed Industries .......... 4
GRSC 790 Grain Science Problems .................................... 2–3
AGEC 410 Agricultural Policy ......................................... 4
AGEC 515 Food and Agribusiness Marketing ...................... 3
AGRIBUS 632 Agribusiness Logistics .................................. 3
ECON 631 Principles of Transportation .............................. 3
ASI 320 Principles of Feeding ........................................... 3
◆ ACCCTG 241 Accounting for Investment and Finance ........... 3
◆ ACCCTG 331 Accounting Processes and Controls ........... 3
FINAN 450 Introduction to Finance ................................... 3
MANGT 390 Business Law ............................................. 3
MANGT 420 Management Concepts .................................. 3
MANGT 530 Industrial and Labor Relations ...................... 3
MANGT 531 Personnel and Human Resource Management ........ 3
MANGT 630 Labor Relations Law .................................... 3
IME 501 Introduction to Industrial Management .................. 3
Unrestricted electives (maximum) .................................... 6
Social science electives ............................................... 9
(university general education requirement)

** Or approved courses at 350-level or above

Milling science and management
Bachelor of science in milling science and management
129 semester hours
Freshman
Fall semester
- GENAG 101 Ag Orientation ........................................... 1
- GRSC 100 Principles of Milling ........................................ 3
- CHM 210 Chemistry I .................................................. 3
- ENGL 100 Expository Writing ........................................... 3
- ECON 110 Principles of Macroeconomics .......................... 3
- SPCH 105 Public Speaking .............................................. 2
- Option A, B, or C electives ............................................. 5

Spring semester
- CHM 230 Chemistry II ................................................... 4
- Social science elective ..................................................... 3
- Option A, B, or C electives ............................................. 4
- BIOL 198 Principles of Biology ....................................... 4
- GRSC 110 Flow Sheets .................................................. 2
- Social science elective ..................................................... 3
- Option A, B, or C electives ............................................. 6

Sophomore
Fall semester
- ENGL 200 Expository Writing II ..................................... 3
- Option A, B, or C electives ............................................. 3
- Social science elective ..................................................... 3
- Option A, B, or C electives ............................................. 3

Spring semester
- GRSC 500 Milling Science I ............................................ 4
- BIOL 455 General Microbiology .................................... 4
- GRSC 505 Cereal and Feed Analysis ............................... 3
- Option A, B, or C electives ............................................. 3

Junior
Fall semester
- AGRON 340 Grain Grading ............................................ 2
- Option A, B, or C electives ............................................. 2
- STAT 320 Elementary Statistics ..................................... 3
- Social science elective ..................................................... 3

Spring semester
- GRSC 602 Cereal Science ............................................... 3
- GRSC 651 Food and Feed Production Protection ............... 4
- Option A, B, or C electives ............................................. 9

Senior
Fall semester
- GRSC 635 Baking Science I ........................................... 2
- GRSC 636 Baking Science I Lab ...................................... 2
- Option A, B, or C electives ............................................. 2

Spring semester
- Option A, B, or C electives ............................................. 13
- GRSC 734 Mill Processing Technology Management .......... 1

Options
Management option (A)
- ACCTG 231 Accounting for Business Operations .......... 3
- ACCTG 241 Accounting for Investment and Financing ........ 3
- AGE 318 Food and Agribusiness Management .................. 3
- AGE 420 Commodity Futures ......................................... 3
- AGE 520 Marketing Fundamentals and Futures/Options Trading .................................................. 3
- BIOCH 265 Introduction to Organic and Biochemistry .......... 5
- GRSC 625 Flour and Dough Testing ................................ 3
- GRSC 630 Management Applications in the Grain Processing Industries ............................................. 3
- GRSC 730 Milling Science II ......................................... 2
- MATH 220 Analytical Geometry and Calculus I ............... 4
- PHYS 113 General Physics I .......................................... 4
- PHYS 115 General Physics II .......................................... 4
- SPCH 311 Business and Professional Speaking .............. 6
- Free electives ............................................................. 6

Select 9 hours from the following:
- ACCTG 331 Accounting Processes and Controls ............ 4
- AGE 513 Agricultural Finance ......................................... 3
- AGE 515 Food and Agribusiness Marketing .................... 3

Chemistry option (B)
- GRSC 625 Flour and Dought Testing ............................... 3
- BIOCH 520 General Biochemistry ................................ 3
- BIOCH 522 General Biochemistry Lab ............................ 2
- CHM 371 Chemical Analysis ......................................... 4
- CHM 500 General Physical Chemistry .......................... 3
- CHM 531 Organic Chemistry I ......................................... 3
- CHM 532 Engineering Physics I .................................... 2
- CHM 550 Organic Chemistry II ....................................... 2
- CHM 551 Organic Chemistry II Lab ............................... 2
- GRSC 712 Vibrational Spectroscopy Analysis .............. 1–2
- MATH 220 Analytic Geometry and Calculus II ................. 4
- PHYS 213 Engineering Physics I ...................................... 5
- PHYS 214 Engineering Physics II .................................... 5
- Electives .................................................................... 13–14

Operations option (C)
- GRSC 610 Electricity and Control for Milling Processes .......... 3
- GRSC 630 Management Applications for the Grain Processing Industries ............................................. 3
- GRSC 640 Advanced Flow Sheets .................................... 2
- GRSC 655 Cereal Food Plant Design and Construction ....... 3
- GRSC 730 Milling Science II ......................................... 2
- GRSC 731 Milling Science II Lab ..................................... 2
- GRSC 785 Advanced Flour and Feed Technology ............. 2
- MATH 220 Analytical Geometry and Calculus I ............... 4
- MATH 221 Analytical Geometry and Calculus II ............... 4
- PHYS 213 Engineering Physics I ...................................... 5
- PHYS 214 Engineering Physics II .................................... 5
- CE 231 Statics A .......................................................... 3
- ATM 540 Introduction to Food Engineering ..................... 3
- ENV 205 Graphics .......................................................... 2
- Free electives ............................................................. 9

Grain science and industry minors
A grain science minor implies a knowledge of certain aspects of grain processing and utilization. We have structured our minors to include a minimum basic understanding of a specialization.

Bakery science minor
- GRSC 100 Principles of Milling ....................................... 3
- GRSC 602 Cereal Science ............................................... 3
- GRSC 625 Flour and Dought Testing ............................... 3
- GRSC 635 Baking Science I .......................................... 2
- GRSC 636 Baking Science I Lab ...................................... 2
- GRSC 737 Baking Science II .......................................... 2
- GRSC 738 Baking Science II Lab ..................................... 1

Grain science majors cannot use courses required in their major as part of a bakery science minor.

Feed science minor
- GRSC 100 Principles of Milling ....................................... 3
- GRSC 110 Flow Sheets .................................................. 2
- GRSC 510 Feed Tech I .................................................. 4
- GRSC 650 Cereal Food Plant Design .............................. 3
- BIOCH 522 Analytical Biochemistry ............................. 3
- GRSC 750 Feed Tech II .................................................. 4

Grain science majors cannot use courses required in their major as part of a feed science minor.

Cereal chemistry minor
- GRSC 100 Principles of Milling ....................................... 3
- GRSC 505 Cereal and Feed Analysis ............................... 3
- Cereal Science 602 ....................................................... 3
- GRSC 625 Flour and Dought Testing ............................... 3
- Plus 3 to 4 hours from the following:
- GRSC 635/636 Baking Science I and Lab (lecture and lab) .................................................. 4
- GRSC 712 Vibrational Spectroscopy Analysis .............. 1–2
- GRSC 713 Cereal Science/Feed Mill Equipment Analysis of Food .................................................. 1
- GRSC 720 Extrusion Processing ..................................... 4
- GRSC 790 Special Topics .............................................. var.

International Grains Program
Brendan Donnelly, Director
John Howard, Program Administrator

The International Grains Program promotes the marketing of wheat, corn, soybeans, sorghum, and other U.S. grains. As part of the effort to expand existing markets and to develop new ones for those agricultural commodities, program participants are trained in the processing and handling of U.S. food and feed grains, instructed in the use of the end products, and given a thorough understanding of the workings of the U.S. grain marketing system.

Grain science and industry courses
- GRSC 100. Principles of Milling. (3) I, II. Introduction to grain and feed milling processes. Two hours lec. and three hours lab a week. Pr.: High school algebra.
- GRSC 110. Flow Sheets. (2) I, II. The construction and assembling of a flow sheet. A considerable amount of time is spent in the feed mill and flour mill sketching the assignment. The assignment is then drawn in the classroom. Six hours lec. and six hours lab a week. Pr.: GRSC 100, ME 212.
- GRSC 500. Milling Science I. (4) I, II. Principles and practices of wheat flour milling with full equipment including grain storage, blending, cleaning, conditioning plant, and a modern pneumatic 240 hundred weight flour mill, with instrumentation and air conditioning, etc. Two hours lec. and six hours lab a week. Pr.: GRSC 100, 110, and a course in physics.
- GRSC 505. Cereal and Feed Analysis. (3) I, II. Principles, methods, and instruments for analyzing and testing cereal grains, cereal, and feed products. One hour lec. and six hours lab a week. Pr.: CHEM 230 and BIOCH 120.
- GRSC 510. Feed Tech I. (4) II. Introduction to formula feed manufacturing, including principles of conveying, grinding, mixing, pelleting, and other processing techniques, and the formulation of concentrates, premixes, and rations using a digital computer. Three hours lec. and three hours lab a week. Pr.: ASI 318 and GRSC 110.
- GRSC 591. Commercial Feed and Food Manufacturing Internship. (2) I. A practical application of feed and food manufacturing technology during an eight-week summer internship with an active commercial feed and food manufacturing company. The course will stress applied aspects of commercial feed and food manufacturing, which can include, but not be limited to, plant operations, maintenance, personnel and labor relations, business management, warehousing, ingredient procurement, quality assurance, and fleet management. Pr.: GRSC 510 or 505 or 635.
GRSC 602. Cereal Science. (3) I, II. The characteristics of cereals, legumes, their components, and their processing to foods. Three hours lec. a week. Pr.: BIOCH 265.

GRSC 610. Electricity and Its Control for the Grain Processing Industries. (3) II. Major emphasis will be given to apply machinery to feed grinding and electrical control. Two hours lec. and two hours lab a week. Pr.: GRSC 500 or 635 or consent of instructor.

GRSC 625. Flour and Dough Testing. (3) I. II. Physical and chemical methods used in evaluating wheat flour and doughs. Two hours lec. and three hours lab a week. Pr.: GRSC 602.

GRSC 630. Management Applications in the Grain Processing Industries. (3) II. Management courses have to determine if the university's market position will maintain a number of lectures in their field of expertise. Special emphasis is placed on the grain industry organizations, plant management, labor contracts, supervision, scheduling and planning, regulatory agencies, and cost control. Three hours lec. a week. Pr.: ECON 110 and either GRSC 510, 500, 635, or consent of instructor. Junior standing.

GRSC 655. Baking Science I. (2), (5). Introduction to the chemical and biological properties of flour and other principal ingredients used in production of yeast-leavened and chemical-leavened bakery foods. Study of major processing methods for making yeast leavened products such as breads, rolls, sweet goods, frosted dough, and partially baked products. Overview of major processes used for chemically-leavened baked products. Study of the relationship of ingredient composition to product type and processing required. Two hours lec. a week. Pr.: BIOCH 120.

GRSC 636. Baking Science I Laboratory. (2) I. Laboratory exercises in theory and production of yeast-leavened baked products. Six hours lab a week. Pr.: GRSC 635 or conc. enrollment.

GRSC 640. Advanced Flow Sheets. (2) I. Design of flow diagrams for dry milling processes. Uses a combination of methods and leavening principles. Industry and personnel in management positions will give a number of lectures in their field of expertise. Special emphasis is placed on the grain industry organizations, plant management, labor contracts, supervision, scheduling and planning, regulatory agencies, and cost control. Three hours lec. a week. Pr.: ECON 110 and either GRSC 510, 500, 635, or consent of instructor. Junior standing.

GRSC 651. Food and Feed Production Protection. (4) I. Sanitation in relation to processing, handling, and storage of human and animal foods. Emphasis on contaminates, control of causative agents, equipment and plant design, applicable laws and regulations. Three hours lec. and three hours lab a week. Pr.: Minimum of 8 hours of biological science; junior standing.

GRSC 655. Cereal Food Plant Design and Construction. (3) I. This course deals with principles of modern grain processing, feasibility, and equipment selection for plant improvements and new plant construction. Emphasis is placed on the effects of design on plant operating efficiency, finished product quality, and construction costs. Pr.: GRSC 500 or GRSC 610; junior standing.

GRSC 661. Qualities of Feed and Food Ingredients. (3) I. The course provides an integrated biological, chemical, and physical basis for evaluating the inherent nutritional quality of food and feed ingredients and the scientific literature techniques for obtaining new information. Three hours lec. a week. Pr.: BIOCH 120.

GRSC 670. Bakery Layout. (1) I. The layout of facilities to produce baked goods is studied. Students prepare their own bakery layout. Current problems in a bakery production setting in the baking industry are discussed. Two hour lab. Pr.: MATH 100, PHYS 113, and GRSC 636.

GRSC 701. Practical in Bakery Technology. (1). Inter. session only. One-week intensive course during the January intercession. Lectures and hands-on laboratory experience with commercial production scale baking equipment for breads and rolls, cookies and crackers, and cakes and sweet doughs. Restricted to upperclass bakery science and management majors or permission of the instructor. Pr.: GRSC 635 and 636.

GRSC 710. Fundamentals of Grain Storage. (2) I. This course focuses on the theory and practice of management of stored grain to maintain grain quality and maximize profits. Subjects include grain quality factors, physical properties of grain, grain masses, and grain storage structures, causes and management of deterioration in grain quality, and regulatory issues related to grain handling and storage. Pr.: GRSC 602 or 661.

GRSC 712. Vibrational Spectroscopic Analysis and Characterization. (1-2) II. Infrared and particularly modern near-infrared spectroscopic ‘‘as is’’ analysis of foods, natural products, and synthetic substances is accomplished with direct sampling and the use of multivariate statistics. This course is intended to equip the student to understand the principles and successfully apply this technology to practical analytical problems with emphasis upon food. Method development will be taught using specific analyzes in selected products. Theoretical background, working of modern instrumentation and associated software is presented in support of achieving practical competence. Pr.: BIOCHEM 265, CHEM 271 or consent of instructor.

GRSC 713. Contemporary Chromatographic Analysis of Food. (6) I. High performance liquid chromatography (HPLC) is the primary focus of this course. This will be supported by including treatment of topics in contemporary gas chromatography and supercritical fluid chromatography and extraction. Optimizing chromatographic conditions through knowledge of the column chemistry will be covered in addition to detector options, instrumentation, and sample preparation. Pr.: BIOCH 265, or CHEM 271 or consent of instructor.

GRSC 720. Extension Processing in the Food and Feed Industries. (4) I. The course is designed to provide the student with an understanding of extension technology and the ability to apply it to product development and production through a ‘‘hands-on’’ approach. Major emphasis is on laboratory exercises in which students will operate pilot scale extrusion equipment to produce readily-recognizable commercial products such as cheese curls, breakfast cereals, pasta, pet food, etc. Emphasis will also be placed on process and product development, analysis, and problem-solving techniques. Three hours lec. and three hours lab a week. Pr.: STAT 320 and GRSC 602.

GRSC 725. Feed Manufacturing Processes. (3) I. Study of the technical phases of formula feed manufacturing, equipment design and function, effect of processing and ingredients on nutritional acceptability of feeds and quality control. Two hours lec. and three hours lab a week. Pr.: MATH 100, MATH 150, and ASI 318.

GRSC 730. Milling Science I. (2) I. Advanced studies of the entire gradual reduction system of wheat flour milling and the many unit process systems that constitute the milling system. The theory and practice of mill control are studied in detail. Processing of other cereal grains and oil seeds are covered as well as small scale mill management. Two hours lec. a week. Pr.: GRSC 500.

GRSC 731. Milling Science II Laboratory. (2) I. The processes for milling other grains such as corn, oats, sorghum, different classes of wheat, and rye are studied in theory and by practice on small-scale laboratory milling units. Six hours a lab a week. Pr: GRSC 730 or conc. enrollment.

GRSC 734. Milling Processing Technology Management. (3) I. A capstone course for milling science and management students. The objective is to familiarize students with the managerial and processing operations involved in the management of a flour mill, modeling simulation techniques for flour milling operations, engineering economic parameters used in management operations, investment projects and evaluation of new milling technologies. Two hours lec. and three hours of lab per week. Pr.: GRSC 730.

GRSC 737. Baking Science II. (2) I. Study of physical, chemical, and functional properties of ingredients used in production of bakery products including cakes, cookies, doughnuts, pies, bagels, and related products. Principles of chemical leavening. Description of processes utilized to make the various bakery foods. Chemistry and functionality of flavors, spices, gums, speciality starches, and colors used in baking. Types of fillings and icings for bakery products. Formulation of low-fat and no-calorie baked products. Quality factors, total quality programs, and nutritional value of end products. Two hours lec. a week. Pr.: GRSC 635.

GRSC 738. Baking Science II Laboratory. (1) I. A laboratory course to accompany Baking Science II (GRSC 737). Exercises and experiments in production of chemically-leavened and yeast leavened bakery foods including various cakes, cookies, doughnuts, bagels, icings, and fillings. Three hours of lab a week. Pr.: GRSC 730 or conc. enrollment.

GRSC 750. Feed Technology II. (4) I. Advanced study of engineering principles applicable to flour and feed plant operations, materials handling, equipment selection, and processing systems. Three hours lec. and three hours lab per week. Separate lab sessions are conducted for flour and for feed students. Pr.: GRSC 510 or 500, PHYS 114 or 214, and a course in statistics and computer applications.

GRSC 785. Advanced Flow and Feed Technology. (3) II. Design and use of exhaust systems, pneumatic conveying systems, bins and hoppers, and the practical applications of electrical interlocking, instrumentation, and microprocessors to automatic mill control. Also other subjects such as sound measurement and explosion detection and prevention are covered. Two hour lec. and three hours lab a week. Pr.: GRSC 730 or 750.

GRSC 790. Grain Science Problem. (Var.) I, II, S. Pr.: Consent of staff.

Horticulture, Forestry, and Recreation Resources

Thomas D. Warner, Head
Raymond Aslin, State Forester
Charles Marr, Horticulture Extension Program Leader
Keith Lynch, Undergraduate Program Coordinator

Professors Cable,* Geyer,* Jennings, *Marr,* Mattson,* Rajashekar,* van der Hoeven and Warner; Associate Professors Barden, Carey, Davis, Fry,* Gast,* Janke,* Khatamian,* Kimmins, Lynch, Morgan,* Reid, Stevens, Stevenson,* and Wiest*; Assistant Professors Becker,* Erb,* Huang,* and Williams,* Instructors, Brookes; Emeriti Professors Clayberg, Leuthold, and Keen.

E-mail: sreyer@oznet.ksu.edu
www.oznet.ksu.edu/dp_hfrr/welcome.htm

The Department of Horticulture, Forestry, and Recreation Resources is a multi-disciplinary department offering undergraduate programs in horticulture, horticulture science, horticultural therapy, park resource management, and recreation and park administration. Departmental faculty participate in research, extension, and academic programs in these diverse fields which have a positive impact on the quality of life and enhancing the environment. Individual students may have opportunities working with faculty on research or extension programs.

Horticulture programs

K-State offers four-year curricula in horticulture and horticultural therapy. The Department of Horticulture, Forestry, and Recreation Resources also participates in an interdisciplinary program in food science and industry.
Horticulture is the science and art of growing plants for environmental improvement, aesthetic value, intensive food production, or social-therapeutic effects. Students in consultation with faculty advisors may select courses of study in horticulture or horticulture science. The horticulture program is designed for those seeking to move into the production or service sectors of horticulture or pursue careers in public horticulture. Students completing this program also meet requirements for entrance into graduate programs across the United States and can meet the education requirements for certification by the American Registry of Certified Professionals in Agronomy, Crops, and Soils. The horticulture science program provides a stronger foundation in basic sciences for graduate studies. Students interested in pursuing careers in industry research or extension can also follow this program.

All students are required to take a core of general courses in addition to the agricultural, horticultural, and business courses. Students in the horticulture program will specialize and take additional courses to gain expertise in the areas of fruit and vegetable production, golf course management, greenhouse management, landscape design, nursery management, or landscape and turf management. The specialization in golf course management is sufficiently different from the others in horticulture that complete requirements are listed separately. After the sophomore year, students are required to complete a three- or six-month internship at an approved site.

Career opportunities for students graduating with a degree in horticulture exist in various arenas, including production, landscape design and management, interiorscape design and management, floral design, botanic gardens and arboreta, garden center operation, athletic grounds management, and golf course operations. Opportunities exist with the various support industries in the area of sales of fertilizers, chemicals, plant material, seeds, containers, and various other supplies; product development; breeding and seed production companies; and trade magazines. Horticulture majors obtaining a minor in plant pathology or entomology will also find opportunities in horticultural pest diagnosis and consulting.

Students considering a career in extension should consider pursuing a master of science degree.

**Horticulture**

Bachelor of science in agriculture

127 semester hours (except golf course management: 124 semester hours and horticulture science: 130 semester hours)

Advisors: Brooks, Davis, Fry, Huang, Jennings, Khatamian, Rajashekar, and Williams.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

### Communications requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
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<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
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<tr>
<td>SPCH 105</td>
<td>Public Speaking 1A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Communications elective</td>
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### Humanities/social science

<table>
<thead>
<tr>
<th>Electives</th>
<th>Credits</th>
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### Math/chemical sciences requirements

| MATH 100 | College Algebra                          | 3       |
| CHM 210  | Chemistry I                              | 4       |
| CHM 230  | Chemistry II                             | 4       |
| ORG 305  | Soils                                    | 4       |
| BIOL 300 | Plant Physiology*                        | 4       |
| PLTH 500 | Principles of Plant Pathology            | 3       |
| ASI 500  | Genetics                                 | 3       |
| HORT 560 | Vegetable Crop Production                | 3       |
| PEST 560 | Pest management elective                 | 2-3     |

*If Landscape design students take surveying elective in place of Organic Chemistry.

### Agricultural/biological sciences requirements

| GENAG 101 | Agricultural Orientation                | 1       |
| BIOL 210  | General Botany                          | 4       |
| HORT 201  | Introductory Horticultural Science      | 4       |
| AGR 305   | Soils                                   | 4       |
| BIOL 500  | Plant Physiology*                       | 4       |
| PLTH 500  | Principles of Plant Pathology           | 3       |
| ASI 500   | Genetics                                | 3       |
| HORT 560  | Vegetable Crop Production               | 3       |
| PEST 560  | Pest management elective                | 2-3     |

*If Landscape design students take biology elective in place of Plant Physiology.

### Horticulture requirements

| HORT 350   | Plant Propagation                       | 3       |
| HORT 590   | Horticulture Internship                 | 3-6     |
| HORT 520   | Fruit Production                        | 3       |
| PEST 560   | Vegetable Crop Production               | 3       |

### Horticulture specialization electives

Select an area of horticulture specialization and complete 27 hours of specialization courses, chosen in consultation with the advisor.

#### Fruit/vegetable production

| AGR 330    | Weed Management                         | 3       |
| HORT 376   | Herbesaceous Ornamental Plants           | 3       |
| HORT 560   | Herbaceous Ornamental Plants             | 3       |
| ENT 612    | Insect Pest Diagnosis                    | 2       |
| ENT 620    | Insecticides: Properties and Laws        | 2       |

#### Greenhouse management

| HORT 376   | Herbesaceous Ornamental Plants           | 3       |
| HORT 377   | Plants in the Interior Environment       | 3       |
| HORT 570   | Green House Operations and Management   | 3       |
| HORT 575   | Nursery/Garden Center Operations         | 3       |
| HORT 625   | Floral Crop Production and Handling     | 4       |

#### Nursery management

| HORT 374   | Woody Plant Materials I                  | 3       |
| HORT 375   | Woody Plant Materials II                 | 3       |
| HORT 570   | Green House Operations and Management   | 3       |
| HORT 575   | Nursery/Garden Center Operations         | 3       |
| AGR 330    | Weed Management                          | 3       |

#### Landscape and turf management

| HORT 374   | Woody Plant Materials I                  | 3       |
| HORT 375   | Woody Plant Materials II                 | 3       |
| HORT 376   | Herbaceous Ornamental Plants             | 3       |

| HORT 508   | Landscape Maintenance                    | 3       |
| HORT 515   | Turfgrass Management                     | 3       |
| HORT 551   | Landscape Contracting and Construction   | 3       |
| HORT 585   | Arboriculture                            | 3       |
| AGR 375    | Soil Fertility                           | 3       |

### Agricultural economics/business electives

| ECON 110  | Principles of Macroeconomics            | 3       |
| ECON 120  | Principles of Microeconomics             | 3       |
| AGEC 120  | Agricultural Economics/Agribusiness      | 3       |
| ACCTG 231 | Accounting for Business Operations       | 3       |

### Free electives

<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>11-15</td>
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</table>

### Golf course management specialization

#### Technical core

| BIOL 198 | Principles of Biology                   | 4       |
| BIOL 210 | General Botany                          | 4       |
| CHM 210  | Chemistry I                             | 4       |
|          | Computer science elective—select three CJS sections from: | |
| CJS 101  | Topics/PC/Windows/Internet              | 1       |
| CJS 102  | Topics/PC/Spreadsheets                  | 1       |
| CJS 103  | Topics/PC/Databases                     | 1       |
| CJS 104  | Topics/PC/Word Processing               | 1       |
| AGR 455  | Computer Applications in Agronomy       | 3       |
| MATH 100 | College Algebra                         | 3       |

### Statistics elective—select one of the following

| STAT 320 | Elements of Statistics                  | 3       |
| STAT 330 | Elementary Statistics for Social Sciences | 3       |
| STAT 340 | Biometrics                              | 3       |
| STAT 350 | Business and Economic Statistics        | 3       |

### Communication and interpersonal relations

| ENGL 100 | Expository Writing I                    | 3       |
| ENGL 200 | Expository Writing II                   | 3       |
| SPCH 105 | Public Speaking IA                      | 2       |
|          | Plus 9 hours selected from the following electives | |
| EDSEC 706 | Principles of Teaching Adult Extension | 3       |
| ENGL 300 | Expository Writing III                   | 3       |
| ENGL 516 | Written Communications for the Sciences | 3       |
| MANGT 520 | Organization Behavior                   | 3       |
|          | Psychology of Organizations             | 3       |
|          | Principles of Advertising               | 3       |
|          | Fundamentals of Public Relations        | 3       |
|          | Business Communications                    | 3       |
|          | Sales Communications                     | 3       |
|          | Business and Professional Speaking      | 3       |
|          | Interpersonal Communications             | 3       |
|          | Nonverbal Communications                 | 3       |
|          | Argumentation and Debate                 | 3       |
|          | Small Group Discussion Methods           | 3       |
Horticulture science
Bachelor of science in agriculture 130 semester hours
The horticulture science program has the same communications, general electives, math/chemical sciences, and agriculture/biological sciences requirements as the horticulture program with the following modifications (modifications are given in italics) and additions.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Humans and/or social sciences
ECON 110 Principles of Macroeconomics 3
ECON 120 Principles of Microeconomics or AGECON 120 Agricultural Economics and Agricultural Business 3

General electives 6

Turf management
GENAG 101 Ag Orientation 4
AGRON 305 Soils 4
AGRON 335 Environmental Quality or FOR 375 Introduction to Natural Resource Management 3
AGRON 375 Soil Fertility 3
ATM 653 Water Management and Irrigation Systems or HORT 595 Landscape Irrigation Systems 3
HORT 201 Introductory Horticultural Science 4
HORT 374 Woody Plant Materials I or HORT 375 Woody Plant Materials II 3
HORT 515 Turfgrass Management 3
HORT 517 Golf Course Operations or PLPTH 500 Principles of Plant Pathology 3

Plus one of the following: AGRON 746 Physical Properties of Soil or ENTOM 320 Horticultural Entomology 3
HORT 374 Woody Plant Materials I or HORT 375 Woody Plant Materials II 3
HORT 376 Herbaceous Ornamental Plants 3
HORT 308 Landscape Maintenance 3
HORT 706 Turfgrass Science 3
PLPTH 590 Landscape and Turf Diseases 2

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Business management
ACCTG 231 Accounting for Business Operations 3
ACCTG 241 Accounting for Investing and Financing 3
FIN 450 Principles of Finance 3
MANGT 420 Management Concepts 3
MKTG 400 Marketing 3

Plus one of the following: AGEC 202 Small Business Operations 3
MANGT 390 Business Law I 3
MANGT 531 Personnel and Human Resource Management 3
RRES 490 Parks and Recreation Administration 3

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Horticulture therapy
Bachelor of science in agriculture 130 semester hours
Advisors: Kimmis, Mattson
Courses are required in general education, horticulture, agriculture, horticultural therapy, and humanities and/or social sciences.

Specialization electives may be selected in community-based programs, corrections, gerontology, education, developmental disabilities, or mental health. Clinical internships are required during the senior year at approved psychiatric hospitals, rehabilitation centers, veterans administration hospitals, correctional agencies, geriatric and retirement centers, community-based agencies, or other approved sites.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

General education requirements
ENGL 100 Expository Writing I 3
ENGL 200 Expository Writing II 3
SPCH 105 Public Speaking IA 2
MATH 100 College Algebra 3
MATH 376 College Algebra 3
MATH 111 General Chemistry 3
CHM 111 General Chemistry Lab 1
BIOL 210 General Botany 4
or
BIOL 198 Principles of Biology 4
MATH/STAT/CIS elective 3

Horticulture and agriculture requirements
HORT 201 Introductory Horticultural Science 4
HORT 210 Concepts of Floral Design 3
HORT 256 Human Dimensions of Horticulture 3
HORT 350 Plant Propagation 3
HORT 508 Vegetable Crop Production 3
HORT 515 Turfgrass Management 3
HORT 525 Horticulture for Special Populations 3
HORT 530 Horticultural Therapy Case Management 1
HORT 535 Horticultural Therapy Field Techniques 3
HORT 520 Fruit Production 3
HORT 560 Vegetable Crop Production 3
HORT 570 Greenhouse Operations Management 3
HORT 575 Nursery and Garden Center Operations 3
HORT 590 Horticulture Internship 3

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Horticulture specialization electives 15
Free electives 10–13

Business requirements
ECON 110 Principles of Macroeconomics or ECON 120 Principles of Microeconomics or AGEC 120 Agricultural Economics and Agribusiness 3
ACCTG 231 Accounting for Business Operations 3

6

Horticulture therapy
Bachelor of science in agriculture 130 semester hours
Advisors: Kimmis, Mattson
Courses are required in general education, horticulture, agriculture, horticultural therapy, and humanities and/or social sciences.

Specialization electives may be selected in community-based programs, corrections, gerontology, education, developmental disabilities, or mental health. Clinical internships are required during the senior year at approved psychiatric hospitals, rehabilitation centers, veterans administration hospitals, correctional agencies, geriatric and retirement centers, community-based agencies, or other approved sites.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

General education requirements
ENGL 100 Expository Writing I 3
ENGL 200 Expository Writing II 3
SPCH 105 Public Speaking IA 2
MATH 100 College Algebra 3
MATH 376 College Algebra 3
MATH 111 General Chemistry 3
CHM 111 General Chemistry Lab 1
BIOL 210 General Botany 4
or
BIOL 198 Principles of Biology 4
MATH/STAT/CIS elective 3

Horticulture and agriculture requirements
HORT 201 Introductory Horticultural Science 4
HORT 210 Concepts of Floral Design 3
HORT 256 Human Dimensions of Horticulture 3
HORT 350 Plant Propagation 3
HORT 508 Vegetable Crop Production 3
HORT 515 Turfgrass Management 3
HORT 525 Horticulture for Special Populations 3
HORT 530 Horticultural Therapy Case Management 1
HORT 535 Horticultural Therapy Field Techniques 3
HORT 520 Fruit Production 3
HORT 560 Vegetable Crop Production 3
HORT 570 Greenhouse Operations Management 3
HORT 575 Nursery and Garden Center Operations 3
HORT 590 Horticulture Internship 3

12

Horticulture specialization electives 15
Free electives 10–13

Business requirements
ECON 110 Principles of Macroeconomics or ECON 120 Principles of Microeconomics or AGEC 120 Agricultural Economics and Agribusiness 3
ACCTG 231 Accounting for Business Operations 3

6

Horticulture therapy
Bachelor of science in agriculture 130 semester hours
Advisors: Kimmis, Mattson
Courses are required in general education, horticulture, agriculture, horticultural therapy, and humanities and/or social sciences.

Specialization electives may be selected in community-based programs, corrections, gerontology, education, developmental disabilities, or mental health. Clinical internships are required during the senior year at approved psychiatric hospitals, rehabilitation centers, veterans administration hospitals, correctional agencies, geriatric and retirement centers, community-based agencies, or other approved sites.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

General education requirements
ENGL 100 Expository Writing I 3
ENGL 200 Expository Writing II 3
SPCH 105 Public Speaking IA 2
MATH 100 College Algebra 3
MATH 376 College Algebra 3
MATH 111 General Chemistry 3
CHM 111 General Chemistry Lab 1
BIOL 210 General Botany 4
or
BIOL 198 Principles of Biology 4
MATH/STAT/CIS elective 3

Horticulture and agriculture requirements
HORT 201 Introductory Horticultural Science 4
HORT 210 Concepts of Floral Design 3
HORT 256 Human Dimensions of Horticulture 3
HORT 350 Plant Propagation 3
HORT 374 Woody Plant Material I 3
HORT 375 Woody Plant Materials II 3
HORT 376 Herbaceous Ornamental Plants 3
HORT 377 Plants in the Interior Environment 3
HORT 508 Landscape Maintenance 3
or
Turfgrow Management 3
HORT 515 Turfgrass Management 3
HORT 525 Horticulture for Special Populations 3
HORT 530 Horticultural Therapy Case Management 1
HORT 535 Horticultural Therapy Field Techniques 3
HORT 520 Fruit Production 3
HORT 560 Vegetable Crop Production 3
HORT 570 Greenhouse Operations Management 3
HORT 625 Floral Crop Production/Handling 4
AGRON 305 Soils 4
PLPTH 500 Principles of Plant Pathology 3
ENTOM 320 Horticultural Entomology 3

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Humanities and/or social science requirements
PSYCH 110 General Psychology 3
PSYCH 905 Abnormal Psychology 3
SOCIO 211 Introduction to Sociology 3

3

Educational psychology elective
Select 3 credits from the list:
PSYCH 280 Psychology of Childhood and Adolescence 3
EDCEP 315 Educational Psychology I 3
HDIF 110 Introduction to Human Development 3

9

Professional electives 15
Select 15 credits from a professional emphasis that appear on the approved departmental list. Professional emphases are community-based programs, corrections, developmental disabilities, education, gerontology, and mental health.

Business requirement
Select 6 credits from the list:
ACCTG 231 Accounting Business Operations 3
AGEC 202 Small Business Operations 3
MANGT 390 Business Law I 3
MANGT 420 Management Concepts 3
MANGT 531 Personnel Management 3

6

Internship requirement
HORT 540 Horticultural Therapy Field Experiences 6

Free electives 11
Horticulture minor
A minor in horticulture will consist of 16 credit hours, which will provide the student with a breadth of knowledge in horticulture.

Required

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>HORT 256</td>
<td>Human Dimensions in Horticulture</td>
<td>3</td>
</tr>
<tr>
<td>HORT 374</td>
<td>Woody Plant Materials I</td>
<td>3</td>
</tr>
<tr>
<td>HORT 375</td>
<td>Woody Plant Materials II</td>
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<td>HORT 376</td>
<td>Herbaceous Ornamental Plants</td>
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</tr>
<tr>
<td>HORT 515</td>
<td>Turf Management</td>
<td>3</td>
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<tr>
<td>HORT 520</td>
<td>Fruit Production</td>
<td>3</td>
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<tr>
<td>HORT 560</td>
<td>Vegetable Production</td>
<td>3</td>
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<tr>
<td>HORT 570</td>
<td>Greenhouse Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>HORT 575</td>
<td>Nursery and Garden Center Management</td>
<td>3</td>
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</table>

Recreation resources
Society faces a future of making potentially infinite demands upon finite natural resources. Appropriate management of America’s natural and recreation resources will require the best efforts of dedicated, trained professional managers. A basic objective of recreation resource managers is to provide essential goods and services while maintaining the highest environmental standards. A primary focus of recreation and park professionals is the supply of quality leisure opportunities that lead to an enhanced “quality of life.” Two four-year programs are offered: (1) park management and conservation and (2) recreation and park administration leading to a bachelor of science degree.

Advisors: Becker, Cable, Lynch, Morgan, and Stevenson

Park management and conservation
Bachelor of science in agriculture
130 semester hours

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Mathematics and statistics requirements

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<td>MATH 100</td>
<td>College Algebra</td>
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<tr>
<td>STAT 330</td>
<td>Elementary Statistics for Social Sciences</td>
<td>3</td>
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<tr>
<td>STAT 340</td>
<td>Biometrics</td>
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Recreation resources core requirements

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<tr>
<td>FOR 385</td>
<td>Microcomputer Applications in Natural Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>LAR 322</td>
<td>Environmental Issues and Ethics</td>
<td>3</td>
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<tr>
<td>MC 325</td>
<td>Fundamentals of Public Relations</td>
<td>3</td>
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<tr>
<td>RRES 210</td>
<td>Introduction to the Park and Recreation Profession</td>
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<tr>
<td>RRES 320</td>
<td>Recreation Group Dynamics</td>
<td>2</td>
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<td>RRES 350</td>
<td>Parks and Recreation Practicum</td>
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<td>RRES 440</td>
<td>Outdoor Recreation Policy</td>
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<td>RRES 489</td>
<td>Recreation Programming</td>
<td>3</td>
</tr>
<tr>
<td>RRES 490</td>
<td>Parks and Recreation Administration I</td>
<td>3</td>
</tr>
<tr>
<td>RRES 492</td>
<td>Internship in Parks and Recreation</td>
<td>3</td>
</tr>
<tr>
<td>RRES 520</td>
<td>Research Methods for Parks and Recreation</td>
<td>3</td>
</tr>
<tr>
<td>RRES 590</td>
<td>Park and Facility Maintenance</td>
<td>3</td>
</tr>
<tr>
<td>RRES 675</td>
<td>Dimensions of Recreational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>RRES 699</td>
<td>Parks and Recreation Administration II</td>
<td>3</td>
</tr>
<tr>
<td>RRES 756</td>
<td>Design of Parks and Recreation Areas</td>
<td>3</td>
</tr>
<tr>
<td>RRES 635</td>
<td>Environmental Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>RRES 940</td>
<td>Park and Facility Maintenance</td>
<td>1</td>
</tr>
<tr>
<td>RRES 675</td>
<td>Dimensions of Recreational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>RRES 699</td>
<td>Parks and Recreation Administration II</td>
<td>3</td>
</tr>
<tr>
<td>RRES 756</td>
<td>Design of Parks and Recreation Areas</td>
<td>3</td>
</tr>
<tr>
<td>RRES 640</td>
<td>Advanced Environmental Interpretation</td>
<td>3</td>
</tr>
</tbody>
</table>

Free electives

<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>11</td>
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</table>

Law enforcement ranger option requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>RRES 200</td>
<td>Topics/Legal Procedures and Codes</td>
<td>3</td>
</tr>
<tr>
<td>RRES 200</td>
<td>Topics/Enforcement Skills and Techniques</td>
<td>3</td>
</tr>
<tr>
<td>RRES 200</td>
<td>Topics/Philosophy of Law Enforcement</td>
<td>3</td>
</tr>
<tr>
<td>RRES 210</td>
<td>Introduction to Law Enforcement</td>
<td>3</td>
</tr>
<tr>
<td>RRES 210</td>
<td>Public and Community Relations</td>
<td>3</td>
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</table>

Plus pick 6 hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SOCIO 361</td>
<td>Sociology of Criminal Justice System</td>
<td>3</td>
</tr>
<tr>
<td>SOCIO 362</td>
<td>Police and Society</td>
<td>3</td>
</tr>
<tr>
<td>SOCIO 561</td>
<td>Criminology</td>
<td>3</td>
</tr>
<tr>
<td>SOCIO 570</td>
<td>Race and Ethnic Relations</td>
<td>3</td>
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</table>

Free electives

<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>11</td>
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</table>

Recreation and park administration
Bachelor of science in agriculture
130 semester hours

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Communications requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<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>SPCH 106</td>
<td>Public Speaking I</td>
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General agriculture requirement

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>GENAG 101</td>
<td>Ag Orientation</td>
<td>3</td>
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</table>

Natural sciences requirements

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 210</td>
<td>General Botany</td>
<td>4</td>
</tr>
<tr>
<td>GEO 101</td>
<td>Earth in Action</td>
<td>3</td>
</tr>
<tr>
<td>CHM 110</td>
<td>General Chemistry</td>
<td>3</td>
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<tr>
<td>CHM 111</td>
<td>General Chemistry Lab</td>
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<tr>
<td>PHYS 101</td>
<td>The Physical World I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 103</td>
<td>The Physical World II</td>
<td>3</td>
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</table>

Social systems requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ECON 120</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>PSTCH 110</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOCIO 211</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>MSCI 102</td>
<td>Basic Riflery</td>
<td>3</td>
</tr>
</tbody>
</table>

Recreation and park administration option requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ACCTG 231</td>
<td>Accounting for Business Operations</td>
<td>3</td>
</tr>
<tr>
<td>ACCTG 241</td>
<td>Accounting for Investing and Financing</td>
<td>3</td>
</tr>
<tr>
<td>FIN 450</td>
<td>Essentials of Finance</td>
<td>3</td>
</tr>
<tr>
<td>HRM 230</td>
<td>Issues in Tourism</td>
<td>2</td>
</tr>
<tr>
<td>MGMT 420</td>
<td>Management Concepts</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 400</td>
<td>Marketing</td>
<td>3</td>
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</tbody>
</table>

Plus pick three courses (1 credit each) from the following list of lifetime exercise and/or sport activities:

<table>
<thead>
<tr>
<th>Credits</th>
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<tbody>
<tr>
<td>15–16</td>
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Plus select 15 hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>AGCOM 400</td>
<td>Ag Business Communications</td>
<td>3</td>
</tr>
<tr>
<td>AGEC 202</td>
<td>Small Business Operations</td>
<td>3</td>
</tr>
<tr>
<td>EDE 350</td>
<td>Scientific Principles of Coaching</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 390</td>
<td>Business Law</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 440</td>
<td>Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>PSYCH 425</td>
<td>Problem Solving and Decision Making</td>
<td>3</td>
</tr>
<tr>
<td>SOCIO 310</td>
<td>Natural Resource Education Workshop</td>
<td>3</td>
</tr>
<tr>
<td>SOCIO 460</td>
<td>Juvenile Delinquency</td>
<td>3</td>
</tr>
</tbody>
</table>
Horticulture courses

HORT 201. Introductory Horticultural Science. (4) II. An introduction to the principles and practices of horticultural plant systems. Plant structure and function will be discussed along with the effects of environmental factors on plant growth. General cultural practices will be described including pest control, mineral nutrition, propagation, and use of herbaceous annuals and perennials. Two hours rec. and three hours lab a week. Pr.: High school biology/botany or concurrent enrollment in BIOL 210.

HORT 210. Concepts of Floral Design. (3) I. An introduction to the use of flowers and related products with an emphasis on fundamentals of design. Two hours rec. and three hours studio a week. For majors or nonmajors.

HORT 256. Human Dimensions of Horticulture. (3) I, II. Introduction to horticulture applied in schools, psychiatric and medical hospitals, corrections, vocational rehabilitation centers, elderly programs, and consumer horticulture settings. Networking the art and science of horticulture with architecture, business, social sciences, health care, horticulture, and education. Two hours lec. and one hour rec. a week.

HORT 301. Horticulture Practicum. (1–3) I, II. Experiential approach to learning horticulture through teaching. Students will assist faculty with specific horticulture courses. No more than 3 credits may be used as horticulture summer elective options nor may it substitute for a required horticulture course in the horticulture or horticultural therapy curricula. Pr.: HORT 201, junior standing, and successful completion of practicum assistance course with at least a C.

HORT 350. Plant Propagation. (3) I. Designed to develop proficiencies in various skills and techniques necessary for propagation of horticultural plants. Basic fundamentals of seed structure and vegetative makeup of plants are emphasized. Two hours rec. and two hours lab a week. Pr.: HORT 201.

HORT 374. Woody Plant Materials I. (3) I. Identification, ornamental characters, site requirements, and use of woody ornamental deciduous trees and shrubs with special emphasis on the cultivated varieties. Weekly labs consist of labeling woody plants and identifying plant parts. Two hours lec. and two hours lab a week. Pr.: BIOL 198, BIOL 210, or HORT 201.

HORT 375. Woody Plant Materials II. (3) I. Identification, ornamental characters, site requirements, and use of woody ornamental conifers, broadleaf evergreens, vines, ground covers, deciduous flowering shrubs, and small-to-medium-size flowering trees. Weekly labs consist of labeling woody walking campus tours to identify plant specimens. Two hours lec. and two hours lab a week. Pr.: BIOL 198, BIOL 210 or HORT 201; and HORT 374.

HORT 376. Herbaceous Ornamental Plants. (3) I. Identification, ornamental characters, culture, propagation, and use of herbaceous annuals and perennials. Two hours rec. and two hours lab a week. Pr.: BIOL 210 and HORT 201.

HORT 377. Plants in the Interior Environment. (3) I, II. Identification, ornamental characters, culture, propagation, and use of foliage plants in the interior environment. Two hours lec. and two hours lab a week. Pr.: BIOL 210 and HORT 201.

HORT 390. Horticulture Topics. (Var.) I, II, S. Lectures and discussion of topics of importance to undergraduate majors. Pr.: Consent of instructor.

HORT 450. Horticultural Design. (3) I. The selection, location and arrangement of plants and other permanent features of the landscape around homes and other similar areas. Two hours lec. and two hours lab a week. Pr.: HORT 374, 375 and 376.

Undergraduate and graduate credit in minor field

HORT 500. Landscape Maintenance. (3) II. Fundamental principles of maintaining ornamental plantings of trees, shrubs, perennials, and turf in the nursery, home grounds, parks, and similar areas. Three hours rec. a week. Pr.: HORT 374 and/or 375.

HORT 515. Turfgrass Management. (3) I. Turfgrass identification and adaptation; establishment and maintenance of lawns and turf areas; turfgrass pest control. Two hours rec. and two hours lab each week. Pr.: HORT 201 and AGRON 305.

HORT 517. Golf Course Operations. (3) II. In odd years. Strategies involved in golf course operation, including development of cultural practices, adherence to environmental regulations, personnel management, and budgeting. Two hours lec. and two hours lab. a week. Pr.: HORT 515.

HORT 520. Fruit Production. (3) II. In even years. Principles and practices of cultivating fruit and nut crops commercially. Laboratory offers experiences in horticultural practices. Two hours rec. and two hours lab a week. Pr.: HORT 201 and HORT 350.

HORT 525. Horticulture For Special Populations. (3) I. An intensive study of the concepts and methods of using plants and gardening as therapeutic activities with developmentally disabled, geriatric, economically and socially disadvantaged, emotionally disturbed, or educationally deprived clients. Two hours rec. and two hours lab a week. Pr.: BIOL 210 or HORT 201.

HORT 530. Horticultural Therapy Case Management. (3) II. Guest lecturer and student presentations of topics relating to professional issues in horticultural therapy; case studies or goals of horticultural therapy. The course is intended to help students focus expectations and assumptions about a professional career in horticultural therapy and to give them practice in articulating their understanding of the field. Client case management is used as part of career practice. One hour rec. a week. Pr.: HORT 256 and 525.

HORT 535. Horticultural Therapy Field Techniques. (3) I, II. Students under supervision will plan, conduct, and evaluate horticultural therapy activities at Manhattan institutional sites selected according to student’s interest. A weekly discussion session addresses evaluation and issues of professionalism. Two hours rec. and two hours lab a week. Pr.: HORT 525.

HORT 540. Horticultural Therapy Field Experiences. (3 or 6) I, II, S. Supervised training at institutions with horticultural therapy programs to gain experience in the application and use of horticultural activities for special populations. Six months (1,000 hours) continuous internships required in psychiatric or correctional institutions. Pr.: BIOL 210, or HORT 201. Two hours rec. and three hours lab a week. Pr.: BIOL 210 or BIOL 210 and AGRON 305.

HORT 551. Landscape Contracting and Construction. (3) I. The student will design and develop development of planting plans (including contracting, construction, and specifications) as applied to landscape horticulture. Two hours rec. and two hours lab a week. Pr.: HORT 450.

HORT 560. Vegetable Crop Production. (3) II. In odd years. Study of production principles and cultural practices involved in the growing of vegetable crops. Two hours lec. and two hours lab or field trips a week. Pr.: HORT 201.

HORT 570. Greenhouse Operations Management. (3) I. Greenhouse systems operations and management including greenhouse layout; structures; glazing materials; heating, ventilation, light conditions; pest control; safety issues, and non-pesticide control methods. Two hours lec. and three hours lab. a week. Pr.: HORT 201 or BIOL 210, MATH 100, and an entomology, plant pathology, or weed science course.

HORT 585. Arboriculture. (3) I. Principles and practices of maintaining shade and ornamental trees under urban environments. Two hours rec. and two hours lab a week. Pr.: HORT 201 and HORT 374 or FOR 330.

HORT 590. Horticulture Internship. (3 or 6) I, II. Principles of commercial or public horticulture activity including exposure to multiple phases of the working horticulture operation. Students will be placed according to specific interest. Required for horticulture majors after having completed 60 hours. Pr.: HORT 201, plus one 500-level horticulture commodity course.

HORT 595. Landscape Irrigation Systems. (3) I. Application of the principles and practices of landscape irrigation which involve drainage, sprinkler system installation, maintenance and scheduling, electrical troubleshooting, pumps, hydrantics, and drip irrigation as these topics pertain to residential and commercial landscapes and golf courses. Two hours rec. and two hours lab a week. Pr.: MATH 100; HORT 201 or BIOL 210; and AGRON 305.

HORT 625. Floral Crops Production and Handling. (4) II. The principles and commercial practices for producing floral crops emphasizing the physical responses of plants to their environment. Aspects of postharvest physiology are also covered. Three hours lec. and three hours lab a week. Pr.: BIOL 210 or BIOL 210. One Saturday field trip will be taken. Pr.: BIOL 500, HORT 350 and 570.

HORT 640. Horticulture Problems. (Var.) I, II, S. Problems and reports in horticulture, floriculture, ornamental horticulture, pomology, turfgrass, and horticultural therapy. Pr.: Consent of instructor.

HORT 796. Turfgrass Science. (3) I, II in even years. Water, temperature, light, soil, and management stresses affecting turfgrass growth; cultural practices that reduce injury. Three hours lec. a week. Pr.: HORT 515.

HORT 725. Postharvest Technology and Physiology of Horticultural Crops. (3) I, in even years. A study of the principles and practices involved in the harvesting, handling and storage of horticultural products. The relationship of plant structure and physiology will be emphasized in discussing effects of postharvest handling and storage to maximize quality and shelf life of products. Three hours lec. a week. Pr.: One horticulture commodity course and BIOL 500.

HORT 751. Human Issues in Horticultural Therapy. (3) I. New developments and applications of gardening or horticultural activities for special populations will be emphasized. Procedures for management of horticultural therapy programs, designing therapeutic or rehabilitation activities, and evaluation methods will be discussed. Reading of selected research publications relating to horticultural therapy will be assigned. Three hours rec. a week. Pr.: HORT 525 and a course in statistics.

HORT 775. Plant Nutrition and Nutrient Management. (3) II, even years. Focuses on the macro and micronutrient elements and their function in the growth and development of plants. Emphasis will be placed on the roles of single elements, interactions/balances between elements, and nutrient deficiency/toxicity symptoms as they affect the physiology of the whole plant and management of nutrient applications. The relationships between crop nutrition with production and environmental considerations (yield, drought, temperature, pests) will be explored. Two hours lec. and two hours discussion a week. Pr.: AGRON 305 and BIOL 500.

Forestry courses

FOR 285. Introduction to Forestry. (3) I. An introduction to American forestry including: forestry heritage in the U.S., importance of forests, multiple-use concepts, management practices, utilization, protection, policy, and the profession of forestry. Three hours a week.

FOR 338. Foresty 1. (3) I. Identification, classification, silvi-calves, characteristics, distribution, and economic significance of North American angiosperm trees. One hour rec. and three hours lab a week. Pr.: BIOL 210 or equiv.
FOR 340. Dendrology II. (2) II. Identification, classifica-
tion, silvical characteristics, distribution, and economic sig-
nificance of North American gymnosperm trees. One hour rec.
and three hours lab a week. Pr.: BIOL 210 or equiv.

FOR 375. Introduction to Natural Resource Manage-
ment. (3) I. A survey of historic and present-day uses, problems, and basic management approaches associated with our renewable and nonrenewable natural resources. The impact of society, economics, law, politics, and philos-
ophy on the management and use of our natural resources will also be examined. Three hours lec. a week.

FOR 385. Microcomputer Applications in Natural Re-
source Management. (3) I. A microcomputer course designed to develop basic skills needed by natural resource management professionals. The course will emphasize use of the microcomputer for communication of written and
graphic information, record keeping, decision making, bud-
getting, and investment analysis. Two hours lec. and two hours lab a week. Pr.: FOR 285 or 375.

FOR 641. Forestry Problems. (1–3) I, II, S. Work is
offered in various fields of forestry. Pr.: Consent of
instructor.

FOR 643. Agroforestry Systems. (2) II. Study of the
woody and non-woody components of the land use man-
gement systems used in much of the world. Topics will
include international agriculture and forestry covering the
interaction of crops, livestock, and woody plants. The agro-
forestry concept, classification of systems, practices used
worldwide, and the contribution of agroforestry to local
economics of less developed countries will be examined.
Two hours lec. a week. Field trip required. Pr.: BIOL 201
or HORT 210 or HORT 220.

Recreation resources courses

RRES 200. Topics in Recreation Resources. (1–3) I, II, S.
Discussion of topics and activities of importance in recreation
resources. This course can be repeated an unlimited
number of times.

RRES 210. Introduction to the Park and Recreation
Profession. (2) I. Coverage of the parks and recreation pro-
fession to include, federal, state, county, and local agencies
and positions. Private sector careers will also be examined.
Two hours lec. a week.

RRES 310. Natural Resources Education Workshop. (3)
I. This course will expose students to a variety of educa-
tional strategies to effectively communicate the importance
of natural resource conservation and management. The
class will feature nationally acclaimed environmental edu-
cation programs in a workshop format. Students will plan and
conduct programs for the public. Some local field trips
are required. Three hours lec. per week. Pr.: Sophomore
standing.

RRES 320. Recreation Group Dynamics. (3) I. Princi-
ples and methods of organizing and directing individual
and group leisure activities and experiences. A mixture of
lecture and experiential education. Some Saturday field
trips required. Two hours lec. and two hours lab a week.

RRES 350. Parks and Recreation Practicum. (2) II, S.
Required professional employment (240 hours., 6 weeks): a
survey and application of the principles of park and recre-
ation areas management and operations. Studies of selected
aspects of natural resource management for recreation.
Preparation and presentation of a comprehensive analysis
of a specific assigned problem. Pr.: Sophomore in
park management and conservation or recreation park
administration.

RRES 440. Outdoor Recreation Policy. (3) II. A survey of
the history, present status, and goals of outdoor recrea-
tion policy in America. Three hours lec. a week.

RRES 489. Recreation Programming. (3) II. A study of
the design, supply, and marketing of recreation programs
by a variety of public, private, and commercial recreation
and park agencies. Three hours lec. a week.

RRES 490. Parks and Recreation Administration I. (3)
I. A focus on basic skills specific to the management of
public recreation and park agencies. Includes special
emphasis on finance and budgeting, organizational struc-
ture, risk management, and an introduction to policy formu-
lization. Three hours lec. a week.

RRES 492. Internship in Parks and Recreation. (3) I, II,
S. An intensive, paid practical experience with an approved
agency, extending over a 10-week, 400-hour span. For
seniors only.

RRES 520. Research Methods in Parks and Recreation. (3)
I. A study of research techniques and the applica-
tion of specific methodologies in the analyses of recreation
and park problems. Three hours lec. per week. Pr.:
STAT 330 or 340.

RRES 575. Management of Water Resources for
Leisure. (3) I. A study of the management of water
resources for leisure time uses. The course investigates
the use of rivers, lakes, reservoirs, and marine resources.
Management considerations, including agency policy for-
mation, legal rights, use conflicts, and use valuation are
covered.

RRES 590. Park and Facility Maintenance. (1) I.
Planning, execution, budgeting, and supervision of mainte-
nance operations for public and private recreation agencies.
Two hours lab a week. Pr.: Junior standing.

RRES 635. Methods of Environmental Interpretation. (3)
II. This course focuses on principles and techniques
necessary to communicate environmental and cultural val-
ues to visitors in park areas. The philosophy, theory, design,
and application of interpretive media to communicate infor-
mation about the environment is studied. Two hours rec.
and three hours lab a week. Field trip required. Pr.: FOR
375 and RRES 440.

RRES 640. Advanced Environmental Interpretation. (3)
II. This course builds on the principles and interpretive
strategies which are introduced in RRES 635. Specifically,
students are introduced to interpretive strategies which are
introduced in RRES 635 (e.g., video equipment, computers, etc.)
The lecture and readings focus on the philosophy of inter-
pretation and the theoretical framework for designing and
evaluating interpretive strategies. One hour lec. and
four hours lab a week. Field trip required. Pr.: RRES 635.

RRES 675. Dimensions of Recreational Behavior. (3) I.
A case study of the motivational factors and trends affect-
ing recreational visitation patterns, including attitudes,
preferences, and satisfaction measurements. Three hours
lec. a week. Pr.: RRES 490.

RRES 699. Parks and Recreation Administration II. (3)
II. Focus on personnel management, liability and political
issues and funding options for park or recreation agencies.
Three hours rec. a week. Field trip required. Pr.:
RRES 490.

RRES 705. Parks and Recreation Theory and Policy. (3)
II. On sufficient demand. An analysis of the values,
principles, theories, and processes of public policy develop-
ment as it applies to the park and recreation profession.
Three hours lec. a week. Pr.: RRES 490.

RRES 756. Design of Parks and Recreation Areas. (3)
I. Site planning of national, state, municipal, and private
parks and specialized recreation areas. Three hours lec.
a week. Pr.: Junior standing. Same as ARW 756.

RRES 799. Problems in Parks and Recreation. (Var.,
1–3) I, II, S. A special investigation of a problem in parks
and recreation normally requiring a combination of experi-
mental work, research, and writing. Pr.: RRES 520 or 590.

Plant Pathology

Robert S. Zeigler,* Head
Professors Bockus,* Clafin,* Gill,* Hubert,*
Jardine,* Johnson,* Leach,* Leslie,*
Schwenk,* Stuteville,* Tisserat,* and
Zeigler,* Research Professor Friebe;*
Associate Professors Bowden,* Heaton,* and
Sim; Emeriti: Professors Browder,* King, Sauer,* and
Willis,*

E-mail: plantpath@kstate.edu
www.ksu.edu/plantpath

Plant pathology is the study of plant diseases, their
causes, effects, nature, and control. Opportunities for
graduates in plant pathology include basic and applied research, develop-
ment, and teaching.

Plant pathology minor

Students interested in the study of plant dis-
ese should consider the plant pathology minor.
The minors program in plant pathology
requires a minimum of 15 semester hours.

Required courses (7 hours):
PLPTH 500 Principles of Plant Pathology .......... 3
PLPTH 585 Crop Diseases .................................. 2
PLPTH 590 Landscape and Turf Diseases .......... 2

At least 9 additional hours from the following:
PLPTH 505 Biotechnology .................................. 2
PLPTH 730 Plant Nematology .............................. 3
PLPTH 835 Plant Virology ................................... 3
PLPTH 840 Plant Pathogenic Bacteria .................... 3
PLPTH 845 Plant Pathogenic Fungi ......................... 3

Any other course in plant pathology
AGRON 645 Soil Microbiology ............................. 4
BIOL 455 General Microbiology ......................... 4
BIOL 604 Biology of the Fungi ......................... 3
ENTOM 300 Economic Entomology ..................... 3
ENTOM 312 General Entomology ......................... 2

PLANT 613 General Entomology Lab ................. 1

Plant pathology courses

PLPTH 300. Microbes, Plants, and the Human Per-
pective. (3) II. The relationship of the biological world
(specifically microbes) to our personal and cultural percep-
tions of how the world works and what our place is in it.
The course focuses on microbes as they interact with
plants, the plant environment, and the human connection
to plants as a resource. Topics include: events and historical
categories of germ theory, symbiosis as biological phe-
omenon and analogue for human social structure, popular
perception of genetically-engineered plants and
microbes. Pr.: BIOL 198.

PLPTH 500. Principles of Plant Pathology. (3) II. An
introductory class in the nature of plant pathogens and the
cause, effect, and control of plant diseases. Diseases of
field and horticultural crops will be addressed. Two hours
lec., one two-hour lab a week. Not open to students with
credit for PLPTH 510 or 520. Pr.: BIOL 198, 210 or equiv.,
and junior standing.

PLPTH 585. Biotechnology. (3) II. The use of biotechnol-
gy and molecular genetic approaches in plant and animal
sciences. Emphasis is on the use of molecular techniques
for plant and animal improvement. Three hours lec. a week.
Pr.: BIOL 198. Cross-referenced as AGRON 505.

PLPTH 585. Crop Diseases. (2) I. An overview of plant
diseases associated with Kansas crops, with an emphasis on
identification and management strategies. Two hours lec.
and four hours lab a week. To meet first half of semester.
Pr.: PLPTH 500.

PLPTH 590. Landscape and Turf Diseases. (2) II. An
overview of plant diseases associated with Kansas land-
scape and turf settings, with an emphasis on identification
and management strategies. Two hours lec. and four hours
lab a week. To meet second half of semester. Pr.: PLPTH 500.
PLPTH 599. Undergraduate Research in Plant Pathology. (1–3) I, II, S. Research experience is offered in classical and molecular plant pathology and biotechnology. Pr.: Background of training needed for the research problem undertaken.

PLPTH 635. Introduction to Plant Resistance to Pests. (2) I, first half of semester, in even years. Basic concepts of the biology, ecology, genetics, and breeding for pest resistance in plants. Four hours lec. and discussion a week. Pr.: ENTOM 300; or ENTOM 312 and 313; or PLPTH 500; and one course in plant or animal genetics. Same as ENTOM 635.

PLPTH 730. Plant Nematology. (3) II, in even years. An introduction to the morphology, taxonomy, and ecology of phytoparasitic and free-living nematodes found in plants, soil, and fresh water. Emphasis is on the identification and control of plant parasitic nematodes and on lab techniques used in their study. Two hours lec., one two-hour lab a week. Pr.: An introductory course in plant pathology.


PLPTH 755. Plant Resistance to Diseases. (1) I, second half of semester, in even years. Evaluation of conventional and novel strategies for obtaining durable resistance to plant diseases. Several well-characterized host/pathogen systems will be selected for indepth analysis. Two hours lec. a week. Pr.: ENTOM 635 or PLPTH 635. Same as ENTOM 755.

PLPTH 760. Plant Pathology Methods. (3) I, in even years. Practical lab methods in manipulating plant pathogens with emphasis on the isolation, culture, identification, inoculation, and preservation of plant pathogenic bacteria and fungi. One hour lec. and five hours lab a week. Pr.: PLPTH 500 or equiv. Enrollment limited to 12 students.
Architecture, Planning, and Design

Dennis Law, Dean
Ray Weisenburger, Associate Dean
Lynn Ewanow, Associate Dean

115 Seaton Hall
785-532-5950
aalto.arch.ksu.edu/

The College of Architecture, Planning, and Design offers opportunities for professional study in architecture, interior architecture, landscape architecture, and regional and community planning.

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

The curriculum in architecture is accredited by the National Architectural Accrediting Board (NAAB). The interior architecture curriculum is accredited by the Foundation for Interior Design Education and Research (FIDER), and the National Association of Schools of Art and Design. The landscape architecture curricula are accredited by the Landscape Architectural Accreditation Board (LAAB). The planning curriculum is accredited by the American Planning Association (APA) in cooperation with the Association of Collegiate Schools of Planning (ACSP).

Bachelor’s degrees are offered in architecture, interior architecture, and landscape architecture. Graduate degrees are offered in architecture, landscape architecture, and regional and community planning.

Admission to the College

Admission to the College of Architecture, Planning, and Design is selective and limited. Students are admitted into the fall semester studio classes of the environmental design studies program (ENVD).

High school applicants who seek admission to the College of Architecture, Planning, and Design must file an application for university admission and an official 6th- or 7th-semester high school transcript and ACT or SAT scores. Transfer students must file an application for university admission and all college transcripts.

Admission decisions are made on a rolling basis. Freshmen admission is based upon a review of high school course work, ACT or SAT scores, and class rank. Emphasis is placed upon performance in academic course work. Transfer admissions are based upon a review of college course work.

Application materials may be obtained by contacting the Office of Admissions.

University General Education

The College of Architecture, Planning, and Design assures that all degree programs provide breadth through the completion of 18 credit hours to fulfill the university’s general education requirements. These 18 credit hours must be approved university general education courses from outside the professional major designation, and may overlap with the general studies requirements in the humanities, social sciences, sciences, and/or business as required by each department within the college.

At least 6 credit hours of the 18 credit hours must be taken in courses numbered 300 or above and no more than two courses from any single discipline (as defined by the course prefix) may be counted toward the required 18 credit hours of university general education electives.

Courses used to fulfill university general education credit cannot be in the student’s major.

Each department within the college specifies particular distribution of the general education electives in order to assure an educational context enriched by the liberal arts and sciences as well as other professional programs. Students develop their programs of university general education with the ongoing assistance of their academic advisor.

Electives

Those electives listed with a specific designation, such as professional, must be chosen from those courses in the indicated field that are open to the student.

Additional information concerning acceptable electives is available from the dean’s office/student services or departmental offices.

In course descriptions, university general education courses are marked with . For more information about university general education requirements, see the Degrees section of this catalog. For a current list of approved university general education courses: www.ksu.edu/registrar/enroll/gened.html

General Requirements

Secondary majors

Certain departmental courses have been approved for credit toward the secondary major in natural resources and environmental sciences, gerontology, international studies, American ethnic studies, and women’s studies. A listing of the approved courses may be found in the Secondary Majors section of this catalog.

Student projects

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

Student projects, assignments, presentations, and models may be retained by the various departments. Students are advised to assemble photographic files of their work for their portfolios.

Transfer students

A transfer program of study can be completed elsewhere and credits transferred to the college so a student can enter the second year of a program. In addition to credit for general studies courses, transfer credit for professional courses equivalent to those offered by the College of Architecture, Planning, and Design will be accepted if earned in environmental design programs accredited by NAAB, FIDER, or LAAB. Students who have questions concerning the application of specific transfer courses should contact the associate dean/student services.

Options

International study

Several international study programs are offered by the college. Students earn academic credit studying in Italy, Japan, France, Denmark, Germany, the Czech Republic, England, or Costa Rica.

Internship

Internships are available with private practitioners, corporations, and government agencies. Students earn academic credit and a salary while on internship. Specific requirements vary among the departments.
Extracurricular activities
The College of Architecture, Planning, and Design offers opportunities for students to become involved in student government, student chapters of professional societies, Open House, and the student journal, Oz.

Environmental Design Studies

Lynn Ewanow, Associate Dean
aulto.arch.ksu.edu/prospectivestudents/undergrad/eds.htm

All students in the first-year undergraduate programs of the College of Architecture, Planning, and Design are enrolled in the Environmental Design Studies Program. In the first year, students are introduced to the knowledge, concepts, attitudes, methods, and skills common to the environmental design professions of architecture, interior architecture, interior design, and landscape architecture. After successful completion of these course requirements students continue their studies in one of the professional curricula in the degree-granting departments.

Courses in the environmental design studies curriculum, which carry a DSFN designator, are offered in a joint venture for students in the design programs from two colleges, Architecture, Planning, and Design, and Human Ecology. The three DSFN-designated courses form part of a common foundation of the environmental design fields.

Participation in environmental design studies courses, together with a close working relationship with faculty and the academic advisor, helps students make informed career choices within, and sometimes outside, the fields of study represented.

Transfer students entering the Environmental Design Studies Program will be placed in the program according to the college-level work they have already completed.

Environmental design studies

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSFN 201</td>
<td>Environmental Design Studio I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>ENVD 250</td>
<td>History of the Designed Environment I</td>
<td>3</td>
</tr>
<tr>
<td>DSFN 203</td>
<td>Survey of the Design Professions</td>
<td>1</td>
</tr>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
</tbody>
</table>

University general education elective 3
SPCH 105    Public Speaking IA | 2       |

High school mathematics prerequisites: Entering freshman or transfer students should have fulfilled the minimum prerequisites of: algebra I (one unit); plane geometry (one unit); algebra II (one unit); and trigonometry (one-half unit) before entering the College of Architecture, Planning, and Design. The prerequisites may be fulfilled at K-State, or elsewhere, with the exception of geometry, which is not taught at K-State. Completing these courses at K-State will extend the time required to complete the degree program.

After satisfactory completion of the environmental design studies program, students are eligible to apply for admission to the Department of Architecture, the Department of Interior Architecture, the Department of Landscape Architecture/Regional and Community Planning, or the Department of Clothing, Textiles, and Interior Design in the College of Human Ecology.

Environmental design studies courses

DSFN 201 and 202. Environmental Design Studio I and II. (4 each). Foundation studies introducing principles, processes, and vocabularies of environmental design. Instruction in two and three dimensional visualization of objects and spaces. Instruction in the use of instrument-aided drawing, freehand drawing, and model building to represent and communicate design ideas at different scales of observation. Pr.: Admission to the College of Architecture, Planning, and Design, the College of Human Ecology, or permission of the dean of either college.

DSFN 203. Survey of the Design Professions. (1) I Overview of the design professions. Comparative study of the working methods, and societal and occupational roles of the architect, interior architect, landscape architect, planner.

ENVD 205. Graphics I. (2) I, II. S. Introduction in instrument-aided drawing as a basic tool for communicating information about environmental subjects. Four hours of studio a week.

ENVD 206. Graphics II. (2) I, II. S. Instruction in the principles and methods of perspective drawing. Perspective drawing is used as a basic tool for communicating information about design components and properties. Four hours of studio a week. Pr.: ENVD 205.

ENVD 250 and 251. History of the Designed Environment I and II. (3 each) A chronological survey of the built and designed environment in the context of the socio-cultural, artistic, technological, economic, and political factors. Three hours lecture per week.


ENVD 251. History of the Designed Environment II. (3) II The history of the designed environment from the 12th century to the mid-18th century. Pr.: ENVD 250 or permission of instructor.

ENVD 299. Problems in Basic Design. (Var.) I, II. S. A study of specified problems in elementary environmental design under the guidance of a member of the staff. Pr.: Approval of associate dean.

Architecture

James S. Jones, Head

Professors Coates, Hoag, Kremer, Norris–Baker, Seamon, Shapiro, and D. Watts; Associate Professors Arens, Charney, Condia, Jones, Krister, Mayo, McNumara, Ornelas, Sachs, Selfridge, Siepl–Coates, Simon, Streeter, and C. Watts; Assistant Professors Imel, Norheim, Pecar, Rudzinski, D., and Rudzinski, R.; Instructors Bennett and Spaw; Adjunct Professors Barucchieri, Bowman, Hoffman, Nelson, Singleton, and Seligson; Emeriti: Professors Christensen, Ernst, Fischer, Foerster, Krider, Sanner, Slack, and Wendt.

E-mail: jsamuell@ksu.edu

Philosophy statement

The program prepares students to enter the profession of architecture, a career that is characterized by change and diversity. Design is at the center of a professional and critical discourse reinforced by liberal studies. A body of artistic, theoretical, social and technical knowledge, understanding, and skill—a background that all architects share—is offered as the basis for the development of individual interests and aptitudes.

As part of the Department of Architecture’s goal of promoting a socially and environmentally aware professional architect, the department requires a minimum of 18 university general education elective credits, of which at least 6 must be in courses numbered 300 or above. At least 15 must be outside the College of Architecture, Planning, and Design. No more than two university general education courses may be taken in a single discipline.

Beginning students are encouraged to select specific introductory-level general education courses with the intention that they may develop concentration of arts, sciences, and/or humanities by taking advanced courses in their later years.

Special activities and programs

An integral part of the architecture curriculum is the opportunity, during the fourth year, to study abroad for a semester at our facility in Castiglion Fiorentino, Italy, or at the Technological University in Prague. In the past students have studied in Finland, Denmark, and Britain, and we are continuously exploring new opportunities.

Each spring third-year students spend a week in Chicago studying the city’s rich architecture and urban design heritage. Summer study trips are organized in which students and faculty have traveled to France and Japan. Fourth-year students may elect to participate in architectural internships in professional offices in the United States and abroad.

An accredited degree

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

Master’s degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

The bachelor of architecture degree offered by Kansas State University is the NAAB accredited professional degree.

Computer applications
The department recognizes digital technology as a valuable asset and is committed to offering access to a variety of opportunities for students to develop their computer skills and understanding.

For updated information regarding recommended computer platforms and software, contact the department.

Architecture program

115 AR
Total hours required for graduation ...................... 164
(including ENVD program)

This curriculum is subject to regular revision. Students should obtain a copy of the current curriculum when they enter the architecture curriculum.

For the curriculum requirements for the first two semesters, see Environmental Design Studies earlier in this section.

Third semester
ARCH 302 Architectural Design Studio I .............. 4
or
ARCH 303 Architectural Design Studio IA .......... 4
ARCH 248 Building Science .................................. 3
ARCH 348 Structural Systems in Architecture I ...... 3
ARCH 350 History of the Designed Environment III ........................................ 3
ENGL 200 Expository Writing II ......................... 3

Fourth semester
ARCH 304 Architectural Design Studio II ............. 4
ARCH 449 Structural Systems in Architecture II .... 3
ARCH 325 Environmental Design and Society ....... 3
ARCH 413 Environmental Systems in Architecture I ........................................ 3

University general education electives*................... 3

Fifth semester
ARCH 403 Architectural Design Studio III ............. 5
ARCH 452 Structural Systems in Architecture III .... 3
ARCH 343 Building Construction Systems in Architecture I ........................................ 3
ARCH 472 Computer Applications in Architecture ..... 3

University general education electives .................... 3

Sixth semester
ARCH 404 Architectural Design Studio IV ............. 5
ARCH 434 Building Construction Systems in Architecture II .................. 3
ARCH 453 Structural Systems in Architecture IV .... 3
ARCH 514 Environmental Systems in Architecture II ........................................ 3
LAR 500 Site Planning and Design ....................... 3

Seventh semester
ARCH 605 Architectural Design Studio V ............... 5
ARCH 515 Environmental Systems in Architecture III ........................................ 3
ARCH 650 Environmental Design and Society ......... 3
ARCH 720 Environmental and Behavior ................ 3

University general education electives .................... 3

Eighth semester
ARCH 606 Architectural Design Studio VI ............. 5

Professional support electives*............................ 10

or
ARCH 505 Architectural Internship Part A ............... 12
ARCH 506 Architectural Internship Part B ............... 3

Ninth semester
ARCH 706 Architectural Design Studio VII ............. 5
ARCH 705 Professional Practice ......................... 2
ARCH 753 Professional Practice ............................. 3

University general education electives (300 level +)........... 3

Tenth semester
ARCH 707 Architectural Design Studio VIII .......... 5
ARCH 680 Development Analysis ........................ 3

Professional support electives*............................ 9

* A minimum of university general education elective credits, of which at least 6 must be in courses numbered 300 or above. At least 15 must be outside the College of Architecture, Planning, and Design. No more than two university general education courses may be taken in a single discipline.

A minimum of 19 professional support electives are required, of which a minimum of 6 credit hours must be taken in architectural history/theory and 3 credit hours in planning.

** For transfer students only.

Architecture courses

ARCH 240. Science, Technology, and Architecture. (3) I, II. An exploration of the interrelationships between architecture and various sciences including the technological applications of selected scientific theories.

ARCH 248. Building Science. (3) I. Instruction in the materials of building and landscape design; sources, characteristics and uses in design and construction; emphasis on evaluation and selection. Two lectures and one recitation per week. Pr.: Second-year standing and PHYS 115.

ARCH 290. Architecture Through the Ages. (3) I, II. An introductory survey of the history of architecture worldwide from its prehistoric beginnings up to the present day. May not be taken for credit by students enrolled in the College of Architecture, Planning, and Design.

ARCH 301. Appreciation of Architecture. (3) I, II, S. An analysis of the evolution of architectural styles to determine the relation of architectural expression to the needs of society. Three hours rec. a week. May not be taken for credit by students enrolled in the architecture, landscape architecture, or interior architecture curricula.

ARCH 302. Architectural Design Studio I. (4) I. Instruction in architectural design focusing on the application of elements and principles of form and space in design. Instruction in the use of techniques for visually representing design ideas. Pr.: Admission to the architecture program and DSFN 102.

ARCH 303. Architectural Design Studio LA. (6) I. This course integrates material from Environmental Design Studio I and II with ADS I. Twelve hours of studio a week. Pr.: For transfer students, 9 or more credit hours of graphics, design, and freehand drawing and enrollment in the Department of Architecture.


ARCH 325. Environmental Design and Society. (3) II. Instruction in behavioral, cultural, and ecological factors that contribute to successful environmental design; considers how the design process is affected by a conceptual point of view. Case studies from architecture, landscape architecture, interior architecture, and interior design. Three hours lecture a week. Pr.: Second-year standing or permission of instructor.

ARCH 348. Structural Systems in Architecture I. (3) I. Introduction to statics; force analysis and the study of forces in equilibrium; principles of statics as applied to the study of simple elemental structures; the origin, the nature, and the action of loads on structural systems. Instruction in the use of statics in the preliminary stages of building design. Three hours lecture, two hours recitation a week. Pr.: PHYS 113, MATH 100.

ARCH 350. History of the Designed Environment III. (3) I. The history of the designed environment from the mid-18th century through present. Pr.: ENVD 251 or permission of instructor.

ARCH 403 and ARCH 404. Architectural Design Studio III and IV. Relation of structures to their environment; client and community restraint; development of building programs; synthesis of functional, technical, and aesthetic considerations in the design of structures for human use. Twelve hours studio a week.

ARCH 403. Architectural Design Studio III. (5) I, II. Pr.: ARCH 402 and not more than one D in an architectural design course.

ARCH 404. Architectural Design Studio IV. (5) I, II. Pr.: ARCH 403 and not more than one D in an architectural design course.

ARCH 413. Environmental Systems in Architecture I. (4) I. Instruction in bioclimatic and ecological design principles as a basis for architectural and landscape design. Emphasis on passive solar heating and cooling and daylighting. Three hours lecture and one hour recitation a week. Pr.: PHYS 113 and enrollment in a professional program in the college.

ARCH 433 and ARCH 434. Building Construction Systems in Architecture I and II. (3 each). These courses focus on developing an understanding of how materials and systems assembly reinforce and extend the intentions of the designer as well as developing an understanding of the strategies and techniques for integration and coordination of the building components. During the second semester of the two-semester sequence, students produce a set of construction documents. Methodologies for evaluating, selecting, and joining building systems and materials are introduced. Economic factors, building codes, and accessibility are studied. Material properties, sequence of assembly, and construction processes are reviewed.

ARCH 433. Building Construction Systems in Architecture I. (3) I, II. Pr.: ARCH 428, 348, and admission to a professional program in the college. Three hours lecture per week.


ARCH 449. Structural Systems in Architecture II. (3) II. Instruction in strength of materials focusing on the behavior of building materials under loading; their ability to resist deformation and failure. Instruction in sizing simple structural elements. Three hours lecture, two hours recitation a week. Pr.: ARCH 348.

ARCH 452. Structural Systems in Architecture III. (3) I. Instruction in the design of building structures as whole systems. Instruction in the principles of structural subsystem design; emphasis on the overall structural behavior and subsystem integrity required to achieve a variety of building forms. Instruction in strategies for the use of approximation in the manipulation of key quantitative properties of whole systems and major subsystems in building design. Three hours lecture, two hours workshop/test each week. Pr.: ARCH 449.

ARCH 453. Structural Systems in Architecture IV. (3) II. Instruction in the design of building structures as whole systems; overall-to-specific systems behavior and manipulative design of major subsystems. Emphasis on the design of subsystems and subsystem components as they are affected by structural material. Instruction in specialized
issues associated with the analysis and design of high rise and long-span building structure, including foundation, constructive, and economic factors which affect building design. Three hours lecture, two hours workshop/visit each week. Pr.: ARCH 452.

ARCH 472. Computer Applications in Architecture. (Var.) I, II. Introduction to technical, representational, and theoretical issues of digital design tools in architecture. Acquisition of skills to independently employ three-dimensional design, modeling, rendering, image processing, two-dimensional drawing, and other applications. Students are strongly encouraged to provide their own portable computers and software. Two hours of lecture and two hours of lab per week. Pr.: Enrollment in one of the degree-granting programs of the college.

ARCH 475. Problems in Architectural Presentation. (Var.) I, II. Study of various methods of graphically representing architectural problems to develop professional office techniques. Pr.: Second-year standing and approval of instructor.

ARCH 505. Architectural Internship, Part A. (12) II. Thirty weeks off-campus work-study program with an approved professional, building industry, government, or non-profit agency sponsor. Must be enrolled concurrently with ARCH 506, and each course must be successfully completed before credit is awarded in either. This course is graded CR/NC only and is not for graduate credit. Pr.: ARCH 434, ARCH 605, not more than one D in an architectural design course, and approval of the internship coordinator.

ARCH 506. Architectural Internship, Part B. (3) II. Preparation of internship journals and employer profiles during the approved 30-week off-campus work-study program in ARCH 505, and preparation of an internship analysis paper during the first semester after ARCH 505. Must be enrolled concurrently with ARCH 505, and each course must be successfully completed before credit is awarded in either. This course is letter-graded only and is not for graduate credit. Pr.: ARCH 434, ARCH 605, not more than one D in an architectural design course, and approval of the internship coordinator.

ARCH 514 and ARCH 515. Environmental Systems in Architecture II and III. (3 each) Criteria for selection and application of natural and mechanical environmental control systems in architecture. Focus on the integration of thermal, illumination, sanitary, movement, and acoustical systems with the building fabric and the natural environment. Contemporary and developing approaches are explored. Three hours lecture. Pr.: ARCH 434.

ARCH 514. Environmental Systems in Architecture II. (3) II. Pr.: ARCH 413.

ARCH 515. Environmental Systems in Architecture III. (3) I. Pr.: ARCH 413.

ARCH 566. Problems in Architecture Design. (Var.) S. Study of specific design problems under the direct supervision of a member of the architectural faculty. Pr.: Approval of instructor.

ARCH 601. Topics in the History of the Designed Environment. (1–4) I, II. For the concentrated study of a particular period or subject in the history of the built environment. Seminars, readings, discussions, and projects. May be taken by majors in the College of Architecture and Design for a total of 12 hours credit. Three hours rec. a week. Pr.: ARCH 404 or IAR 602 or LAR 641.

ARCH 605. Architectural Design Studio V. (5) I, II. Problem analysis and program development, generalization of alternative solutions, and selection and refinement of the building design. Twelve hours studio a week. Pr.: ARCH 404 and not more than one grade of D in an architectural design course, and LAR 500 or concurrent enrollment in LAR 500.

ARCH 606. Architectural Design Studio VI. (5) I, II. Continuation of ARCH 605. Increased complexity of function and space definition systems. Relating environmental technology to total design. Twelve hours studio a week. Pr.: ARCH 605 and not more than one grade of D in an architectural design course.

ARCH 655. Foreign Seminar. (Var.) I, II. S. Group observation of design examples (ancient or modern) of a selected region, conducted in situ, to study significant aspects of environment, culture, and technology as relating to design solutions. Pr.: Approval of the instructor.

Undergraduate and graduate credit ARCH 658. Architectural Programming. (3) I, II. An introductory course surveying the basic philosophies and methodologies for architectural programming; emphasis on the comparative evaluation of different strategies and their integration within the process of design. Pr.: Senior standing or permission of the instructor.


ARCH 657. Preservation Principles. (3) I. Examination of theoretical and practical aspects of preservation; background of current ethical and legal issues. Pr.: Senior standing or permission of instructor.

ARCH 670. History of American Architecture and Allied Design I. (3) I. The history of American architecture including aspects of interior architecture, landscape architecture, urban planning, and preservation. This course investigates how the built forms of various colonial settlers in America responded to a new environment and how a distinctive American culture eventually took shape by the end of the 18th century. Pr.: ENVD 250 and 251 or approval of the instructor.

ARCH 671. History of American Architecture and Allied Design II. (3) II. The history of American architecture including aspects of interior architecture, urban planning, landscape architecture, and preservation. This course surveys those distinctively American styles of design which originated in the late 1800s and traces their impact on world architecture and how outside influences shaped American design from that time period up to present. Emphasis is placed upon the interplay of formal and functional concerns in architectural design. Pr.: ENVD 250 and 251 or approval of the instructor.

ARCH 680. Development Analysis. (3) I, II. An examination of various development characteristics and components and their crucial interactive nature which leads toward success or failure of building and land development. Development factors investigated include: market analysis, location uses and users, cost/benefit, nonmonetary benefits, financial returns expected and realized, financial incentives for investors, and feedback into the design process. Pr.: Admission to the professional program.

ARCH 703 Environmental Aesthetics. (3) I, II. Problems involving aesthetics in areas related to student’s major field. Three hours a week. Pr.: Senior standing in architecture, landscape architecture, interior architecture, urban design.

ARCH 704. Environmental Seminar. (Var.) I, II. Environmental systems related to human perception, reactions, and behavior. Pr.: Senior standing.

ARCH 705. Project Programming. (2) I, II. The development of a program for ARCH 707 Architectural Design VIII under the direction of a faculty member. Pr.: ARCH 606, ARCH 650, and approval of the faculty committee.

ARCH 706. Architectural Design Studio VII. (5) I, II. Integration of the physiological, psychological, and sociological parameters in the design of environments. Analysis, programming, and planning problems, increased complexity of function and space definition systems. Relating environmental technology to total design. Twelve hours studio a week. Pr.: At least 2.0 GPA in required third-, fourth-, and fifth-year courses other than design which have been taken; ARCH 658 or ARCH 656, ARCH 434, or ARCH 432 and concurrent enrollment in ARCH 434; ARCH 514, or ARCH 514 and concurrent enrollment in ARCH 515; and ARCH 452.

ARCH 707. Architectural Design Studio VIII. (5) I, II. Development of the student’s project programmed in ARCH 705, under the direction of a faculty committee. Project must demonstrate a high level of achievement in systematic and comprehensive thinking, application of resources, and communication of total process. Twelve hours studio a week. Pr.: At least 2.0 GPA in required third-, fourth-, and fifth-year courses other than design which have been taken; ARCH 434, ARCH 515, ARCH 452 and concurrent enrollment in ARCH 453.

ARCH 710. Topics in Architectural Design Methods. (3) I, II. Intensive review of selected design methodologies, including systematic and computer-based approaches to problem definition and project design; emphasis upon the comparative evaluation of problem-solving strategies within the architectural design process. Pr.: Advanced undergraduate or graduate standing.

ARCH 715. Theory of Design. (3) I, II. Analysis of theories and philosophies in the design professions, including those in related societal and technological fields. Pr.: ARCH 404 or IAR 602 or LAR 641.

ARCH 716. Environmental Systems in Architecture. (3) I, II. Study of site-specific microenvironmental systems and their design as the result of a coordinated exploration of their interaction and manipulation to meet human comfort requirements and achieve resource-efficient site and building design. Pr.: ARCH 413 and 403, or graduate standing.

ARCH 720. Environment and Behavior. (3) I, II. An introductory course investigating the relationship between human behavior and the design of the physical environment, identifying those basic psychological and social concepts which influence and are influenced by the built environment. Three hours lecture: a week. Pr.: Senior standing or permission of instructor.

ARCH 725. Architectural Research Methods. (3) I, II. An introductory course surveying the basic philosophies and methodologies of science and research as they apply to the field of architecture. Special emphasis will be placed on those methods appropriate for investigating human response to the built environment. Three hours lecture: a week. Pr.: Senior standing.

ARCH 730. Environment and Aging. (3) I, II. An exploration of the aging process related to those factors in the architecturally designed environment that hinder and facilitate successful adaptation by the aging individual. Three hours lecture: a week. Pr.: Senior or graduate standing.

ARCH 735. Topics in Building Construction Systems in Architecture. (1–4) I, II. Advanced study of the relationship of conceptual and/or technological factors of building construction to architecture. Pr.: ARCH 434; or graduate standing and consent of instructor.

ARCH 740. Building-Related Health and Safety. (3) I, II. Multidisciplinary concepts and applications of buildings-related health and safety in the design, construction, and operations of residential, commercial, and institutional buildings. Three hours: Initially lecture followed by field-work analysis, documentation, and reporting. Pr.: Senior or graduate standing.

ARCH 752. Structural Systems in Architecture. (Var.) I, II. Study of the relationship of conceptual and/or technological factors of structural architecture in more depth, or in a broader context of design determinants than that presented in ARCH 452 and ARCH 453. Pr.: ARCH 453.

ARCH 753. Professional Practice. (3) I, II. Studies of conventional and newly developing methods of professional design practice. Instruction in the relationships of architects, landscape architects, interior architects and other professionals to users, clients, construction industry, society, government, and one another. Two hours lecture and one hour recitation. Pr.: ARCH 433.

ARCH 765. Problems in Architecture. (Var.) I, II. A study of specific architectural problems under the direction of a member of the department staff. Pr.: Approval of instructor.
Interior Architecture

Stephen M. Murphy, Head
Professors Dubois, Haycock, and Murphy; Associate Professors Brown, Bullock, Hastings, Husseini, Owens-Wilson*, Thompson* and Troyer; Assistant Professors Borchers and Davidson; Instructor Wunderlich, Emeritus Professors Durgan and McGraw; Adjunct Professors Pauli Barucchiere, Castiglioni Fiorentino, Italy; Franz Puschovich, Frank Sander, and Klaus Steinman, Trier, Germany.

The bachelor of interior architecture program consists of a four-year course of study following the one-year environmental design studies program. The Department of Interior Architecture’s five-year program is one of the first curricula in this profession to be recognized and accredited by the Foundation for Interior Design Education Research in the United States. The Department of Interior Architecture’s professional program is also accredited by the National Association of Schools of Art and Design.

The curriculum in interior architecture is structured for students who plan a professional career in space planning in commercial, institutional, and industrial interior design. The learning experience is gained through the college’s study in Italy program and the university’s student exchange program with Prague, in the Czech Republic. The Italian program allows students from the three professional programs to participate in an invaluable learning experience at Santa Chiara. These foreign studies options can be taken as an alternative to the internship program or remaining at K-State for the semester. Students may earn 15 hours of credit while overseas.

General education philosophy
The responsibilities of the interior architect/designer encompass all spaces within environments built for human habitation. Our goal is to develop creative professionals who can synthesize information and analyze problems from many perspectives. New technologies affect the skills and knowledge required for designers.

The best preparation for the future is an education that will enable graduates to adapt to a changing world. Adaptation to change requires that the graduate draw on history and on experience of many cultures and apply the theories of empirical investigation. A sound curriculum for professional interior architectural education balances the broad cultural aspects of education and the specialized practical content integral to the profession.

Interior architecture program

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<tr>
<th>Course</th>
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<tr>
<td>IAR 301 Interior Architecture Design Studio I</td>
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<tr>
<td>IAR 304 Interior Architecture Design Studio I Lecture</td>
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<tr>
<td>IAR 248 Building Science</td>
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<tr>
<td>ARCH 430 Visual Communication</td>
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<tr>
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<tr>
<td>IAR 416 History of Furniture</td>
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<td>ARCH 413 Environmental Systems in Architecture I</td>
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<td>ARCH 449 Structural Systems in Architecture II</td>
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<td>IAR 390 The Contemporary Interior</td>
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Foreign study program
During their fourth year, interior architecture students may participate in the semester long exchange program between K-State and the interior architecture program at Trier, Germany. This program is on a space-available basis only. Other foreign studies options exist with the college’s study in Italy program and the university’s student exchange program with Prague, in the Czech Republic. The Italian program allows students from the three professional programs to participate in an invaluable learning experience at Santa Chiara. These foreign studies options can be taken as an alternative to the internship program or remaining at K-State for the semester. Students may earn 15 hours of credit while overseas.

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**Computers in the studio**
The department provides a supportive and integrated studio beginning with the fifth semester, when students can bring in their own CAD-capable computers. The department provides cabinets, peripheral equipment, and a secure environment with updated electrical and data connections. Use of the computer and appropriate software is integrated into the department courses from this point on. Computers are the tool of choice in today’s design offices, and the department strives to fully educate its students on their uses.

**Internship program**
A 30-week, full-time, paid internship is an available option for the spring semester of the fourth year. Students may apply their skills in a professional design environment while receiving 15 hours credit.

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<th>Course</th>
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<tr>
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**Sixth semester**

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**Seventh semester**

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<td>IAR 515 Environmental Systems in Architecture III</td>
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<td>ENGL 200 Expository Writing II</td>
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<td>IAR 408 Design Workshop II</td>
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**Eighth semester**

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**Ninth semester**

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<td>IAR 753 Professional Practice</td>
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150 IAR Total hours required for graduation—156

For the curriculum requirements for the first two semesters, see Environmental Design Studies, earlier in this section.

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<td>IAR 390 The Contemporary Interior</td>
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</table>
IAR 303. Interior Architecture Design Studio I. (3) I. Design vocabulary, abstract design, form and space generation, use of light and color theory, application of design concepts are necessary to reinforce graphic development, creative design process, prototype construction, evaluation, and redesign. Emphasis is placed on the nature of the office work environment and the linking together of various architectural and landscape architecture. Pr.: IAR 202; not more than one D in an interior architecture design studio course.

IAR 408. Design Workshop I, II, III. (3) I. An introduction to shop procedures, equipment, design materials, joinery, and elements of design in furniture and shaping various materials. This course provides the student the opportunity through a series of small projects exposure to the total creative design process by researching, designing, constructing, and evaluating projects. Pr.: Admission to the professional program of interior architecture.

IAR 410. Interior Architecture Microcomputer Applications. (2) I. Introduction in microcomputer operating procedure, general terminology, programming concepts for microcomputer, and word processing specification writing and computer-aided design software as it relates to the interior architecture profession. Four hours lab a week. Pr.: Enrollment in the interior architecture program.

IAR 411. Drawing in Black and White. (3) I. Freehand representational drawing of architectural space using graphite pencil and ink pen. Emphasis is on the development of the visual perception of space and the communication of the perceived space through drawings that are clear and expressive. Pr.: Third-year standing.

IAR 413. Materials and Finishes Laboratory. (1) I. Identification and application of specific interior finishes. Two hours lab a week. Pr.: To be taken concurrently with IAR 409.

IAR 416. History of Furniture. (2) I. Analysis of the social, political, and religious influences on product and furniture design in Italy, France, England and from early renaissance through the 18th century. Pr.: Admission to the professional program in architecture, interior architecture, or landscape architecture.

IAR 420. Theory of Furniture Design. (2) I. Design theory related to analysis, materials, and construction techniques from the early American period through the contemporary movement. Pr.: Admission to the professional program in architecture, interior architecture, or landscape architecture.

IAR 430. Visual Communication. (2) Students will be challenged to visualize and communicate in a three-dimensional language using constructed perspective, computer generated perspective with rendering and animation techniques, and constructed models as tools of the profession. Rapid graphic visual techniques using various mediums will be used enabling student exploration of design options in a spatial environment. Graphic arts including photography, typsetissing, silk screening and reproduction as applied to board presentations will be introduced. Throughout the entire semester the study of color theory and its application will be used in all presentations. Pr.: Admission to the professional program of interior architecture.

IAR 455. Product Design Illustration. (1, II) I. Exercises in various rendering techniques and involvement in different media presentations associated with product design. Pr.: IAR 420.


IAR 520. Furniture Design Workshop. (3) II. A course in the use of materials and surface treatment available in furniture. Pr.: Prior training in three-dimensional design and computer-aided design software.

Landscape Architecture and Regional and Community Planning

Dan Donelin, Head
Alton A. Barnes, Jr., Associate Head/Graduate Director, Landscape Architecture
C. A. Keithley, Associate Head/Graduate Director, Regional and Community Planning

Professors Barnes,* Brooks,* Day,* Donelin,* Forsyth,* Keithley,* Keller,* Law,* Marshall,* Page,* Weisenburger,* and Winslow;* Associate Professors Chelez,* Clement,* Ewanow,* Keane,* Mattson,* Rolley,* Smith,* and Wigfall;* Assistant Professor Lawhorn;* Instructor Bernard;* Adjunct Professors McGraw,* Seamon,* Watts,* Emeriti Professors Deines,* Ealy,* and Foerster.*

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Landscape architecture

The curriculum leading to the professional bachelor of landscape architecture degree is designed to prepare students for a variety of career opportunities found within the profession. Special emphasis is placed on site analysis, land planning, arrangement and organization of facilities on the land, organization of outdoor spaces, topographical manipulation and other aspects of site construction, and the use of plants in the landscape. Study of human impact on the natural and built environment and methods of minimizing negative aspects of this relationship are emphasized.

The bachelor of landscape architecture degree is accredited by the Landscape Architectural Accreditation Board of the American Society of Landscape Architects.

The bachelor of landscape architecture program consists of a four-year course of study following the one-year environmental design studies program. All required courses taught in the landscape architecture program that are counted toward the degree must be passed with a grade of C or better.

The Department of Landscape Architecture and Regional and Community Planning, in order to prepare students for their professional responsibilities and leadership roles, requires that all students provide or have access to a computer and appropriate software to support their course of study. The department will provide information about appropriate hardware and software.
University general education and professional electives
To fulfill curriculum requirements, 32 elective credit hours are taken. Of the 32 elective credits, the curriculum maintains 19 directed elective credits to include:
• 6 credit hours in business.
• 6 credit hours in social science/humanities.
• 4 credit hours in science.
• 3 credit hours in architecture.
Of the 32 elective credits, 18 must be taken from university general education electives. Directed electives may be taken as university general education or professional electives.

A listing of both university general education and professional electives can be found in the Bachelor of Landscape Architecture Handbook. A copy of the handbook may be purchased at the department office, 302 Seaton Hall.

*It is expected that all students, prior to participating in LAR 460 Computer Applications in Landscape Architecture, will have successfully completed a computer class emphasizing word processing and/or computer graphics.

**Surveying is taught in civil engineering; MATH 150 Plane Trigonometry, or equivalent, is a prerequisite.

***Woody Plant Materials is taught in horticulture and the prerequisite is one of these two courses: BIOL 210 General Botany; or BIOL 198 Principles of Biology for transfer students.

****Internship in a professional office is arranged by the program in regional and community planning.

Community planning minor
The minor in community planning is for students who wish to expand their knowledge of the processes of community planning and development.

Core requirements
Successful completion of the following planning course with a grade of C or better:

PLAN 315 Introduction to Planning ................. 3

Planning electives
Successful completion of 12 hours of the following planning courses (unless an external elective option is elected by the student) with grades of C or better:

PLAN 615 Shaping the American City .................. 3
PLAN 620 Urban America ...................................... 1
PLAN 630 Computer Application in Planning and Design .... 1–3
PLAN 633 Computer Application in Planning III ....... 1
PLAN 640 Community Growth Management .......... 3
PLAN 650 Housing and Development Programs .... 2
PLAN 651 Planning Municipal Services ............... 3
PLAN 655 Land Development Planning ................. 2
PLAN 715 Planning Principles and Process .......... 3
PLAN 716 Seminar in Planning ......................... 1–3
PLAN 721 Infrastructure Planning and Development Review .......... 2
PLAN 731 Solid Waste Planning and Management .... 1
PLAN 740 Small Community and Rural Area Planning .......... 3
PLAN 745 Urban Design and Preservation Planning Theory ........................................ 3
PLAN 746 Urban Design and Preservation Planning Study ........................................ 4
PLAN 747 Urban Design and Preservation Field Study ........................................ 1–3
PLAN 748 Urban Visual Analysis ....................... 3
PLAN 752 Physical Process of Plan Implementation .......... 2
PLAN 753 Planning Law ...................................... 3
PLAN 754 Fiscal Process of Plan Implementation .... 3
PLAN 760 Community Development Planning .......... 3

PLAN 761 Community Development Workshop ............ 1–3
PLAN 780 Planning in Developing Areas ........... 3

External electives
Successful completion of 3 credit hours from the following list of courses is considered as an acceptable substitute for one of the courses listed above in the planning elective area:

LAR 500 Site Planning and Design .................... 3
LAR 648 Landscape Architecture Design Studio VI .................. 4
LAR 720 Public Lands and Natural Resources Law .................. 3
LAR 744 Community Site Planning ..................... 3
LAR 746 Urban Design Studio I ......................... 4
LAR 758 Land Resource Information Systems .......... 3
LAR 759 Land Resource Evaluation .................... 3
ARCH 656 Preservation Documentation ............... 3
ARCH 657 Preservation Principles .................... 3
ARCH 680 Development Analysis .................... 3
ARCH 703 Environmental Aesthetics .................. 3
ARCH 720 Environment and Behavior .................. 3
ARCH 730 Environment and Aging .................... 3
ARCH 746 Urban Design Studio II ...................... 1
SOCIO 531 Urban Sociology .................................. 3
SOCIO 432 Community Organization and Leadership .......... 3

FINAN 552 Real Estate ......................................... 3

Specific questions may be directed to the director of the graduate program in regional and community planning.

Landscape architecture courses
LAR 220 and LAR 330. Landscape Architectural Design Studio I and II. An introduction to the principles, elements, and materials of landscape architecture. Design procedure, methodology and process are explored with a variety of project types emphasizing exterior spatial development as it relates to human behavior.

LAR 220. Landscape Architectural Design Studio I. (4) I. Two hours lecture and six hours design studio a week. Pr.: Admission to the professional program and ENV 201, 202.
LAR 248. Building Science. (3) I. Instruction in the materials of building and landscape design; sources, characteristics, and uses in design and construction; emphasis on evaluation and selection. Two lectures and one recitation per week. Pr.: Second-year standing and PHYS 113.
LAR 310. Design Graphics and Visual Thinking. (3) I. A study of graphic communication techniques for the exploration and presentation of landscape architecture design ideas. One hour lecture and four hours studio a week. Pr.: ENV 202.
LAR 320. Landscape Architectural Design Studio II. (4) II. Two hours lecture and six hours design studio a week. Pr.: LAR 220.

LAR 222. Environmental Issues and Ethics. (3) II. An introduction to the relationship of the natural environment to the life within it and as a factor in environmental design ethic. Three hours lecture a week.

LAR 410. Landscape Architecture Design Studio III. (4) I. Principles and concepts of site planning and programming with special emphasis on recreation facility planning and design. Two hours lecture and six hours studio a week. Pr.: LAR 320.

LAR 420. Natural Systems and Site Analysis. (4) I. Emphasis on ecological issues in design, natural systems, and site analysis in planting design. Two hours lecture and six hours studio a week. Pr.: Third-year standing in the university.
LAR 433. History and Theory of Landscape Architecture. (3) I. The influences of social, political, economic, and climatic factors on historic landscape styles; theory of landscape design. Three hours lecture a week. Pr.: First-year classification in professional LAR program.

LAR 438. Land Construction I. (4) I. Problems in the basic aspects of land construction to include topography, site design, site grading, earthwork estimating, and site layout. Three hours lecture and five hours studio a week. Pr.: LAR 248, 320, CE 212.

LAR 439. Land Construction II. (4) II. Continuation of LAR 438. To include landscape irrigation, area and landscape lighting, construction detailing, construction specification writing, bid proposals, and cost estimating. Three hours lecture and five hours studio a week. Pr.: LAR 438.


LAR 442. Landscape Architecture Design Studio IV. (4) I, II. Design studies emphasizing functional, aesthetic and ecological uses of plants. Relationship between plants and the built environment; preparation of planting plans and their use as working drawings; elements and principles of planting design; specification writing; contractor relationships; and design implementation. Two hours lecture and six hours studio a week. Pr.: LAR 410, 420, 438.

LAR 444. Internship/Advanced Studies Planning Seminar. (1) I. Review of the nature and scope of professional internships and opportunities for specialized professional study. Pr.: LAR 410.

LAR 450. General Landscape Design. (3) I, II. Basic graphic communication skills, design principles, and design vocabulary covering residential and small scale landscape architecture, planning, and design.
Development plans. Two hours lec. and two hours studio a week. Pr.: LAR 645 and LAR 648. Landscape Architectural Design Studio V. (4) I. An interdisciplinary design studio involving large-scale design; projects with extensive time implementation sequence; responses to socioeconomic, cultural, environmental, and technical needs; and implementation strategies. Design methods are applied to selected urban areas of the Midwest. Pr.: PLAN 315 or equiv.; and conc. enrollment in PLAN 745.


LAR 753. Professional Practice. (3) II. Studies of conventional and newly developing methods of professional design practice. Instruction in the relationships of architects, landscape architects, interior architects, and other professional to users, clients, construction industry, society, government, and others. Two hours lec. and one hour rec. Pr.: Fifth-year standing.

LAR 756. Design of Parks and Recreation Areas. (3) I. Site planning of national, state, municipal, and private parks, and specialized recreation areas. Three hours lec. a week. Pr.: Junior standing.

LAR 757. Design for Special Populations. (3) II. Design of exterior environments to accommodate the handicapped and disadvantaged individual. Pr.: Advanced undergraduate or graduate standing.

LAR 758. Land Resource Information Systems. (3) I. The understanding, collection, and application of land resource data to land planning and design. Current methods of resource inventory, ecologically oriented site analysis, and environmental impact assessment. Review of common sources for necessary information in each resource category. Two hours lec. and two hours studio a week. Pr.: Advanced undergraduate or graduate standing.

LAR 759. Landscape Resource Evaluation. (3) II. The determination of the impact of physical landscape project design upon the natural and man-made environment. Studies of existing site conditions and projection of the effect of such projects upon the site and vicinity. Pr.: Senior or graduate standing.

Regional and community planning courses

PLAN 315. Introduction to Planning. (3) I. The origins and evolution of planning in response to economic, social, political, and physical problems and its relationship to the design professions and the social and behavioral sciences. Three hours recitation a week. Pr.: Sophomore standing.

PLAN 605. Planning Communications. (1–3) I–III. Study and application of communication concepts and media utilized in regional and community planning, focusing on developing an understanding of graphic communication techniques, design techniques, physical development standards and models, professional presentation, and public hearings. Pr.: Senior standing and PLAN 315.

PLAN 615. Shaping the American City. (3) II, in odd years. An examination of the history of American city planning since 1850 presented through illustrated lectures, chronologically (rather than thematically) to coincide with the manner in which we live. Specific emphasis is on the evolving physical form of the city and the impact of the political, social, and economic processes and decisions that have helped shape the American city over the last 150 years. Pr.: Junior standing or instructor permission.

PLAN 620. Urban America. (1) II, in even years. A visual depiction of the urbanization of America as chronicled in film and discussion. The focus of the material is on students’ reaction to the urbanization process and the impact the process leaves in its wake. Pr.: Junior standing and PLAN 315.

PLAN 630. Computer Applications in Planning and Design. (1–3), I, intersession. The application of computer-aided design concepts to design and mapping in a planning context. Basic skill development in the use of CAD software for general mapping, design, and data display, with extension to GIS software applications in the planning and design professions. Focus will be on the use and capabilities of AutoCAD, ArcCAD, and ARCVIEW for design, data display, and analysis. Pr.: CIS 101 and junior standing.

PLAN 631. Computer Applications in Planning I. (4) I. The application of computer concepts to problem solving and data analysis in the planning profession, including the development of user skills in the application of various software packages for data analysis. Included is an extension of the basic knowledge level to advanced spreadsheet design for demographic and economic analysis used in the planning profession and the use of basic programs. Pr.: CIS 101, CIS 102, CIS 103, and conc. enrollment in PLAN 801.

PLAN 632. Computer Applications in Planning II. (1) II. The application of computer concepts to public presentations in the planning profession, including the development of user skills in the application of various software packages for producing multimedia presentations of planning projects for use in public meetings. Material developed in PLAN 631, 801, and 802 form the subject matter of the presentations. Pr.: PLAN 631 and conc. enrollment in PLAN 802.

PLAN 633. Computer Applications in Planning III. (1) II, intersession. The application of computer concepts to planning project management, including the development of user skills in the application of various software packages for producing project management reports. Network analysis techniques of PERT, CPM, and Gantt Charts are explained and applied to the development of planning process flow diagrams, time management, and work scheduling. Pr.: CIS 101 and junior standing.

PLAN 640. Community Growth Management. (3) II, in even years. Study of the process of city growth and change in relation to planning techniques and socio-economic-political determinants. Criteria and methodology for the growth management process are reviewed and applied to the contemporary city. Pr.: PLAN 315.

PLAN 650. Housing and Development Programs. (2) II, in even years. Review and evaluation of historical and current housing issues, production, and financial systems, including consideration of racial, ethnic, income and gender issues as they relate to the role of housing developments and programs in community development. Pr.: PLAN 315.
PLAN 651. Planning Municipal Services. (3) I, in even years. An investigation of the socio-political, spatial, and bureaucratic issues related to the planning, financing, and delivery of municipal services. The key focus is on how planners provide technical information on such topics as equity standards, citizen participation, and citizen demand-making models as they impact site selection of parks, libraries, fire stations, and other municipal projects. Pr.: PLAN 315.

PLAN 655. Land Development Planning. (2) II, in odd years. Examination of the process of land development in the United States, and its impacts from the perspective of developers, financial institutions, community planners, and city administrators. Focus is on the understanding of the land development process in meeting community goals, and shaping land development to meet community expectations for the improvement of the community. Conflict resolution and negotiation skills represent a communication emphasis. Pr.: PLAN 315

PLAN 699. Special Studies in Planning. (1–3) I, II, S. Independent study on special topics of interest in planning and the planning environment. Within context, special course offerings that would appeal to both graduate and undergraduate students may be offered, on demand. Pr.: PLAN 315.

PLAN 715. Planning Principles and Process. (3) I. Examination of the principles and process of regional and community planning, including historical development of growth patterns and form, the role of the architects, landscape architects, geographers, politicians and government, engineers, and planners in the historical development of regions and cities. The role of citizen involvement and interaction with community leaders and planners in the planning process, as well as the concept of individual rights versus the right of governmental units to regulate development in the best interest of the general public, is explored. Visionary concepts and Utopia are examined in the context of creating sustainable futures through planning. Pr.: Senior or graduate standing.


PLAN 721. Infrastructure Planning and Development Review. (2) II. Examination of infrastructure systems, and development standards; consideration of policy options and strategies; and implementation of community development through infrastructure planning and development review. Elements of site design are presented to provide the evaluative basis of site plan review as required in practice. Pr.: PLAN 315.

PLAN 731. Solid Waste Planning and Management. (1) II, intersession. The focus is on federal and state policies and programs for solid waste management as a framework for private sector and local government response to solid waste issues for resource recovery (recycling, incineration and composting) and landfilling. Pr.: Plan 315.

PLAN 740. Small Community and Rural Area Planning. (3) I. Synthesis of small community and rural area change, including socio-economic-political determinants as bases for community design and planning. Pr.: PLAN 315, plus 9 credit hours in economics, political science, and sociology.

PLAN 745. Urban Design and Preservation Planning Theory. (3) I. Review of recent historical developments of urban form and space, presented through lecture and accompanying slide show. Criteria and methodology for urban design, planning, and the role of historic preservation are examined and applied to the elements of cities. Pr.: PLAN 315.

PLAN 746. Urban Design and Preservation Studio. (4) II. An interdisciplinary design studio involving large-scale design projects having an extensive time implementation sequence and components of historic significance that must be resolved within the design process. Design methods are applied to selected urban areas of the Midwest. Pr.: PLAN 315, PLAN 745 desirable but not mandatory.

PLAN 747. Urban Design and Preservation Field Study. (1–3) I, II, S, intersession (on demand). Field investigation of varied large-scale institutions, central business districts, and other mixed-use developments which may or may not include structures of historic significance that should be preserved. Pr.: PLAN 745.

PLAN 748. Urban Visual Analysis. (3) II. In even years. Survey and analysis of urban form and space in relation to aesthetic theories and values. Methods of visual perception and analysis are reviewed and applied to contemporary urban form and space. Pr.: PLAN 745.

PLAN 752. Physical Processes of Plan Implementation. (2) II. Introduction to legislation and interpretation of codes and ordinances related to planning, design, and construction. Focus is on the planning process and technical studies of housing, land use, building condition, and parking, as well as staff responsibilities in professional practice. Pr.: PLAN 715.

PLAN 753. Planning Law. (3) I. Examination of the evolution and current state of land use regulation within constitutional limits. Introduction to zoning, subdivision, and other police power controls within the comprehensive planning process. Pr.: PLAN 715.

PLAN 754. Fiscal Processes of Plan Implementation. (3) II. An examination of the means by which comprehensive development plans can be implemented. The focus will be on the methods of financing various community-based activities envisioned in the long-range planning process, including a study of the roles of bonds, taxation, and intergovernmental grants. Resource allocation analysis and impact assessment will also be explored in regard to relevance to the capital budget and capital improvement plan. Pr.: PLAN 715.

PLAN 755. State and Regional Planning. (3) I, in odd years. Review of the principles and elements of regional growth and change. Criteria and methodology for regional analysis and planning are examined and applied to the elements of regions. Pr.: PLAN 715 or conc enrollment.

PLAN 760. Community Development Planning. (3) II. Examination of past and present approaches to community development planning in the United States. Review and assessment of community development planning policies, programs, and practices. Pr.: PLAN 715 or conc. enrollment, and 9 credit hours in the social sciences.

PLAN 761. Community Development Workshop. (Var.) I, S. The organization, planning, design, development, and evaluation of community development projects with real clients and actual locations. Pr.: PLAN 715 and PLAN 760 or conc. enrollment.

PLAN 780. Planning in Developing Areas. (3) I, in odd years. Examination of comparative regional and community systems of development, consideration of alternative approaches to planning, with emphasis on developing countries and underdeveloped areas in the rural United States. Pr.: PLAN 715, plus 9 credit hours from the social sciences.
The College of Arts and Sciences is the home of the liberal arts and is the largest college at K-State. The liberal arts, which include the physical and biological sciences, the fine arts, the social sciences, the humanities, and the quantitative disciplines, embody the core studies of a university education.

The liberal arts seek to develop intellectual skills, such as critical analysis, self-expression, and creativity. Majors in the College of Arts and Sciences range from those related to specific jobs and professions to those related to vocation in a more general and perhaps more fundamental way.

Majors and Degrees

The undergraduate degrees offered in the College of Arts and Sciences are: bachelor of arts, bachelor of fine arts, bachelor of music, bachelor of music education, and bachelor of science. In addition, the associate of arts and the associate of science degrees with unspecified majors are offered at Fort Riley.

Below in the left column are majors, options, advising programs, and degrees offered. In the right column are names of the departments under which the major programs are offered. The specific requirements for a degree in the various curricula may be found in the department listings later in the College of Arts and Sciences catalog section.

Programs

- Anthropology, B.A. or B.S.
- Art, B.A. or B.F.A.
- Biochemistry, B.A. or B.S.
- Biology, B.A. or B.S.
- Chemical science, B.A. or B.S.
- Chemistry, B.A. or B.S.
- Economics, B.A. or B.S.
- English, B.A.
- Creative writing
- Literature
- Teaching certification
- Fishery and wildlife biology, B.A. or B.S.
- Fisheries biology
- Wildlife biology
- Natural history
- Geography, B.A. or B.S.
- General Pre-planning

Departmental office

- Sociology, Anthropology, and Social Work
- Art
- Biochemistry
- Biology
- Chemistry
- Economics
- English
- Biology

Common degree requirements

120 credit hours required for graduation.

Courses numbered below 100 may not be applied toward a degree. In addition to the university’s limit on credits for extracurricular work, no more than 4 credit hours in lifetime sports and exercise activity classes may be applied toward a degree.

University general education requirements

University

Kansas State University has established requirements for a university general education program. See “University General Education Requirements” in the Degrees section of this catalog.

College

As required by the university, students must complete at least 18 credit hours of approved university general education courses, at least 6 credit hours of which must be at the 300 level or above. The college further requires that at least one university general education course must be taken from each of the three areas of humanities, social sciences, and computational or natural sciences. Transfer students requiring only 6 hours of university general education courses should take at least one course from each of two discipline areas.

Courses used for university’s general education credit may not be in the student’s major field without the approval of the college and the university.

Within the above guidelines, any approved general education courses offered by any college at Kansas State University may be used to satisfy these requirements. University general education courses approved as basic requirements in the College of Arts and Sciences (see “Bachelor of Arts and Bachelor of
of Sciences’ following this section) may be used to satisfy simultaneously both university general education and College of Arts and Sciences basic requirements. Courses from other colleges may be approved as basic requirements in the College of Arts and Sciences. Students should consult their advisors for up-to-date lists of approved courses.

**Departmental**

Individual departments within the college may propose exceptions or additions to the college requirements noted above. Students are advised to check with their major departments to see whether such is the case.

In course descriptions, university general education courses are marked with a ◆. For more information about university general education requirements, see the Degrees section of this catalog. For a current list of approved university general education courses: www.ksu.edu/registrar/enroll/gened.html

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**Bachelor of Arts and Bachelor of Sciences**

**College of Arts and Sciences basic requirements**

Basic requirements are to be fulfilled with courses chosen by students in consultation with their advisors. The aim of these requirements is to provide breadth in the major areas of knowledge outside of the field of specialization. Introductory and intermediate-level courses are available for this purpose in departments in natural sciences, social sciences, and humanities.

The aim of the requirement in the humanities is to encourage and to enable students to recover “a heritage so important that to lose it would be to lose the very qualities that make men and women greater than the systems they devise and mark the difference between a society of robots and a community of civilized human beings.” The aim of the requirement in the sciences is to ensure that students gain an immediate acquaintance with the general principles of scientific method and with the different shapes the scientific enterprise takes in the physical sciences, the life sciences and the social sciences.

Up to two courses from one department may be used to fulfill the distribution requirements for humanities and the social sciences. They may be used at the same time to count towards the student’s major. No course may be used to satisfy more than one specific requirement for humanities and social sciences. Only courses taken for 2 or more credit hours satisfy these requirements; courses in excess of 5 credit hours count as two courses.

**Humanities**

Four courses, one course each section, 11 credit hours minimum

**Fine arts** (one course, or at least two credits)

Purpose: to ensure some interpretive or expressive competence in a traditional nonliterate mode of artistic expression.

Choose from the following:

- DAS 100
- Anthropology—ANTH 515, 516, or 517
- Art—ART 301, 305, 400, or 560
- Art history—any course
- Art technique—ART 200 to 799
- Dance—DANCE 205, 323, 324, 325, 326, 371, 399, 459, or 520
- History—HIST 459
- Theatre—THTR 260 to 799

**Philosophy** (one course)

Purpose: to ensure some interpretive or expressive competence in the fundamental conceptual issues of human thought and activity.

Choose any philosophy course except PHILO 110, 220, or 510.

**Western heritage** (one course)

Purpose: to ensure some interpretive or expressive competence regarding the institutions, traditions, and values that have shaped Western civilization.

Choose from the following:

- American ethnic studies—AMETH 160, 501, or 560
- Constitutional law—POLSC 613, 614, 615, 616, or 799
- Foreign civilizations—FREN 514, GRMN 530, SPAN 565, or SPAN 566
- History—courses dealing with the Greco-Roman, Western European, or North American experience; HIST 515
- History of Sport
- Kinesiology—KIN 515 (crosslisted with HIST 515), 325
- Music—MUSIC 245
- Political thought—POLSC 301, 661, 663, 667, 671, 675, or (SOCIO) 709
- Sociology—507
- Speech—SPCH 460
- Western humanities—ENGL 230, 231, 233, or 234
- Women’s studies—WOMST 105, 395, 405, 500, or 506 or 510

**Literary or rhetorical arts** (one course)

Purpose: to ensure some interpretive or expressive competence in a traditional literary or rhetorical mode of artistic expression.

Choose from the following:

- English—literature or creative writing—ENGL 250 to 799
- Modern languages—literature courses including literature in translation
- Speech—SPCH 325, 480
- Theatre—THTR 562 or 764
- History of rhetoric—SPCH 330, 331, 430, 432, 434, 460, 725, 730, 732, or 733

Exception: Students in B.S. programs who take two courses in one foreign language may use these to satisfy the requirements for Western heritage and for literary and rhetorical arts.

**Social sciences**

Four courses, 12 credit hours minimum, from three disciplines

Purpose: to acquaint students with the adaptation of scientific method to the analysis of human social systems.

One course must be at 500 level or above, or carry a prerequisite in the same department.

Three of the four courses must be from these areas:

- Cultural anthropology—including archaeology
- Economics—any course
- Geography—except GEOG 220 or 221 or 535
- History—any course
- Political science—any course
- Psychology—any course
- Sociology—any course

The fourth course must be from the above areas or from:

- American ethnic studies—AMETH 501
- Anthropology—ANTH 520
- Gerontology—GERON 315 or 600 or 615
- Kinesiology—KIN 320, 340, 345, or 435
- Linguistics—except LG 601
- Speech—SPCH 323, 425, 435, 720, or 726
- Women’s studies—WOMST 105, 405, 500, or 506 or 510

**Natural sciences**

Three courses, 11 credit hours minimum

**Life sciences** (one course with laboratory)

Purpose: to introduce students to the systematic study of organisms and their interrelationships.

Choose from the following:

- Biology—any course
- Biochemistry—any course
- Paleobiology—GEOL 581 or 704
- Physical anthropology—ANTH 280, 281, 680, 688, 691, 694, or 695

**Physical sciences** (one course with laboratory)

Purpose: to introduce students to the appropriate attitudes and methods that characterize the systematic study of matter and energy.

Choose from the following:

- Chemistry—any course
- Environmental geography—GEOG 220 or 221 or 535
- Geology—any course except GEOL 581 or 704
- Physics—any course

One additional natural science course selected from life sciences or physical sciences lists above, or from the natural science list: KIN 220.

**International studies overlay**

One course

Purpose: to equip students better to become citizens of a world where the most important problems are unavoidably defined in international terms and to understand cultures of the world outside the Western tradition.

A student must take one course of which at least half is devoted to: economic, political, and social relations or interactions between or among different countries, in which the major focus is upon the interdependency of nations of the modern world; or contemporary features or historical traditions of non-Western cultures (excluding those dealing primarily with Greek, Roman, Western European, or North American experience).
Students may satisfy the international studies requirement at the same time they satisfy requirements in the major, in the humanities, or the social sciences. These courses qualify:

- Agricultural economics—AGEC 615
- Anthropology—ANTH 200, 204, 220, 260, 505, 506, 508, 511, 512, 515, 516, 517, 536, 545, 550, 604, 618, 630, 634, 673, or 676
- Economics—ECON 505, 506, 507, 536, 681, or 682
- English—ENGL 580
- Geography—GEOG 100, 200, 201, 505, 506, 620, 640, 650, or 715
- History—HIST 250, 350, 505, 506, 509, 510, 514, 543, 544, 545, 560, 561, 562, 564, 576, 577, 578, 591, 592, 593, or 598
- Journalism and mass communications—MC 725
- Management—MANGT 690
- Marketing—MKTG 544
- Modern languages—RUSSN 250, 504, 508, or 552
- FREN 503
- Political science—POLSC 333, 505, 506, 511, 541, 543, 545, 622, 623, 624, 625, 626, 627, 628, 629, 642, 645, 647, 649, 651, 652, or 653
- Sociology—SOCIO 505, 506, 507, 535, 618, or 742

Students may use the fourth course in a single foreign language sequence (other than Latin) to satisfy the international studies overlay requirement.

**Additional requirements for the B.A.**

**Foreign language**

Level 4 (i.e., French 4, German 4, Spanish 4, etc.) or the equivalent of level 4 in a foreign language sequence offered by the Department of Modern Languages. (Conversation “4A” courses do not meet the level 4 requirement.)

Purpose: to bring students to a point at which they are able to proceed on their own to a command of a second language—a key for access both to a foreign culture and to much primary and secondary material in many special fields.

**Mathematics**

(One 3-credit-hour course, 100–799 level, or any other course for which there is a mathematics prerequisite)

Purpose: to give students a college-level competence in mathematical reasoning and analysis.

Any course used to satisfy this requirement cannot be used to satisfy any other general education requirement.

**Additional requirements for the B.S.**

**Natural sciences**

(One course, 3 credit hours minimum, with a prerequisite in the same department; for this requirement, biochemistry courses with a chemistry prerequisite qualify as upper-level courses.)

Purpose: to give students who elect the baccalaureate of science degree an especially solid foundation in the natural sciences.

Courses that qualify are those listed earlier under natural sciences, and:

- Kinesiology—KIN 330 or 335 or 650
- Psychology—PSYCH 470 or 480

**Quantitative and abstract formal reasoning**

Purpose: to give students training in a clear, nonambiguous, simplified language for the efficient transfer and logical analysis of information—a language in which a good deal of discussion is conducted in the sciences.

A course that satisfies this requirement may at the same time be used to satisfy any major requirement for which it qualifies. Fulfill this requirement one of three ways:

1. Three courses, 9 credit hours minimum, selected from:
   - Computer science—200 level or above
   - Mathematics—100 level or above
   - Philosophy—PHILO 110, 220, or 510
   - Statistics—any course
   - 2. One course and its Level II prerequisite, selected from:
      - Geography—GEOG 700 (with a statistics course)
      - Physics—PHYS 113 (with MATH 150)
      - PHYS 223 (with MATH 221)
      - PHYS 224 (with MATH 221)
      - PHYS 325 (with MATH 240)
      - Sociology—SOCIO 520 or 725 (with STAT 330)
      - Social work—SOCW 519 (with STAT 330)

3. Equivalent competency:
   - Competency may be demonstrated by taking two Level II courses or a Level III course from:

   **Level II courses (two courses):**
   - Computer science—CIS 200
   - Mathematics—MATH 150, 205, or 210
   - Philosophy—PHILO 510
   - Statistics—STAT 320, 330, 340, 350, 702, or 703

   **Level III courses (one course):**
   - Computer science—CIS 300 or 350
   - Mathematics—MATH 210 or 220
   - Philosophy—PHILO 701
   - Statistics—STAT 341, 351, 704, or 705

**Bachelor of Fine Arts**

120 hours required for graduation

The baccalaureate of fine arts degree is a professionally oriented undergraduate degree in art. Emphasis is on actual practice in the creative art disciplines. The degree is considered the appropriate preparation for the master of fine arts degree, which is recognized as the terminal degree in studio arts, and for the master of arts in art therapy, which is required for certification as an art therapist. The B.F.A. in art is a four-year, 120-credit-hour program with emphases possible in painting, sculpture, ceramics, graphic design, printmaking, metal-smithing and jewelry, drawing, and pre-art therapy. The degree requirements are as follows:

**Basic requirements (45 hours)**

- Communications—English composition, two courses; and oral communication, one course
- Social sciences—two courses
- Humanities—three courses
- Philosophy or mathematics—one course
- Natural sciences—two courses, one with a lab
- General electives—11-19 hours

**Art courses (75 credit hours)**

Core—39 hours

Major—21 hours

Art electives and related courses—15 hours

**Bachelor of Music**

129–134 credit hours required for graduation

Areas of concentration offered in this curriculum are: all instruments, voice, and composition. A secondary performance area also is required.

**Basic requirements (42 hours)**

ENGL 100 Expository Writing I .............................. 3
ENGL 200 Expository Writing II ........................... 3
SPOH 106 Public Speaking I ................................ 3
PHYS 101 The Physical World I ............................ 3
PSYCH 110 General Psychology ............................ 3

Nonmusic electives ......................................... minimum of 9

Modern language ......................................... two courses minimum

The remaining hours are to be taken in the area of concentration. For specific music requirements, see the Music section of this catalog.

**Bachelor of Music Education**

136–139 credit hours required for graduation, depending on emphasis

The program of study leading to this degree is a nine-semester curriculum designed to prepare music teachers for grades K-12. With careful planning and enrollment during summer session(s) all requirements may be completed in four years. Within this curriculum there are two optional emphases—one in vocal/choral music, the other in instrumental music.

**Basic requirements**

ENGL 100 Expository Writing I .............................. 3
ENGL 200 Expository Writing II ........................... 3
ENGL 110 English Honors Composition I ............. 3
ENGL 125 English Honors Composition II ............ 3
SPOH 106 Public Speaking I ............................... 3
Any Department of English literature course (except ENGL 355 or 545) or Department of Modern Languages literature course ............................................. 3
Any course offered in the Department of Philosophy (except PHILO 110 or 220) or SPCH 320 or SPCH 330 or SPCH 434 or any two courses in a modern language ......................................................... 3-10

Fine arts elective (fulfilled by courses in the major) ...... 3
PSYCH 110 General Psychology ............................ 3
Any course from the Department of History .............. 3
Any additional social science course that addresses cultures outside the Western tradition (excludes those dealing primarily with the Greek, Roman, Western European, or North American experiences) .................... 3
Two courses from the natural sciences (one course must include a lab) ......................... 7
MATH 100 College Algebra or higher level math course or grade of C or better on Algebra CLEP test ..................... 3
STAT 320 Elements of Statistics or higher level statistics course ............................... 3
FSHS 110 Introduction to Human Development ..................................................... 3
Electives to complete a total of 46 hours (not more than 3 hours of music may be counted.)

The remaining hours are to be taken in the area of concentration. For specific music requirements, see the Music section of this catalog.

### Associate of Arts at Fort Riley

60 hours including the following general requirements:
- English—ENGL 100 and 200
- Speech—SPCH 105 (or one course), courses subject to approval by Department of Speech
- Modern languages—two years in one language or equivalent competence
- Mathematics—one course
- Humanities—three courses from: art, dance, English, history, modern languages, music, philosophy, speech, and Introduction to Women’s Studies. No more than three courses in history may be used to fulfill humanities and social sciences requirements.
- Social sciences—three courses from: anthropology, economics, geography (excluding GEOG 220 and 221), history, political science, psychology, sociology, social work, mass communications, and Introduction to Women’s Studies. No more than three courses in history may be used to fulfill humanities and social sciences requirements.
- Natural sciences—four courses, including one laboratory course and one course that has a prerequisite in the same department: biochemistry, biology, chemistry, computer science, geography, (GEOG 220 and 221 only), geology, mathematics, physics, or statistics.

### Associate of Science at Fort Riley

60 hours including the following general requirements:
- English—ENGL 100 and 200
- Speech—SPCH 105 (or one course), courses subject to approval by Department of Speech
- Humanities and social sciences—seven courses, taken from at least two departments, including one course in philosophy, from: anthropology, art, dance, economics, English, geography (excluding GEOG 220 and 221), history, modern languages, music, philosophy, political science, psychology, sociology, social work, speech, mass communications, and Introduction to Women’s Studies.
- Natural sciences—four courses, including one laboratory course and one course that has a prerequisite in the same department: biochemistry, biology, chemistry, computer science, geography (GEOG 220 and 221 only), geology, mathematics, physics, or statistics.

### Program Options

#### Honors program

The honors program offers intellectually able and motivated students experiences in the humanities and in the social-behavioral and natural sciences that are challenging and unusual in breadth and focus. By stressing liberal studies in the freshman and sophomore year, interdisciplinary study in the junior year, and independent study in the senior year, the honors program enables students to develop broad intellectual interests.

The honors program further enriches the experiences of its members by creating opportunities for them to develop a sense of community and to meet faculty and distinguished guests of the university in informal settings.

Students with high ACT scores are invited to participate in the honors program during the freshman year. Formal admission to the program is granted at the end of the freshman year to students who have achieved a 3.3 GPA.

Students in the honors program are expected to enroll in DAS 110 Introduction to the Honors Program in arts and sciences and an honors section of ENGL 125 Honors English II or receive consent of the director. Students must complete: two seminars, one in social sciences or humanities and one in the natural sciences or mathematics; an interdisciplinary colloquium, and research leading to a senior thesis, an independent creative/research project, under the supervision of a faculty member of the student’s choice, during the senior year. Honors sections of regular Arts and Sciences classes are also available each semester.

The senior study culminates in an honors thesis or other documentation of performance, which is filed with the director. This project is invaluable as evidence of a student’s ability to organize and complete a study independently. It provides evidence of capability to do well in graduate studies and may enable the student to strengthen significantly an application to graduate school. It may also help make the case for a scholarship application or serve as the impetus for more detailed investigation later in the student’s career. Honors students are encouraged to complete a four-course sequence in a modern language other than English.

All phases of the honors program emphasize oral and written communication, both as a method of demonstrating one’s understanding of a subject, and as a strategy for developing one’s thinking skills. In addition to the curricular options described, students in the honors program have many opportunities to individualize their courses of study. Student-designed curricular plans may be approved with the consent of department heads involved, the director of the honors program, and the dean of the college.

Students are also encouraged to propose other plans in their course work, including off-campus learning experiences that may be supplemented by reading, discussion, and reporting for course credit with the approval of the proper supervising faculty.

A transfer student or other upperclassman who has a grade point average of 3.3 and who receives a positive evaluation by the director may be admitted to the honors program as late as the beginning of the junior year. Students who wish to be considered for late admission should contact the director.

For more information, contact the director of the honors program, College of Arts and Sciences, Office of the Dean.

#### Freshman Seminar

Freshman Seminar introduces students to what a university is, the purpose of a university education, and what it means to be an educated person. This is done, not through a lecture approach, but through sharing the varied cultural and intellectual activities that occur at K-State, demonstrating by example the characteristics of educated persons and the importance of higher education.

#### Study abroad

Barry Michie, Director
304 Fairchild Hall
785-532-5990

The Office of Study Abroad should be the first stop for students who wish to study in another country for a year, a semester, a summer, or an intersession.

In addition to a number of good language programs, there are opportunities to study almost every subject from art to zoology in Africa, Asia, Canada, Latin America, and Europe. Every attempt is made to ensure the best match between the interests of a student and the ingredients of a program sponsored by K-State or by another institution.

Students may apply for scholarships, such as the Fulbright or the Pearson, or scholarship-exchanges, such as the K-State/Justus Liebig year abroad. Through the International Stu-
mission of recruitment and retention of women in engineering and science from the middle school through post-graduate levels. The program is designed to help create an academic and social climate at K-State that is conducive to both women and men in science and engineering.

WESP activities include on-campus speakers, career exploration panels, workforce preparation programs, and social events to facilitate student and faculty contact. Students are also encouraged to become involved in WESP’s ongoing research and outreach programs to middle and high school girls. For more information, contact the program director, Dr. Suzanne E. Franks, by phone (785-532-3395) or by e-mail at sefranks@ksu.edu.

Advising

Students with undeclared, interdisciplinary, and pre-professional majors are advised in the office of the dean. Students with other majors are assigned an advisor by the department head who supervises the majors. In all cases, advisors try to ensure that students design their curriculum to meet such goals as: the ability to think, speak, and write with clarity and precision; knowledge of another culture or another language; knowledge and appreciation of science and technology; familiarity with major artistic and literary forms; and exposure to moral and ethical issues.

University Undergraduate Studies

Interdisciplinary options

Interdisciplinary options within the university undergraduate studies major provide an opportunity for students to organize their interests within a broad area of study rather than within the narrower focus required by a major in a single discipline. Students who want to create their own fields of emphasis and students who are eager to pursue multidisciplinary solutions to complex problems often choose an interdisciplinary major. Other students choose interdisciplinary study as a second major, adding it to a departmental major in order to gain expertise in complementary areas.

Advising for undeclared students: open option

Students in the university undergraduate studies major may declare one of the interdisciplinary options upon entering the major or they may enter in the open option. Students in the open option must declare one of the interdisciplinary options or another major on or before the completion of 60 credit hours. It is strongly recommended that students with more than 45 cumulative hours not enter the open option. However, transfer students and those facing exceptional circumstances may enter the open option with more than 45 hours on the recommendation of an open option advisor. Such students may remain in the open option for one semester.

The university undergraduate studies major offers the open option and four interdisciplinary options:

<table>
<thead>
<tr>
<th>Degree option</th>
<th>Degree(s)</th>
<th>Credit hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities</td>
<td>B.A. only</td>
<td>36</td>
</tr>
<tr>
<td>Life science</td>
<td>B.S. or B.A.</td>
<td>39</td>
</tr>
<tr>
<td>Physical science</td>
<td>B.S. or B.A.</td>
<td>37</td>
</tr>
<tr>
<td>Social science</td>
<td>B.S. or B.A.</td>
<td>36</td>
</tr>
</tbody>
</table>

The requirements for each of the interdisciplinary options are sufficiently flexible to allow students, in consultation with their advisors, to devise degree programs designed to meet their particular needs, interests, and career goals.

Humanities

The humanities disciplines require the study of cultural artifacts, traditions, and activities. The purpose of cultural study is to learn what culture means and how individuals operate within it. This study should enable students to understand their own places in existing traditions, and help them to contribute positively to the development of new ones. Creativity, imagination, and interpretation are central to humanistic study. The humanities disciplines include art, dance, speech, theater, history, languages, literature, music, and philosophy. A humanities major leads to the traditional liberal degree, the bachelor of arts.

A student seeking admission to the program must submit a plan of study to an interdisciplinary humanities advisor in the College of Arts and Sciences dean’s office for approval. This proposal must include a rationale or thematic design for the interdisciplinary degree and a tentative listing of courses. The student must confer with other humanities faculty members who have special expertise in the areas of the student’s interest. This procedure should be accomplished before or during the semester in which the student completes 60 credit hours toward the degree. The student’s proposal must be approved by the Humanities Advisory Committee.

The humanities major consists of 36 credit hours.

Fifteen credits must be completed in each of two humanities disciplines; these should be selected from among courses normally counted toward a major in the field. However, courses applied toward another major may not also be applied toward the humanities interdisciplinary major.

At least 15 credit hours must be completed in humanities disciplines at the 500–699 level.
including at least two courses in each of the two humanities concentration areas. (Students interested in music are encouraged to seek special advising in the music department.)

No more than 9 credit hours may be counted toward both the general requirements and the major.

A student with a well-defined theme that exceeds the scope of these requirements may petition the Humanities Advisory Committee for an appropriate waiver.

A 2.0 GPA in the major is required for graduation.

Life sciences

Life science is a multidisciplinary major that deals with studies of living organisms and life processes.

Physical science

Physical science is a multidisciplinary major that deals primarily with nonliving matter. It concerns itself with the theoretical and observable natural phenomena of our world and universe.

Students majoring in physical science must earn grades of C or better in all courses (including transfer work) prescribed for this curriculum, including electives, as outlined below.

Math 220 Analytic Geometry and Calculus I .......... 4
Mathematics 320, 340, 410, or 510 ................. 3

Physics 214 Engineering Physics II .................. 5
PHYS 214 Engineering Physics II .................. 5

Chemistry 122, 191, 300 or above, except 515

English 130, 131, 132

Physics 213 Engineering Physics I .................. 5

Electives ................................................. 5–9*

*Students must complete a total of 37 hours in the major. Electives must be selected from the following:

Computing and information sciences—200 or above

Physics—122, 191, 300 or above, except 512

Math 221, 222, 240, 510, or 551

Psychology course with prerequisite .......................... 3

PHYS 214 Engineering Physics II .................. 5

Electives ................................................. 5–9*

*Students must complete a total of 37 hours in the major. Electives must be selected from the following:

Mathematics—221, 222, 240, 510, or 551

Psychology course with prerequisite .......................... 3

Electives ................................................. 5–9*

*The 14 elective hours must be at or above the 300 level and they must be selected from two or more of the following fields: biochemistry, biology, microbiology, organic chemistry, physical anthropology, and psychology. A minimum of 15 hours in the major must be taken at K-State.

Any restrictions placed on transfer work by departments for their majors will apply to the life science degree. To obtain a life science degree a student must earn at least a 2.0 GPA in the required science courses (including transfer work).

The life science degree is not available to students who will earn a degree in biochemistry, biology, microbiology, pre-dentistry, and pre-medicine.

Social science

Social science is a branch of learning that examines society’s institutions—their structures, theoretical foundations, evolution, and interrelationships—and how they affect and are affected by human behavior. The social science disciplines include anthropology, economics, geography, history, mass communications, political science, psychology, and sociology.

A student seeking admission to the program must submit a plan of study to an interdisciplinary degree and curriculum at K-State; rather, pre-law is an interest area for students interested in potentially attending law school. If a student is undecided, the pre-law advisor will help the student explore curriculum options with the goal of finding a major.

No more than 9 credit hours may be counted toward both the general requirements and the major.

A 2.0 GPA in the major is required for graduation.

The social science major is not available to students who will earn a degree in anthropology, economics, geography, history, mass communications, political science, psychology, or sociology.

Students must complete at least one course in social science research methods or data analysis. This course may be any statistics course that a student is qualified to take or may be selected from: GEOG 700 Quantitative Analysis in Geography; HIST 586 Junior Seminar in History; POLSC 400 Political Inquiry and Analysis; POLSC 700 Research Methods in Political Science; PSYCH 350 Experimental Methods in Psychology; SOCIO 520 Methods of Social Research; STAT 330 Elementary Statistics for the Social Sciences.

The research/data course cannot be used to fulfill any other requirement in the major. It can, however, be used to fulfill a general requirement.

Pre-Law

Pre-professional programs are advised in the College of Arts and Sciences dean’s office.

Law schools across America select students from a wide variety of majors. As a result, there is no pre-law major or prescribed curriculum at K-State; rather, pre-law is an interest area for students interested in potentially attending law school. If a student is undecided, the pre-law advisor will help the student explore curriculum options with the goal of finding a major.

Pre-law students may select the major of their choice in any college on campus. The Association of American Law Schools does not prescribe a particular pre-law curriculum; however, it does emphasize the selection of rigorous courses that will aid students in the development of critical and analytical thinking skills, a facility with written and spoken expression, an understanding of our society’s institutions and values, and creative power in thinking. The development of these capacities is a highly individualized process to be pursued in consultation with the student’s major advisor and the pre-law advisor.

Students in all majors who are considering attending law school should consult with the pre-law advisor in the College of Arts and Sciences dean’s office as early as possible in their undergraduate career. Additional information about pre-law can be found on the College of Arts and Sciences homepage at www.ksu.edu/artscl/prelaw/
Pre-Health Professions Program

Pre-professional programs are advised in the College of Arts and Sciences dean’s office.

As careers in health professions continue to be plentiful, applicants to the professional training programs become more numerous and requirements for admission into those programs become more stringent. One of the universal requirements for admission is a high grade point average. For this reason students entering K-State for the first time as freshmen will enroll in the pre-health professions program (PHPP). Students requesting transfer into a health professions curriculum with previous academic work at K-State or elsewhere must have a 2.75 GPA or higher to enroll in PHPP. For purposes of admission into PHPP, GPAs will be based on all courses attempted at colleges or universities.

Through the pre-health professions program successful students will establish a firm base for application to the professional school of their choice. While in PHPP students are advised in the health professions advising office for two semesters, normally 30 credit hours, while they take communications, humanities, social science, natural science, and math courses required for their chosen professional program.

PHPP students are required to enroll in Orientation to Health Careers (DAS 115) to acquaint them with the variety of health professions available, requirements for entry to professional schools, characteristics of health professionals, and issues in health care delivery.

Admission to a pre-health curriculum (pre-medicine, pre-physical therapy, etc.) will be granted after completion of the 30 hours with a GPA of 2.75 or above. Students with a GPA below 2.75 will be required to find an alternative to a pre-health curriculum.

DAS 115. Orientation to Health Careers. (1) I. Acquaints students whose career goals are in the health professions with the variety of options available and with the corresponding academic requirements. Discussion covers an introduction to the personal responsibilities that health-care workers assume and the impact of social and economic problems on our health-care delivery system. Includes an orientation to general requirements for success as a student at K-State and in professional health related programs.

DAS 240. Practicum in Pre-Health. (1) I, II, S. Forty hours spent observing the practice of dentistry, medicine, or optometry. Students are under the supervision and direction of individual dentists, physicians, or optometrists. Pr.: Sophomore standing, permission of the health professions advisor.

Medical technology

The medical technology curriculum requires 90 semester hours of preclinical courses and 10 to 18 months of work at one of the affiliated clinical programs in Kansas City or Wichita. Admission into the clinical portion of the training is by application; students are expected to have a minimum GPA of 2.0 to 2.5 for both overall work and for the required science courses. All the requirements for a bachelor’s degree must be completed before a student is allowed to sit for the certification examination.

In addition to the general requirements for a bachelor’s degree in the College of Arts and Sciences, the following courses are required:

**Preclinical courses**

<table>
<thead>
<tr>
<th>Course Code</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>CHM 210</td>
<td>Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>CHM 350</td>
<td>General Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHM 351</td>
<td>General Organic Chemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>BIOCH 521</td>
<td>General Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>BIOCH 522</td>
<td>General Biochemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>CHM 371</td>
<td>Chemical Analysis</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 455</td>
<td>Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 670</td>
<td>Immunology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 530</td>
<td>Pathogenic Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 340</td>
<td>Human Body</td>
<td>8</td>
</tr>
<tr>
<td>BIOL 545/546</td>
<td>Parasitology and Lab</td>
<td>5</td>
</tr>
<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
</tbody>
</table>

**Preclinical courses (taken during internship)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAS 401</td>
<td>Clinical Microbiology</td>
<td>(6–8)</td>
</tr>
<tr>
<td>DAS 402</td>
<td>Clinical Chemistry</td>
<td>(6–8)</td>
</tr>
<tr>
<td>DAS 403</td>
<td>Clinical Hematology</td>
<td>(4–6)</td>
</tr>
<tr>
<td>DAS 404</td>
<td>Clinical Immunology</td>
<td>(2–6)</td>
</tr>
<tr>
<td>DAS 405</td>
<td>Topics in Medical Technology</td>
<td>(3–6)</td>
</tr>
<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
<td></td>
</tr>
<tr>
<td>CHM 351</td>
<td>Organic Chemistry I</td>
<td></td>
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<tr>
<td>CHM 352</td>
<td>Organic Chemistry Laboratory</td>
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</tr>
<tr>
<td>CHM 355</td>
<td>Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
<td></td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td></td>
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<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
<td></td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td></td>
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</tbody>
</table>

**Preclinical courses (required science courses and a broad range of health professionals, and issues in health care delivery.)**

Admission to a pre-health curriculum is by application. Students are required to complete the 30 credit hours of clinical work required for the bachelor’s degree in medical technology. Pr.: Completion of the 90 hours of undergraduate course work required for the medical technology degree.

**Clinical courses (taken during internship)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAS 401</td>
<td>Clinical Microbiology</td>
<td>(6–8)</td>
</tr>
<tr>
<td>DAS 402</td>
<td>Clinical Chemistry</td>
<td>(6–8)</td>
</tr>
<tr>
<td>DAS 403</td>
<td>Clinical Hematology</td>
<td>(4–6)</td>
</tr>
<tr>
<td>DAS 404</td>
<td>Clinical Immunology</td>
<td>(2–6)</td>
</tr>
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<td>Organic Chemistry Laboratory</td>
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<tr>
<td>CHM 355</td>
<td>Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
<td></td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td></td>
</tr>
<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
<td></td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td></td>
</tr>
</tbody>
</table>

**Requirements for some dental schools vary, so consultation with the pre-dental advisor is recommended.**

Contact the College of Arts and Sciences dean’s office for more information.

**Pre-medicine**

Medical schools in the United States require applicants to complete a bachelor’s degree before matriculating, to include a series of required science courses and a broad range of humanities and social sciences in their studies, to show leadership and an interest in the health field, and to present acceptable scores on the Medical College Admission Test. Kansas residents are given preference at the University of Kansas School of Medicine. The courses listed below fulfill the science/math requirements at most U.S. medical schools and at the University of Kansas School of Medicine.

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
<td></td>
</tr>
<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
<td></td>
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<tr>
<td>CHM 351</td>
<td>Organic Chemistry I</td>
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<tr>
<td>CHM 352</td>
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<tr>
<td>CHM 355</td>
<td>Organic Chemistry II</td>
<td></td>
</tr>
<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
<td></td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td></td>
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<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
<td></td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td></td>
</tr>
</tbody>
</table>

**Pre-optometry**

In order to apply for admission to a school of optometry, students are expected to complete successfully at least three years of college work including a set of specified science and math courses and to present acceptable scores on the Optometry Admission Test. Students must receive a bachelor’s degree before the optometry degree will be granted. Pre-optometry is not a major toward an undergraduate degree.

The following courses satisfy the admission requirements at most optometry schools:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td></td>
</tr>
<tr>
<td>MATH 150</td>
<td>Plane Trigonometry</td>
<td></td>
</tr>
<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
<td></td>
</tr>
</tbody>
</table>
PHYS 113 General Physics I ......................... 4
PHYS 114 General Physics II ....................... 4
BIOL 198 Principles of Biology ..................... 4
BIOL 201 Organismic Biology ...................... 4
BIOL 455 Microbiology .............................. 4
BIOL 340 Structure and Function of the Human Body .......... 8
CHM 210 Chemistry I ................................. 4
CHM 230 Chemistry II ............................... 4
CHM 350 General Organic Chemistry Laboratory ..... 2
BIOCH 521 General Biochemistry .................. 3
PSYCH 110 General Psychology .................... 3
STAT 320 Elements of Statistics .................... 3

Requirements for some optometry schools vary, so consultation with the pre-optometry advisor is recommended.

Contact the College of Arts and Sciences dean’s office for more information.

Pre-veterinary

Seventy semester hours and satisfactory scores on the Graduate Record Exam are required for students applying for admission to the freshman class entering the College of Veterinary Medicine.

ENGL 100 Expository Writing I ....................... 3
ENGL 200 Expository Writing II ..................... 3
SPCH 105 Public Speaking I ......................... 4
CHM 210 Chemistry I ................................. 4
CHM 230 Chemistry II ............................... 4
CHM 350 General Organic Chemistry ............... 3
CHM 351 General Organic Chemistry Laboratory ..... 2
BIOCH 521 General Biochemistry .................. 3
PSYCH 110 General Psychology .................... 3
ENGL (Literature) 200+ ............................... 3

Because the pre-veterinary curriculum is not a degree-granting program, students in arts and sciences are encouraged to combine the pre-veterinary requirements with a degree-granting major of their choice. Students should consult the pre-veterinary advisor in the College of Arts and Sciences dean’s office.

High school seniors with a 29 or greater ACT score or a 1280 or greater SAT combined score qualify for application to the veterinary scholars early admissions program. For more information contact the College of Veterinary Medicine at 785-532-4335.

The pre-veterinary requirements may be completed in the College of Agriculture if a student’s major is in that college.

Pre-pharmacy

The admission committee of the Pharmacy School at the University of Kansas gives a preference to applicants who are Kansas residents. The following courses constitute their requirements.

ENGL 100 Expository Writing I ....................... 3
ENGL 200 Expository Writing II ..................... 3
CHM 210 Chemistry I ................................. 4
CHM 230 Chemistry II ............................... 4
CHM 531 Organic Chemistry I ...................... 3
CHM 532 Organic Chemistry Laboratory .......... 2
CHM 550 Organic Chemistry II ..................... 3
CHM 551 Advanced Organic Chemistry Laboratory . 2
MATH 220 Analytic Geometry and Calculus I ..... 4
BIOL 198 Principles of Biology ..................... 4
BIOL 340 Structure and Function of the Human Body .......... 8
PHYS 115 Descriptive Physics* ..................... 4
PHYS 101 Physical World* ......................... 3
SPCH 106 Public Speaking I ....................... 3
ENGL 100 Expository Writing I ....................... 3
Humanities and social sciences electives .......... 9
Free electives ........................................... 9

*Students who have completed high school physics with a grade of B or better may be exempt.

Requirements for other pharmacy schools vary, so consultation with the pre-pharmacy advisor is recommended.

Contact the College of Arts and Sciences dean’s office for more information.

Pre-nursing

Students entering the pre-nursing curriculum take the necessary courses and electives for transferring to a school of nursing. The number and types of courses taken will vary depending on the school of nursing the student desires to attend. For students entering a baccalaureate degree program in nursing, generally two years of course work (60–65 credit hours), as prescribed by the university granting the degree, are required.

The following are core requirements needed for most BSN programs:

ENGL 100 Expository Writing I ....................... 3
ENGL 200 Expository Writing II ..................... 3
SPCH 106 Public Speaking I ....................... 3
SOCIO 211 Introduction to Sociology ............... 3
PSYCH 110 General Psychology ................... 3
CHM 110/111 General Chemistry and Lab .......... 4
BIOL 198 Principles of Biology and Lab .......... 4
BIOL 510 Embryology .................................. 3
PSYCH 505 Abnormal Psychology ................... 3
BIOL 340 Structure and Function of the Human Body .......... 8
PSYCH 520 Life Span Personality Development .......... 3
FIN 132 Basic Nutrition ................................ 3
STAT One introductory statistics course .......... 3
Electives ................................................. 3

The number of additional specific courses and elective hours vary with the BSN program of your choice. Individual advising is strongly recommended.

Contact the College of Arts and Sciences dean’s office for more information.

Pre-physical therapy

To be eligible for the state’s two physical therapy master’s degree programs, which are located at the University of Kansas and Wichita State University, students should complete an undergraduate degree in the field of their choice. The following are core requirements needed for most physical therapy programs. Additional humanities, social sciences, and other electives are required and vary with each program. KU requires satisfactory scores on the Graduate Record Exam. Individual advising is strongly recommended.

ENGL 100 Expository Writing I ....................... 3
ENGL 200 Expository Writing II ..................... 3
SPCH 106 Public Speaking I ....................... 3
PSYCH 110 General Psychology ................... 3
PSYCH 505 Abnormal Psychology ................... 3
PSYCH 520 Life Span Personality Development .......... 3
SOCIO 211 Introduction to Sociology ............... 3
MATH 100 College Algebra ........................... 3
BIOL 198 Principles of Biology ..................... 4
BIOL 340 Structure and Function of the Human Body .......... 8
MATH 100 College Algebra ........................... 3
STAT One introductory statistics course .......... 3
PSYCH 520 Life Span Personality Development .......... 3
FN 132 Basic Nutrition ................................ 3
STAT One introductory statistics course .......... 3
Electives ................................................. 3

A minimum of 90 hours is required for application to KU’s master’s program in occupational therapy.

Individual advising is strongly recommended. Contact the College of Arts and Sciences dean’s office for more information.

Pre-respiratory therapy

Advising is available for two years of preparatory work for application to respiratory therapy programs. The following classes should be taken:

ENGL 100 Expository Writing I ....................... 3
ENGL 200 Expository Writing II ..................... 3
SPCH 106 Public Speaking I ....................... 3

*Tangible art/craft classes (metal and jewelry, drawing I, sculpture, weaving, ceramics, painting, etc.)
Any student—graduate or undergraduate—who is a U.S. citizen may become a cadet by enrolling in AERO 110. The duration of the program varies from two to four years, depending upon an applicant’s previous experience and the availability of different options.

Scholarships
Full-time students who qualify to become Air Force officers, with two or more years left for degree completion (including graduate study), are eligible to apply for scholarships. If selected, students will have their tuition, fees, and book expenses paid for by the U.S. Air Force; they will also receive a $200 monthly stipend while in school. All payments are tax free.

Students who apply for and receive the Air Force Pre-Health Professions Scholarship, and are subsequently accepted to medical school, are guaranteed scholarship through medical school. The Pre-Health Professions Scholarship pays for tuition, fees, and books, plus $200 monthly. The medical school scholarship pays med-school tuition, fees, books, and more than $950 per month.

High school students considering the four-year Air Force College Scholarship Program must be highly motivated toward becoming Air Force officers. To qualify, students should be above-average scholars, be physically capable, possess leadership potential, and apply before December of the senior year. Financial benefits are the same as the undergraduate scholarships mentioned earlier. Applicants should contact their high school counselor or an AFROTC officer for applications and further information.

Four-year program
Basic course
Students electing the four-year program normally will begin with the General Military Course during the freshman or sophomore year. This program consists of four semesters of 1 credit hour each, counts toward all bache-
or’s degrees awarded by K-State, and in no way obligates students to a military commitment. Aerospace studies GMC courses are open to all students at the university without obligation to military service. Students in the GMC are provided uniform, textbooks, and other equipment needed for their AFROTC courses. Students may begin enrollment in GMC courses at any time up to two years prior to graduation (graduate or undergraduate).

Advanced course
The Professional Officer Course is the upper-
class program and consists of four courses of 3 credit hours each, over a period of four semesters. All cadets in the POC become members of the Air Force Reserve and receive $200 a month and all necessary AFROTC texts and equipment. Upon completion of the POC and their degree requirements, students are commissioned as second lieutenants in the United States Air Force.

Two-year program
The two-year program consists of the POC phase only and may be taken during a stu-
dent’s final four semesters, undergraduate or graduate, at the university.

Prerequisites for selection include Air Force aptitude testing, an Air Force physical, and completion of five weeks of summer field training. Applicants should contact AFROTC before October 15.

Field training
Cadets practice their leadership and management
skills in a cadet group. Cadets who are in the four-year program attend four weeks of field training at an Air Force base during the summer prior to entering the POC. Two-year program cadets attend five weeks of field training. During training, cadets are paid approximately $140 per week, and receive travel pay to and from the training base.

Extracurricular activities
Students enrolled in Air Force ROTC may participate in many activities including detachment-sponsored events and social functions. Cadets pursuing officers’ commissions are eligible for membership in the Arnold Air Society, a national honorary professional and service organization established to foster good relations among Air Force ROTC, the Air Force, the campus, and the local community. Participation in the Arnold Air Society is voluntary.

Minor in military leadership
Military leadership is a multidisciplinary program designed to recognize the intensive leadership training completed by Air Force and Army officer candidates and to expand this knowledge and experience base through selected political science and history courses. Students who complete the minor program will then have their special knowledge documented on their transcript and diploma.

While designed for students in the Reserve Officer Training Corps, non-cadets who complete all program requirements can also receive this minor. See instructor for further details.

General military courses
AERO 099. Aerospace Studies Lab. (0) I. II. The leadership laboratory for aerospace studies. Students will receive leadership training and experience as well as training in Air Force customs and courtesies. Pr.: Instructor permission.


AERO 111. Aerospace Studies 1B. (1) II. U.S. strategic offensive and defensive forces; their mission, function, and employment. One hour of class a week.
AERO 210. Aerospace Studies 2A. (1) I. The development of air power from its beginnings to the end of World War II. It traces the development of various concepts of employment of air power. One hour of class a week.

AERO 211. Aerospace Studies 2B. (1) II. The development of air power from the close of World War II to the present. It focuses upon factors which have prompted research and technological change and stresses significant examples of the impact of air power on strategic thought. One hour of class a week.

AERO 215 AFROTC Summer Program. (4) I. Mission and organization of United States Air Force, including function and employment; development of air power from its beginning to the present. Emphasis on factors prompting research and technological change and impact of air power on strategic issues. Taught off campus at selected Air Force bases. Pr.: Open only to students entering AFROTC program at the junior level.

Professional officers courses

AERO 310. The Professional Officer 3A. (3) I. A study of USAF professionalism, leadership, and management. Includes the meaning of professionalism, professional responsibilities, leadership theory, functions and practices, management principles, and problem solving, and management tools, practices, and controls. Three hours of class a week.

AERO 311. The Professional Officer 3B. (3) II. Continuation of AERO 310. Three hours of class a week.

AERO 399. Problem in Aerospace Studies. (Var.) I, II. Work offered in any of the AFRTOC general or professional courses for students out of phase for graduation; material covered in a basic or advanced course. Pr.: Consent of department head.

AERO 410, Aerospace Studies 4A, (3) I. This course will examine the role of the professional officer in a democratic society; socialization processes within the armed services; the requisites for maintaining adequate national security forces; political, economic, and social constraints upon the overall defense policy-making process. Three hours a week.

AERO 411, Aerospace Studies 4B. (3) II. Focusing on the armed forces as an integral element of society, this course provides an examination of the broad range of American civil-military relations and the environmental context in which defense policy is formulated. Communication skills are stressed. The role of contemporary aerospace power, and current and future employment of aerospace forces will also be examined. Three hours of class a week.

AERO 491. Introduction to Flight Training. (1) II. Basic aerodynamics, aviation weather, navigation, flight/mission planning, and introduction to undergraduate pilot/navigator training. Normally taken by senior professional officer course students. Pr.: Consent of instructor.

Anthropology

See the Department of Sociology, Anthropology, and Social Work.

Art

Anna Calluori Holcombe, * Head


E-mail: art@ksu.edu

www.ksu.edu/art

Bachelor of arts

The B.A. degree in art consists of three parts: the general education courses outlined under the humanities curriculum; a core of beginning art courses to provide prerequisites and a broad range of art experience for the art major; and 15 hours concentration of related subjects that should provide a minimal basis for establishing professional competence.

Concentration possibilities are in one of the following: painting, printmaking, ceramics, sculpture, drawing, art history, metal-smithing and jewelry, graphic design, illustration, or digital arts.

The bachelor of arts degree requires a minimum of 48 semester hours in art. The major requirements are as follows:

- Art history (12 hours)
  - ART 195 Survey of Art History I .......................... 3
  - ART 196 Survey of Art History II .......................... 3
  - ART 545 Twentieth Century Art History I .............. 3
  - ART 550 Twentieth Century Art History II ............. 3
  - ART 100 2D Design ......................................... 3
  - ART 200 3D Design ......................................... 3
  - ART 190 Drawing I .......................................... 3
  - ART 210 Drawing II ......................................... 3
  - ART 225 Figure Drawing I .................................. 3
  - Two-dimensional course choice* .......................... 3
  - Three-dimensional course choice** ........................ 3
  - Major concentration ........................................... 15

- *Two-dimensional courses: Type and Design Principles, Oil Painting I, Photography in Art, Printmaking I, Watermedia I.

- **Three-dimensional courses: Ceramics I, Metalsmith and Jewelry, Sculpture I.

Bachelor of fine arts

The bachelor of fine arts degree is a professionally oriented undergraduate degree in art. It is designed primarily for those planning to become professional artists, artist-teachers, or art therapists. Greater emphasis is placed on actual practice in the creative art disciplines.

The degree is considered the appropriate preparation for the major of fine arts degree, which is recognized as the terminal degree in studio arts, and for a master’s degree in art therapy, which is required for registration as an art therapist. The B.F.A. in art is a four-year, 120-hour program with concentrations possible in painting, sculpture, ceramics, graphic design, printmaking, drawing, metal-smithing and jewelry, illustration, digital arts, and pre-art therapy.

Concentration admission procedure

Formal evaluation prior to admission to a chosen area of concentration is required upon completion of Department of Art foundation core. A display of selected completed foundation core work will occur at the end of the semester when the last of eight foundation courses (24 credit hours) will be completed. Visual course work must meet faculty approval, and a minimum 2.75 GPA in foundation courses is required. Upon passing the concentration admission procedure students may begin BFA study in the area of concentration they have selected.

An additional review opportunity is allowed after an unsuccessful attempt to pass the concentration admission procedure. The second attempt must be made at the end of the semester following the unsuccessful effort to pass the concentration admission procedure. The second attempt may, if so requested, occur in an area different from the first unsuccessful attempt.

Students not successful in a second attempt to pass the concentration admission procedure will be advised to consider the BA degree in art. For complete details on the concentration admission procedure, students may get a copy of the requirements from the Department of Art advisor.

The major requirements are as follows:

Foundation core

- ART 100 2D Design ........................................... 3
- ART 200 3D Design ........................................... 3
- ART 190 Drawing I .......................................... 3
- ART 210 Drawing II ......................................... 3
- ART 225 Figure Drawing I .................................. 3
- Two-dimensional course choice* .......................... 3
- Three-dimensional course choice** ........................ 3
- Two- or three-dimensional course choice*** ............ 3

Additional requirements

- Art history (15 hours)
  - ART 195 Survey of Art History I .......................... 3
  - ART 196 Survey of Art History II .......................... 3
  - 20th century art history requirement (6 hours)
    - Any two of the following:
      - ART 545 20th Century Art History I .............. 3
      - ART 550 20th Century Art History II ............. 3
      - ART 602 20th Century Art History III ............. 3
      - ART 603 20th Century Art History IV ............. 3
  - Art history electives ............................................ 3
  - ART 410 B.F.A. Exhibition .................................. 0
  - Major concentration ........................................... 21
  - Art electives ....................................................... 15

- *Two-dimensional courses: Type and Design Principles, Oil Painting I, Photography in Art, Printmaking I, Watermedia I.

- **Three-dimensional courses: Ceramics I, Metalsmith and Jewelry, Sculpture I.

Studies, laboratories, and equipment for creative work are provided and adequate to the needs of the art areas. Student work may be retained at the discretion of the faculty for an indefinite period of time for instructional and exhibition purposes.

Art education

Students may satisfy requirements to teach art in public schools by any of three programs: B.A. and teacher certification; B.F.A. and teacher certification; or B.S. in education with art concentration. Under the first two options...
students qualify for teacher certification by completing specified courses in the College of Education. See the College of Education approved programs section for more information.

Pre-art therapy
The B.F.A. with a pre-art therapy concentration provides a strong background in studio art and psychology plus an introduction to the field of art therapy. This program of study prepares students to do graduate studies in art therapy and related fields. To pursue a pre-art therapy concentration students must have completed 60 or more semester hours with a minimum of 2.5 K-State GPA overall. Completed K-State course work must include 9 hours of art studio and 9 hours of psychology.

Transfer students
Art hours transferred to K-State will be assigned by the art department. Students may use transfer hours toward their area of concentration only when obtained from a four-year college or university.

Computer application
The Department of Art includes a number of concentrations that require the use of the computer. The department, in order to help prepare students for their professional activities requires that students within these concentrations provide or have access to a computer and software to enhance their course of study. The Department of Art will provide information related to hardware and software options.

Art courses
ART 095. Art Assembly. (0) I, II. Recommended for all art and art education majors each semester. By appt.◆

ART 100. 2 Dimensional Design. (3) I, II, S. Introduc-
tion to and laboratory practice in the principles and elements of design. Emphasis is placed on organizational command of the two-dimensional picture plane and issues of illusion. Six hours lab.

ART 190. Drawing I. (3) I, S. Fundamentals of draw-
ing as applied to the realistic and expressive representation of objects through the use of a variety of media and approaches. Six hour lab.

ART 193. Beach Museum Seminar and Contemporary Society. (3) I, II. An introduction to the Beach Museum as an example of the function of a museum in contemporary society. Lec.

ART 195. Survey of Art History I. (3) I. Historical development of art from pre-history through the Middle Ages.

ART 196. Survey of Art History II. (3) II. Historical development of art from the Renaissance to the nineteenth century.

ART 200. 3 Dimensional Design. (3) I, S. Introduction to and laboratory practice in the principals and element of design. Emphasis is place in the perceptions and use of spatial properties as related to components of three-dimensional art and design. Six hours lab.

ART 201. Graphic Design Survey. (1) I, II. Overview of the historical, cultural, and social issues related to the prac-
tice of visual communications. Lec.

ART 205. Graphic Design Studio I. (3) I, II. Development and preparation of design concepts for appli-
cation to the printing process. (Black and white and color.) Six hours lab. Pr.: ART 201, 290.

ART 210. Drawing II. (3) I, II. Continuation of Drawing I, with strong emphasis on creative expression. Six hours lab. Pr.: ART 100, 190.

ART 220. Water Media I. (3) I, II. Introduction to paint-
ing with water-based media through a variety of techniques. Emphasis is placed on learning transparent watercolor. Six hours lab. Pr.: ART 100, 190.

ART 225. Figure Drawing I. (3) I, II. Sustained drawings of the human figure using a variety of media; introduction to human anatomy used by artists. Six hour lab. Pr.: ART 210.

ART 230. Sculpture I. (3) I, II. An introduction to the problems of sculptural form; fundamental techniques and theory in woodcarving, clay modeling, mold making, cast-
ing, oxy/acetylene welding, and metal casting. Six hours lab. Pr.: ART 200.

ART 235. Printmaking I. (3) I, II. Introduction to the intaglio, lithographic relief, and serigraph printmaking techniques and tools. Six hours lab. May be taken for four semesters. Pr.: ART 100, 190.

ART 240. Drawing III. (3) I, II. Continuation of Drawing II, emphasizing exploration in mixed media. Six hours lab. Be may taken for two semesters. Pr.: ART 225.

ART 245. Oil Painting I. (3) I, II. Introduction to oil painting through a variety of techniques. Six hours lab. Pr.: ART 100, 190.

ART 265. Ceramics I. (3) I, II. Introduction to basic hand building techniques; decoration of ceramic forms using slips, stains, glazes. Student participation in Raku firing procedures; stacking and firing of electric kilns. Six hours lab. Pr.: ART 200.

ART 270. Metalsmithing and Jewelry. (3) I, II, S. Design and execution of small-scale, three-dimensional objects, involving the basic processes of raising, forging, and fabri-
cation in semi-precious metals. The techniques of centrifugal and vacuum casting of precious metals will also be introduced as well as soldering and piercing. Six hours lab. Pr.: ART 200 or nonmajors consent of instructor.

ART 280. Art Education Seminar. (3) I, II. An introduction to concepts in art education. Research, literature, creativity, aesthetics, and the history of art education as they relate to teaching art. Six hours lab.

ART 285 Illustration. (3) I, II, S. Exploration of various applied drawing/painting/collage techniques and how they relate to illustration and layout. Various traditional and dig-
tal media will be utilized. Six hours lab. Pr.: ART 201.

ART 290. Type and Design Principles. (3) I, II. Ap-
plication of design and type principles to the development of let-
terforms and to principles of symbology. Selected topics in design, i.e., perception, figure/ground, shape, visual dynamics, Gestalt principle; fundamentals of the design process: research, thumbnails/roughs, comprehensive, pre-
sentation, paste-up, and digital fines. Six hours lab. Pr.: ART 201.

ART 295. Photography in Art I. (3) I, II. Understanding and using photography as an art form. The basic elements and principles of art are explored. Camera usage and photo-
graphic processing are covered. An adjustable camera is required. Six hours lab. Pr.: ART 100, 190 or consent of instructor.

ART 298. Concentration Admission Procedure. (0) I, II. The preparation and display of a student’s own creative work, upon completion of the Department of Art 24-credit-hour core. The concentration admission procedure occurs after student selection of an area of concentration within the BFA art major format and the attainment of a minimum GPA of 2.75 within the eight-studio-core course.

ART 300. Special Studies in Art. (1–3) I, II. Specialized workshops or seminars conducted in studio, art therapy, art education, or art history. Lec.

ART 301. Human Form and Composition. (3) Inter-
sections only. Building stylization and expressive image making of the human form with experimental methods: use of color, mono-print, mixed media. A connected and sus-
tained studio time available during intersession only, pro-
viding students a working rhythm without interruption from other course work. Six hours lab. Pr.: ART 100, 190.

ART 305. Introduction to Museum Studies. (3) I, II. Fundamentals of museum work including specific museum functions, museum personnel, and proper care and handling of art works.

ART 376. Studio Art Exploration. (3) II. Studio experi-
cences in a variety of media including printmaking, fibers, drawing, and sculpture. Art materials, techniques, and pro-
cesses are explored. Six hours lab. Pr.: ART 100, 190, and 200.

ART 386. Photography in Art II. (3) I, II. S. Creative exploration of broad-based approaches to photographic images. Both camera and darkroom manipulations will be used in the process of image making. Six hours lab. Pr.: ART 295.

ART 395. Digital Photography. (3) I, II. Introduction to the principles and aesthetics of digital image processing. Hands-on activities will permit each student to explore the creative potential of electronic photography and imaging. Pr.: ART 386 and instructor permission.◆

ART 399. Sophomore Honors Seminar in Art. (3) Selected topics in art. Pr.: For students in the honors pro-
gram only.

ART 400. Computer Imaging. (3) I, II. Exploration of computer imaging through the use of paint system and image processing technologies. Two hours lecture, four hours lab a week. Pr.: ART 200 and 210.

ART 405. Illustration II. (3) I, II. Advanced studio that explores various techniques in illustration in traditional and digital media. Six hours lab. Pr.: ART 285.

ART 410. B.F.A. Exhibition. (0) I. The preparation and execution of a senior exhibition of the student’s own crea-
tive work primarily from his/her area of concentration. The option of a portfolio presentation exists for students whose area of concentration is graphic design. The student will be responsible for all the arrangements for the exhibi-
tion including scheduling, installation, and publicity.

ART 425. Art for Elementary Schools. (3) I, II, S. Art methods, materials, and philosophy of children’s art at dif-
erent grade levels. Six hours lab.

ART 430. Independent Study—Ceramics. (1–5) I, II, S. Work in ceramics after competency has been achieved. Personal development is emphasized.

ART 435. Independent Study—Crafts. (1–5) I, II, S. Work in crafts after competency has been achieved. Per-
sonal development is emphasized.

ART 440. Independent Study—Drawing. (1–5) I, II, S. Work in drawing after competency has been achieved. Per-
sonal development is emphasized.

ART 445. Independent Study—Graphic Design. (1–5) I, II, S. Work in graphic design after competency has been achieved. Personal development is emphasized.

ART 450. Independent Study—Metalsmithing and Jewelry. (1–5) I, II, S. Work in metalsmithing and jewelry after competency has been achieved. Personal development is emphasized.

ART 455. Independent Study—Painting. (1–5) I, II, S. Work in painting after competency has been achieved. Per-
sonal development is emphasized. Permission of instructor and painting area head required.

ART 466. Independent Study—Printmaking. (1–5) I, II, S. Work in printmaking after competency has been achieved. Personal development is emphasized.

ART 465. Independent Study—Sculpture. (1–5) I, II, S. Work in sculpture after competency has been achieved. Per-
sonal development is emphasized.

ART 470. Independent Study—Water Color. (1–5) I, II, S. Work in water color after competency has been achieved. Personal development is emphasized.

ART 480. Independent Study/Research Computer Art and Design. (3) I, II, S. This course is intended to provide students an opportunity to focus on a specific visual pro-
jectproblem that will be solved using computers to focus on as the primary tool/medium. Pr.: ART 400.
ART 545. Twentieth Century Art History I. (3) I. Origins and development of twentieth century art from 1890 to 1914. Pr.: ART 195 or 196.

ART 550. Twentieth Century Art History II. (3) II. Origins and development of twentieth century art from 1914 to 1950. Pr.: ART 195 or 196.

ART 560. Ceramics for the Individual. (3) I, II. Using art concepts and activities to meet the needs of the mentally deficient, physically impaired, or emotionally disturbed. Adaptation will be based upon art development of the intact individual. Three hours lect. Pr.: PSYCH 110. Same as EDCI 560.

ART 565. Ceramics II. (3) I, II. Advanced work on potter’s wheel combined with hand-built forms. Consideration of simple kiln design, firing techniques, and procedures using various fuel burning kilns. Six hours lab. May be taken for four semesters. Pr.: ART 265.

ART 570. Oil Painting II. (3) I, II. Continuation of Oil Painting I. Emphasis on a more extensive understanding of concepts about painting which will lead to the development of a wider range of professional experience and expression. Six hours lab. Pr.: ART 245.


ART 577. Graphic Design and Illustration III. (Workshop-Matrix) (3) I, II, S. Students selected by portfolio review, design projects to client specifications. May be repeated. Pr.: ART 576 or consent of instructor.


ART 582. Internships in Graphic Design. (1–3) I, II, S. The student works with the supervision of faculty and an appointed professional. Emphasis is on the development of approaches to problem solving and strengthening related skills in visual communications within a professional setting. May be repeated for up to 9 hours credit. Pr.: ART 575 and consent of instructor.


ART 590. Approaches to Art Therapy. (3) I, II, S. Supervised studies in research relating to the art therapy profession, its current developments, and goals. Pr.: ART 560 or junior standing in a program that emphasizes work with special population groups and consent of instructor.

ART 595. Independent Study in Art Therapy. (1–5) I, II, S. This course offers students who have fulfilled the full sequence of coursework an opportunity for individual advanced study. Area of research to be selected by the student under the advisement of the instructor. Pr.: ART 560, 590 and consent of the instructor.

ART 602. 20th Century Art History III. (3) I, II. Art movements beginning with abstract expressionism and continuing through pop, op, minimal, and conceptual art movements up to 1980. Pr.: ART 195 or 196.

ART 603. 20th Century Art History IV. (3) I, II, S. The art movements of the 1980s beginning with photo-realism and continuing through pattern and decoration, new image art, neo-expressionism, and neo-abstraction. Pr.: ART 195 or 196.

ART 604. Greek Art History. (3) I, II. The art of classical Greece, from its Aegean origins through the Hellenistic period. Pr.: ART 195 or 196.

ART 608. Special Studies in Art. (1–6) I, II. Specialized workshops or seminars conducted in studio, art therapy, art education, or art history. Pr.: Three credit hours in the relevant area.

ART 612. Renaissance Art History. (3) I, II. Renaissance art and culture of northern Europe in the fifteenth and sixteenth centuries, with a brief discussion of its fourteenth century origins. Pr.: ART 195 or ART 196.

ART 622. Baroque Art History. (3) I, II. The development of the baroque period in northern and southern Europe, from its beginnings in the early seventeenth century to the rococo style of the eighteenth century. Pr.: ART 195 or 196.


ART 628. Foreign Studies in Art History. (1–6) I, II, S. Participation in art history study abroad. Pr.: Three credit hours of art history and consent of instructor.

ART 630. Foreign Studies in Studio Art. (1–6) I, II, S. Participation in studio art study abroad. Pr.: Three credit hours of studio art and consent of instructor.

ART 632. The Development of American Art. (3) I, II. American art from the Colonial period to the beginnings of abstract expressionism in the early 1940s, with major emphasis on the late nineteenth and early twentieth century developments. Pr.: ART 195 or 196.

ART 634. History of Modern Sculpture. (3) I, II. Direction in sculpture since the time of Rodin. Pr.: ART 195 or 196.

ART 642. Nineteenth Century Art History. (3) I, II. Painting, sculpture, and architecture of the late eighteenth and nineteenth centuries, with emphasis on the art of France. Pr.: ART 195 or 196.

ART 654. Women in Art. (3) I, II. The work of women artists from early Middle Ages to the twentieth century, with emphasis on the contemporary period. Pr.: ART 195 or 196.

ART 662. Southwestern Indian Arts and Culture. (3) I, II. The development of southwestern Indian silversmithing, weaving, pottery, basketry, and painting from the prehistoric period through the twentieth century. Pr.: ART 195 or 196.

Undergraduate and graduate credit
ART 600. Advanced Drawing. (1–5) Credit over 3 credits must be approved by the instructor. I, II. Upper-level drawing, development, and personal motivation. Lectures and problems directed toward understanding of the historical development of drawing as well as investigations of contemporary attitudes. Pr.: ART 645. ART 225, 240.

ART 601. Graphic Design History/Theory/Criticism. (3) I, II. Significant works from late nineteenth century to the present to provide understanding of the development and character of graphic design, artists, and designers. Six hours lab. Pr.: ART 576.

ART 610. Figure Drawing II. (3) I, II. Continuation of Figure Drawing I, with emphasis on individual expression. Six hours lab. Pr.: ART 225.

ART 615. Figure Painting. (3) I, II. Painting from the human figure with oil and plastic media. Six hours lab. Pr.: ART 225.

ART 620. Water Media II. (3) I, II. Upper-level painting with emphasis on individual expression in water-based media, acrylic watercolor, gouache. Six hours lab. Pr.: ART 220.


ART 624. Photography Art Direction. (3) I, II. Relationship of photography to graphic design. Art direction of photographs, programs, and related darkroom experimenta-

ART 625. Independent Study—Art Education. (1–5) I, II. Work offered in art education after competency has been achieved. Personal development is emphasized. Pr.: Full sequence of courses related to art education subject matter.


ART 635. Printmaking II. (3) I, II. Advanced work in blockprints, serigraphy, lithography, and intaglio. Six hours lab. Pr.: ART 235.


ART 650. Advanced Painting III. (3–6) I, II. Continuation of Painting II. Emphasis on individual directions in painting to attain personal expression and competency. Pr.: ART 220, 245, 570 or 620.

ART 655. Metalsmithing Techniques. (3) I, II. Surface embellishment, container construction of various tech-

ART 656. Ceramics III. (1–5) I, II. Individual exploration and further development of ceramic design and glaze technol-

ART 658. Advanced Study in Art Therapy. (Var.) I, II, S. Specialized advanced study. Area of research to be selected by the student under the advisement of the instructor. Pr.: ART 655.

ART 660. Sculpture III. (1–5) I, II. Continuation of Sculpture II. Further exploration of media and technique, emphasizing the development of individual direction and expression. Pr.: ART 655. Three credit hours lab. May be taken for four semesters. Pr.: ART 270.

ART 665. History of Ceramics. (3) I, II. History and development of ceramics; study of the use of pottery and other aspects of ceramics from earliest known records to present day. Use of slides and other visual materials. Pr.: ART 195 or 196.

ART 680. Metals Workshop. (1–5) I, II. A number of techniques, with emphasis on experimental problems and possibilities. The development of an individual point of view will predominate throughout the course. Pr.: ART 655. May be repeated twice. Pr.: ART 655.


ART 690. Techniques in Teaching Art. (Var.) I, II. Lectures and class discussion of methods, consideration of suitable laboratory equipment, use of illustrative material, and preparation of courses of study. Pr.: Twelve hours in art or consent of instructor.

ART 695. Topics in Art History. (Var.) I, II, S. Independent exploration in selected problems in art history. Pr.: Twelve hours art history.

Biochemistry

Charles Hedgcoth,* Head
Professors Davis,* Hedgcoth,* Kanost,* Kramer,* Muthukrishnan,* Reeck,* Roche,* D. Takemoto,* and Tomich,* Associate Professors Krishnamoorthi* and Wang,* Assistant Professors P. Smith,* A. Zolkiewska,* and M. Zolkiewski,* Research Assistant Professors Iwamoto and

Arts and Sciences 99
Biochemistry seeks to understand the molecular events of life processes. It applies chemical and physical techniques to elucidate the structure and organization of molecules, particularly macromolecules that are responsible for the structural organization as well as operation and control of all cellular processes. The emerging knowledge has broad importance and consequences for all areas of the life sciences.

The Department of Biochemistry offers work leading to bachelor of arts and bachelor of science degrees with majors in biochemistry. The B.A. degree provides a liberal education with sufficient emphasis on science for students who wish to prepare for certain professional schools. The B.S. degree prepares students for professional careers in biochemistry or entry into graduate biochemistry training programs.

To graduate, a student must have a grade of C or better in all science and mathematics courses required for the degree, including transfer courses, as specified below. In addition, to graduate a student must have a 2.2 GPA in required science and mathematics courses taken at K-State.

**Bachelor of arts**

The requirements for the B.A. degree with a major in biochemistry include the general requirements of the College of Arts and Sciences plus the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOCH 100</td>
<td>Biochemistry Orientation</td>
<td>1</td>
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<tr>
<td>CHM 220</td>
<td>Chemical Principles I</td>
<td>5</td>
</tr>
<tr>
<td>CHM 250</td>
<td>Chemical Principles II</td>
<td>5</td>
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<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
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<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
<td>4</td>
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<tr>
<td>CHM 371</td>
<td>Chemical Analysis</td>
<td>4</td>
</tr>
<tr>
<td>CHM 531</td>
<td>Organic Chemistry I</td>
<td>3</td>
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<tr>
<td>CHM 550</td>
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<tr>
<td>CHM 532</td>
<td>Organic Chemistry Laboratory</td>
<td>2</td>
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<tr>
<td>BIOCH 290</td>
<td>Biochemistry Seminar</td>
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<td>BIOCH 522</td>
<td>General Biochemistry Laboratory</td>
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<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus</td>
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<td>MATH 221</td>
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<td>BIOL 198</td>
<td>Principles of Biology</td>
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<td>BIOCH 101</td>
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<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
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<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
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<td>Biological science electives</td>
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</tbody>
</table>

These science courses satisfy the mathematics and natural sciences requirements shown in the general requirements for the B.A. degree.

**Bachelor of science**

The requirements for the B.S. degree with a major in biochemistry include the general requirements of the College of Arts and Sciences plus the following:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>BIOCH 100</td>
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</tr>
<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Analytic Geometry and Calculus</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
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<tr>
<td>Biological science electives</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

**Biochemistry courses**

**BIOCH 100. Biochemistry Orientation.** (1) I. Discussion of biochemistry as a discipline in the life sciences.

**BIOCH 101. Biochemistry Colloquium.** (2) I. II. Offered by TELNET. Topics in biochemistry chosen to illustrate current research of scientists and methods chosen to study biological problems from a biochemical point of view. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to biochemistry majors.

**BIOCH 110. Biochemistry and Society.** (3) I. II. A cultural and environmental approach to biochemical compounds and circumstances affecting man. Topics to be discussed include compounds of biochemical interest, biochemical evolution, food additives, heavy metals, drugs and certain control chemicals, e.g., pesticides. Intended for nonscience majors.

**BIOCH 265. Introductory Organic and Biochemistry.** (5) I. II. For students in human ecology, nursing, and other areas desiring an integrated organic and biochemistry course to provide an understanding of carbohydrates, proteins, lipids, and digestive and metabolic systems. Three hours lec. and six hours lab a week. Pr.: CHM 110.

**BIOCH 290. Biochemistry Seminar.** (2) I. Lectures and discussions on basic topics in biochemistry. Pr.: BIOCH 100.

**BIOCH 399. Honors Seminar in Biochemistry.** (3) II. Lecture, guided reading, and discussion of topics of general interest in biochemistry. Topics will vary depending on the interests and backgrounds of students enrolled. Pr.: Freshman Honors Seminar.

**BIOCH 499. Senior Honors Thesis.** (2) I, II. S. Open only to seniors in the arts and sciences honors program. May be used by honors students to satisfy B.S. requirement for BIOCH 799. Pr.: BIOCH 755 or conc. enrollment.


**BIOCH 522. General Biochemistry Laboratory.** (2) I, II. S. One-semester laboratory course with experiments relating to carbohydrates, lipids, proteins, nucleic acids, and enzymes. Six hours lab a week. Pr.: CHM 351 and BIOCH 521 or conc. enrollment. Pr.: BIOCH 755 or conc. enrollment.

**BIOCH 590. Physical Studies of Biomacromolecules.** (3) II. A lecture course providing an overview of the concepts and techniques of physical science as they are applied to study the structure and function of biomacromolecules, such as proteins and DNA. The applications discussed will range from those utilizing classical equilibrium thermodynamics to spectroscopic methods such as mass spectrometry, circular dichroism (CD), and nuclear magnetic resonance (NMR). Pr.: CHM 500 or equiv., and MATH 220 and 221, or equiv., and PHYS 113 and 114, or equiv.

**BIOCH 599. Research Training in Biochemistry.** (1–3) I, II. S. Provides laboratory experience for majors and nonmajors in research techniques contributing to ongoing biochemistry research. Pr. may be used by students interested in a two-semester comprehensive coverage of biochemistry. Pr.: BIOCH 521. Pr.: *Background adequate for relevant techniques.

**Undergraduate and graduate credit**

**BIOCH 755. Biochemistry I.** (3) I. An introduction to physical methods, kinetics, and thermodynamics of biochemical reactions and bioenergetics, chemistry of proteins and amino acids, carbohydrate chemistry, and metabolism. BIOCH 755 and 765 are for students interested in a two-semester comprehensive coverage of biochemistry. For a one-semester laboratory course, enroll in BIOCH 521. Pr.: *Chemical analysis, one year of organic chemistry, differential and integral calculus.

**BIOCH 756. Biochemistry I Laboratory.** (2) I. An intensive laboratory course to accompany BIOCH 755. BIOCH 756 and 766 are sequential courses for students interested in three-semester comprehensive coverage of biochemistry. Pr.: *Background adequate for relevant techniques.

**BIOCH 765. Biochemistry II Laboratory.** (2) I. A continuation of biochemical reactions and bioenergetics, chemistry of proteins and amino acids, carbohydrate chemistry, and metabolism. BIOCH 755 and 765 are for students interested in a two-semester comprehensive coverage of biochemistry. For a one-semester laboratory course, enroll in BIOCH 521. Six hours lab a week. Pr.: BIOCH 755 or conc. enrollment.


**BIOCH 766. Biochemistry II Laboratory.** (2) II. A continuation of BIOCH 756. Six hours lab a week. Pr.: BIOCH 756 and 765 or conc. enrollment.

**BIOCH 790. Physical Biochemistry.** (3) I. A survey of biophysical methods most frequently encountered in biochemistry and related disciplines. The course emphasizes principles underlying methods used to determine the molecular weight and shape of biopolymers, and techniques
used to detect conformational changes in polynucleotides, proteins, and polysaccharides. Pr.: Calculus, a course in physical chemistry, BIOCH 765 and 766.

**BIOCH 799. Problems in Biochemistry.** (Var.) I, II, S. Problem may include laboratory or library work in various phases of biochemistry, agricultural chemistry, or nutrition. Pr.: *Background adequate for problem undertaken.

*Nonmajors lacking these prerequisites should obtain consent of instructor before enrollment.*

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**Biology**

**Brian S. Spooner,** *Division Director*

**Larry G. Williams,** *Associate Director, Undergraduate Studies*

University Distinguished Professors Conrad,* T. Johnson,* and Spooner;* Professors Chapes,* Denell,* Guikema,* Hartnett,* Kaufman,* Knapp,* Perchellet,* Robel,* C. Smith,* Takemoto,* and Upton,* Associate Professors Blair,* Dodds,* Consigli;* Professors Barkley,* Bode,* Center,* Fina,* Hansen,* Kramer,* Pady,* Pittenger,* Roufa,* and Zimmerman,* Emeriti: University Distinguished Professor Consigli,* Professors Barkley,* Bode,* Center,* Fina,* Hansen,* Kramer,* Pady,* Pittenger,* Roufa,* and Zimmerman,* Associate Professors Klaassen,* Lockhart,* Spooner,* and Weis,* Instructor Kundiger.

www.ksu.edu/biology

The biology undergraduate requirements provide students a basic understanding of biological principles and methods, and allow students to build on that base by further intensive or extensive study.

Course offerings and curricula accurately reflect both recent developments in the field of biology and changing requirements of students. Undergraduate majors are offered in biology, microbiology, and fisheries and wildlife biology, plus the professional (para-medical) and pre-professional areas. Students majoring in areas of the Division of Biology are assigned advisors to assist in planning their academic programs. Course offerings and degree requirements are sufficiently broad to allow great flexibility in tailoring a program of study to the interests and needs of an individual student. Undergraduate curriculum planning, including choice of areas of emphasis and elective courses, is ultimately the responsibility of students in consultation with their advisors.

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**Biological majors**

Students in this major may obtain either the B.A. or B.S. degree. In addition to the requirements of the College of Arts and Sciences, biology majors must take the courses of blocks A, B, and C as listed below.

**Block A: Courses offered by other departments**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>MATH 220</td>
<td>Analytical Geometry and Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
<td>4</td>
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<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
<td>4</td>
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<tr>
<td>CHM 350</td>
<td>General Organic Chemistry</td>
<td>3</td>
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<tr>
<td>CHM 351</td>
<td>General Organic Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BIOCH 521</td>
<td>General Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
<td>4</td>
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</tbody>
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**Block B: Division of Biology courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 201</td>
<td>Organismic Biology</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 450</td>
<td>Modern Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 541</td>
<td>Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 755</td>
<td>Genetics of Microorganisms</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 770</td>
<td>Microbial Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 775</td>
<td>Virology Laboratory (lab course)</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 776</td>
<td>Genetic Engineering</td>
<td>2</td>
</tr>
<tr>
<td>STAT 340</td>
<td>Biometrics I</td>
<td>3</td>
</tr>
</tbody>
</table>

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**Microbiology degree**

Students in microbiology may obtain either the B.A. or B.S. degree. The requirements for a microbiology major, in addition to those requirements of the College of Arts and Sciences, include blocks A, B, and C as listed below.

**Block A: Courses offered by other departments**

<table>
<thead>
<tr>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>CHM 350</td>
<td>General Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHM 351</td>
<td>General Organic Chemistry Laboratory</td>
<td>2</td>
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<td>BIOCH 521</td>
<td>General Biochemistry</td>
<td>3</td>
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<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td>4</td>
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<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
<td>4</td>
</tr>
</tbody>
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**Block C: Biology major electives**

In addition to the Block A courses, students must take a minimum of 18 credit hours of biology courses at the 400* level or higher, including two courses providing a laboratory experience.

*Students who take BIOL 340 will be awarded 3 hours of biology elective credit.

Because the biology major has room for at least 20 hours of free electives beyond the 18 hours of biology electives, it is a popular major for students aiming at a variety of professional health disciplines, at graduate programs ranging from molecular biology to ecology, and at a diversity of bachelor’s-level jobs. Depending on the student, free electives could be courses in computer science, statistics, foreign language, business, etc. and/or additional courses in biology, biochemistry, chemistry, and math.

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**Fisheries and wildlife biology**

Students in this major may obtain either the B.A. or B.S. degree. In addition to the requirements of the College of Arts and Sciences, fisheries and wildlife biology majors must take the courses of Block A, Block B, and one of the three options of Block C as shown below. Students who wish to qualify for professional certification as a fisheries or wildlife biologist should consult their academic advisors about any additional courses needed for such certification.

**Block A: Courses offered by other departments**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>SPCH 106</td>
<td>Public Speaking I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 115</td>
<td>Descriptive Physics</td>
<td>4</td>
</tr>
<tr>
<td>CJS 101-104</td>
<td>Applied computer science courses</td>
<td>4</td>
</tr>
<tr>
<td>STAT 340</td>
<td>Biometrics I</td>
<td>3</td>
</tr>
</tbody>
</table>
to assure the proper planning of an academic program to meet their professional goals.

Students preparing to be biology teachers in secondary education are encouraged to pursue a degree program in the Division of Biology. Students should utilize both an advisor in the College of Education (regarding certification requirements and education courses) and a Division of Biology advisor.

**Biology minor**

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 201</td>
<td>Organicism Biology</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 433</td>
<td>Wildlife Conservation</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 450</td>
<td>Modern Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 529</td>
<td>Fundamentals of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 632</td>
<td>Ecology Laboratory</td>
<td>1</td>
</tr>
</tbody>
</table>

Plus at least two courses in the Division of Biology (400 level or above) totaling 5 hours or more.

Twelve additional biology hours, eight of which must be numbered at 400 or above.

**Undergraduate research**

The Division of Biology encourages exceptionally motivated students to participate in biology research, as a way of using information obtained in the classroom. This is especially encouraged for students intending to apply to graduate programs or professional programs following graduation. Students may receive course credit for these activities, which can be used to fulfill major elective requirements. Opportunities are available in the laboratories of individual faculty members, often with funding provided from research grants obtained by faculty efforts. Students may learn of these opportunities by discussion with faculty members having interests in biology which are similar to their own.

**Biology courses**

- **BIOL 198. Principles of Biology.** (4) I, II, S. An introductory course for majors and nonmajors focusing on plants, animals and microbes. Specific areas covered include biological molecules, cells, genetics, energy flow, physiology, ecology, and evolution. Studio format incorporating lab, rec. and elements in two-week sessions per week.
- **BIOL 201. Organicism Biology.** (5) I. A study of the structure and function of organisms with special attention paid to the phylogenetic origins of taxonomic groups and the integration of their structural systems. Three hours lec. and four hours lab. Pr.: BIOL 198 or equiv.
- **BIOL 210. General Botany.** (4) I, II. Plant groups and their evolutionary development. Physiology, anatomy, ecology, identification of seed plants, and economic applications. Two hours lec. and six hours lab a week.
- **BIOL 222. Field Ornithology.** (1) I, II. An odd years. Identification of bird species in the field and the illustration of attributes of avian behavior and ecology. One three-hour lab a week. Pr.: Sophomore standing.
- **BIOL 303. Ecology of Environmental Problems.** (3) II. Principles of ecology and their application to such problems as pollution, human population growth, and land-use planning. Two hours lec. and one hour discussion a week. Pr.: Two courses in natural science.
- **BIOL 310. Bioethics.** (3) II. Discussions of the development and use of biomedical technology and its social, moral, and ethical impact on the human spectrum from conception to death. Three hours lec. per week. Pr.: Junior standing.
- **BIOL 320. Economic Botany.** (3) I, II. Origin and uses of cultivated plants useful to humans, especially grains, legumes, spices, beverage plants, fibers, and dyes. Pr.: BIOL 198 or BIOL 210.
- **BIOL 330. Public Health Biology.** (3) I. Fundamental concepts of human infectious and organic diseases with emphasis on disease etiology and mechanisms, collection of epidemiological data, and the influences upon, and consequences of, governmental public health policy. Two hours lec. and one hour rec. per week. Pr.: BIOL 198.
- **BIOL 340. Structure and Function of the Human Body.** (6) I, II. Anatomy and physiology of the organ systems of the human body. Laboratory includes physiological experiments, study of anatomy from human cadavers, dissection experience, x-rays, and slide work. Five hours lec. and two three-hour lab sessions a week. Pr.: BIOL 198.
- **BIOL 365. Practicum in Biology.** (1–4) I, II. Experimental approaches to learning biology through teaching. One hour rec. a week plus three to nine hours lab a week. Pr.: Permission of instructor and credit with superior performance in the course in which the student will be involved.

**BIOL 397. Topics in Biology.** (1–6) I, II, S. Pr.: Consent of instructor.

**BIOL 399. Honors Seminar in Biology.** (1–3) Selected topics. Open to nonmajors in the honors program.

**BIOL 404. Biology of Aging.** (3) II. An introduction to theories, both physiological and evolutionary, proposed to explain the aging phenomena. Major emphasis on a systems approach, e.g., circulatory, nervous, etc. A course of this system includes a review of normal structure and function, age-related changes and age-related dysfunctions and diseases. Pr.: BIOL 198; and GERON 315 or a second course in biology.


**BIOL 433. Wildlife Conservation.** (3) I. An introductory course to the fields of fisheries and wildlife conservation, history of the conservation movement, review of important wildlife species, overview of management concepts, and exposure to wildlife-related issues. Pr.: BIOL 201.

**BIOL 450. Modern Genetics.** (4) I, II. An introduction to the principles and mechanisms of inheritance at both the organismic and molecular levels. Provides an integrated approach to transmission genetics and the fundamentals of molecular biology. Topics covered include Mendelian inheritance, DNA and chromosome structure, gene expression, mutation, recombinant DNA, quantitative inheritance, population, and evolutionary genetics. Three hours lec. and one hour rec./studio. Pr.: BIOL 198, CHM 230, MATH 100.

**BIOL 455. General Microbiology.** (4) I, II. Micro-organisms; their handling, morphology, growth, and importance. Two hours lec. and four hours lab a week. Pr.: BIOL 198 and one course in chemistry.

**BIOL 495. Topics in Biology.** (1–6) I, II, S. Pr.: Consent of instructor.

**BIOL 496. Honors Tutorial in Biology.** (1–3) I, II, S. Individual directed research and study of a topic in biology, normally as a prerequisite to writing a senior honors thesis. May be repeated once to a total of 3 hours credit. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of instructor.

**BIOL 497. Senior Honor Thesis.** (2) I, II, S. Open only to seniors in the arts and sciences honors program.

**BIOL 500. Plant Physiology.** (4) I. Detailed consideration of physiological processes of higher plants. Three hours lec. and three hours lab a week. Pr.: BIOL 201 or 210; and a course in organic chemistry.

**BIOL 510. Embryology.** (3) I, II. Developmental biology of animals. Three hours lec. a week. Pr.: BIOL 198.

**BIOL 511. Embryology Laboratory.** (1) I. One three-hour lab a week. Pr.: BIOL 510 or conc. enrollment.

**BIOL 513. Physiological Adaptations of Animals.** (3) I. Integration of physiological mechanisms as the basis for adaptive responses of animals to different environments. Pr.: BIOL 201; and a course in organic chemistry or biochemistry.

**BIOL 514. Physiological Adaptations of Animals Laboratory.** (1) I. One three-hour lab a week. Pr.: Conc. enrollment in BIOL 513.
BIOL 515. Behavioral Ecology. (3) II. Study of the social, environmental, genetic, and evolutionary processes that affect animal behavior. Topics include evolution of social organization, spacing and group behavior, mating systems and reproductive behaviors, sexual selection, communication, aggression, habitat selection, and foraging. Research project required. Pr.: BIOL 201.

BIOL 529. Fundamentals of Ecology. (3) I. Ecosystem structure and function including energy flow; biogeochemical cycling; effect of climate, soil, fire, succession; application to land management practices. Three hours lec. a week and optional field trips. Pr.: BIOL 201 or 210; and CHM 210.

BIOL 530. Pathogenic Microbiology. (3) I. Ecology and descriptions of major infectious diseases of humans within the context of host defense. Two hours lecture and one hour laboratory-demonstration a week. Pr.: BIOL 455.

BIOL 541. Cell Biology. (3) II. Structure and function of cells and subcellular components. A molecular understanding of membranes and cellular physiology will be emphasized. Three hours lec. Pr.: BIOL 450 and CHM 350.

BIOL 542. Ichthyology. (3) II. In even years. Systematics, morphology, physiology, distribution, and natural history of fishes. Two hours lec. and three hours lab a week. Pr.: BIOL 201.

BIOL 543. Ornithology. (3) II. Classification, morphology, physiology, distribution, and natural history of birds. Two hours lec. and two hours lab a week. Pr.: BIOL 201.

BIOL 544. Mammalogy. (3) I. Characteristics, evolution, life histories, and ecology of mammals, especially North American game species. Two hours lec. and three lab hours a week. Pr.: BIOL 201.

BIOL 545. Human Parasitology. (3) II. Protozoan and helminth parasites of humans with lesser emphasis on ectoparasitic arthropods. Pr.: BIOL 201 and laboratory diagnosis. Three hours lec. a week. Pr.: BIOL 198.

BIOL 546. Human Parasitology Laboratory. (1) II. Examination of prepared materials and identification of internal parasites of man. Two hours lec. and three hours lab a week. Pr.: BIOL 545.

BIOL 551. Taxonomy of Flowering Plants. (4) I. Morphology, taxonomy, and biogeography of the vascular plants. Two hours lec. and two three-hour labs a week. Pr.: BIOL 201 or 210.

BIOL 560. Human Oncology. (3) II. In even years. Study of the pathogenesis of human cancer with emphasis on the biological, biochemical, and molecular mechanisms involved in the multistage process of tumorigenesis and the role of biological, chemical, and physical carcinogens in neoplasia. Three hours lecture per week. Pr.: Two courses in biology and a course in organic chemistry.

BIOL 604. Biology of the Fungi. (3) I. An introduction to fungal structure, function, physiology, ecology, and genetics. Importance of fungi as disease organisms, as saprotophs, and in industry. Techniques of culture, isolation, cultivation, and as experimental organisms. Two hours lec. and two hours lab a week. Pr.: BIOL 198 or 210.

BIOL 612. Limnology. (4) I. In even years. Basic ecologi- cal principles of aquatic environments. Plants and animals of local streams, rivers, ponds, and reservoirs are used to demonstrate the principles of biological processes with the chemical and physical features of natural aquatic environments. Three hours lec., three hours lab a week; two optional weekend field trips. Pr.: BIOL 201 and CHEM 110 or 210.

BIOL 620. Evolution. (3) III. A study of the theory of evolution including its historical and social implications. Three hours lec. a week. Pr.: BIOL 450 or a course in genetics.

BIOL 625. Animal Parasitology. (4) I. In odd years. Biology and pathology of the principal protozoan, helminth, and arthropod parasites of domestic animals and wildlife. Three lecture hours and two lab hours a week. Pr.: BIOL 198 and junior standing.

BIOL 632. Ecology Laboratory. (1) I. Laboratory and field experiences with ecological problems. Pr.: STAT 340 or equiv., and BIOL 529.

BIOL 670. Immunology. (4) II. Chemical, genetic, and biological properties of the immune response, acquired immunity, and antibody production. Pr.: Two courses in biology; and a course in biochemistry or equiv.

BIOL 671. Immunology Lab. (2) II. Laboratory exercises in immunology. Pr.: BIOL 670 + 67 conc. enrollment. Three-hour lab a week plus one hour rec.

BIOL 675. Genetics of Microorganisms. (3) I. The genetics of bacteria, viruses, and other microorganisms. Both the use of genetics in microbiological studies and the use of microbial systems to investigate basic genetic problems will be covered. Pr.: BIOL 450 and 455.

BIOL 676. Molecular Genetics Laboratory. (3) I. An advanced course in the techniques of molecular genetics and recombinant DNA technology. Emphasis will be placed on successful completion of a project that will involve several methods in modern molecular genetics. Some typical methods used in the course include mutagenesis, characterization of mutants, polymerase chain reaction, molecular cloning; and DNA sequencing. One-hour lec. and two three-hour labs. Pr.: BIOL 675 or concurrent enrollment.

BIOL 682. Fish Ecology. (3) I. In odd years. The interaction between fish and their environment. Exploring fundamental ecological processes in aquatic systems at individual, population, community, and ecosystem scales. Two hours lec. and three hours lab per week. Pr.: BIOL 529.

BIOL 684. Wildlife Management. (3) I. Concepts of managing wildlife with emphasis on North American game species. Applied population dynamics as they relate to management, historical, and recent developments in wildlife management, habitat improvement, and related material. Three hours lec. a week. Pr.: BIOL 433 and 450.

BIOL 685. Wildlife Management Techniques. (3) I. Ecology and management techniques. Two hours lec. and three hours lab a week. Pr.: BIOL 433 and 450.

BIOL 687. Microbial Ecology. (3) II. In odd years. The ecology of aquatic and terrestrial microorganisms in their natural environment. Pr.: BIOL 455.

BIOL 690. Microbial Physiology and Metabolism. (2) I. The study of structure, function, regulation, and intermediary metabolism of bacteria. Pr.: BIOL 455; and BIOL 527 or 765.

BIOL 696. Fisheries Management. (4) I. In even years. Historical and contemporary issues in the management and conservation of exploited fishes. Methods for managing fisheries resources in streams, lakes, and ponds including estimating abundances, quantifying age and growth, manipulating populations, modelling population dynamics, culturing fishes, and improving aquatic habitat. Three hours lec. and three hours lab per week. Pr.: BIOL 430.

BIOL 697. Topics in Biology. (1–6) I, II, S. Pr.: Consent of instructor.


BIOL 699. Undergraduate Seminar in Biology. (1) I, II. Pr.: Consent of instructor.

BIOL 702. Radiation Safety in the Research Laboratory. (1) I. Principles of radioactive safety and radiosotope handling; licensing procedures, and laboratory techniques. Pr.: BIOL 198 or 455; and CHM 210 or PHYS 113.

BIOL 710. Endocrinology. (3) II. In even years. A survey of the glands of internal secretion in vertebrates with emphasis on mechanisms of control of hormone secretion and mechanisms of hormone action. Pr.: BIOL 198; and a course in organic chemistry or biochemistry.

BIOL 719. Biomembranes. (2) II. In even years. Funda- mental concepts in membrane biochemistry. Emphasis on the relationship of membrane structure and function. Includes an introduction to research literature on cellular and model membranes. Reading/discussion format. Pr.: BIOL 541 and BIOC 521.

BIOL 720. Anaerobic Bacteriology. (2) II. In even years. Study of anaerobic bacteria, anaerobiosis, description of anaerobic techniques, and physiology and biochemistry of anaerobes of the natural environment, including the gastrointestinal tract, oral cavity, veterinary, medical and industrial importance. Two hours lec. a week. Same as ASI 720. Pr.: BIOL 455 and BIOC 521.

BIOL 730. General Virology. (3) II. Theoretical and experimental basis of virology, with emphasis on the role of the virus as a controlling force in cellular biology; principles of host-virus interactions; introduction to use of mammalian cell cultures as the host for virus propagation: Pr.: Twelve hours of biological sciences, including BIOL 450 and 455; and BIOC 521 or equiv.; consent of instructor.

BIOL 731. Virology Laboratory. (2) II. An introduction to the techniques used in virus replication, detection, and quantification. Emphasis will be placed on the methodology used to study virus replication and virus-host cell interactions. One-hour lec. and three-hour lab. Pr.: BIOL 730.

BIOL 736. Cancer Therapy. (3) II. In odd years. Current methods of cancer management with emphasis on the kinetic principles of chemotherapy and radiation therapy; diagnostic; surgical oncology; oncologic emergencies; adverse effects of cancer therapy; and the new therapies; Pr.: BIOL 450 and BIOC 521 or equiv.

BIOL 740. Anatomy of Higher Plants. (3) II. Structure and development of the various tissues and organs of seed plants. Two hours lec. and one two-hour lab a week. Pr.: BIOL 201 or 210.

BIOL 755. Specialized Cell Functions. (3) I. In even years. Ibn vitro cell and organ culture techniques as tools for differentiation and specialization studies. Emphasis on mammalian cell culture systems with some study of plant cell culture. Pr.: BIOL 541.

Chemistry

Peter M.A. Sherwood,* Head

University Distinguished Professors
Klabunde,* and Sherwood,* Professors
Hamaker,* Hawley,* Hua,* A. Kelley,* D. Kelley,* Maatta,* and Ortiz,* Associate Professors Buszek* and Hollingsworth,* Assistant Professors Aakeröy,* Baures,* Collinson,* Higgins,* Lenhert, Muiño,* and Warmuth,* Instructors Paukstelis and E. Dikeman; Emeriti: University Distinguished Professor Fateley* and Setser,* Professors Copeland,* Kruth,* McDonald,* Meloan,* Moser,* and Schrenk,* Associate Professor Lanning,** Instructor Weyerts.

www.ksu.edu/chem

The Department of Chemistry occupies modern laboratory facilities in the Chemistry/Biochemistry Building, the H.H. King Chemical Laboratory and part of Willard Hall. The faculty represents a broad range of interest in the discipline of chemistry. The department offers programs leading to the B.S. and B.A. degrees in chemistry and chemical science. In addition to the undergraduate program, the department offers M.S. and Ph.D. degrees; the graduate program includes approximately 60 students.

The discipline of chemistry is very broad and a training in chemistry provides many different career possibilities. For example, research chemists explore and synthesize new compounds and materials and they invent and characterize new processes. Development chemists translate research findings into products, and they work in areas such as marketing, economics, management, and safety.

Chemists are involved in solving chemical problems that range from analysis of environ-
mental aspects of chemicals to the manufacture of chemicals and finished products. Chemists also work in federal- or state-sponsored research activities (trade, foods, roads, fire research, nuclear energy) and environmental protection (water, waste, and drugs), and a variety of educational and teaching activities.

Students often use chemistry degrees as preparation for advanced study in medicine, pharmacy, and other health science areas. Students who plan to become high school science teachers may choose to earn dual degrees in chemistry and education. Numerous other possibilities, such as biochemistry or chemical engineering, exist for dual degrees. For dual degree programs, the requirements of both curricula must be met.

High school preparation
High school students who plan to major in chemistry must have a good background in mathematics and science. Trigonometry and two years of algebra are essential, as are courses in chemistry and physics.

Transfer students
Community college students are encouraged to take a year of general chemistry and a course in quantitative analysis, two to three semesters of calculus, English composition, and speech classes for transfer credit.

Independent study and research
Many chemistry students are engaged in independent study and research, some as early as their first year. Two credit hours of research experience, under the supervision of a faculty member of the student’s choice, are required for the B.S. degree in chemistry. A formal, written report describing the research is also required.

General requirements for undergraduate major
Students majoring in chemistry or chemical science must earn grades of C or better in all courses prescribed for these curricula, as outlined below. A total of 120 credit hours are required for graduation. The B.A. program is obtained by following the curriculum for the B.S. degrees with the additional foreign language requirement of the College of Arts and Science.

Chemistry curriculum for the B.S. degree
The preferred curriculum for students preparing for employment as chemists or for graduate study in chemistry is listed below. This curriculum is approved by the American Chemical Society: chemistry option (40–42 hours)*; biochemistry option (45–47 hours)*.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 220</td>
<td>Chemical Principles I</td>
<td>5</td>
</tr>
<tr>
<td>CHM 250</td>
<td>Chemical Principles II</td>
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<td>CHM 531</td>
<td>Organic Chemistry I</td>
<td>3</td>
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<td>CHM 598</td>
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<td>CHM 566</td>
<td>Instrumental Methods of Analysis</td>
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</tr>
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<td>CHM 567</td>
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<tr>
<td>CHM 657</td>
<td>Inorganic Techniques</td>
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<tr>
<td>CHM 711</td>
<td>Inorganic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHM 712</td>
<td>Inorganic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHM 599</td>
<td>Senior Thesis Research</td>
<td>2</td>
</tr>
</tbody>
</table>

Mathematics (12 hours)
- MATH 220 Analytic Geometry and Calculus I 4
- MATH 221 Analytic Geometry and Calculus II 4
- MATH 222 Analytic Geometry and Calculus III 4

Physics (10 hours)
- PHYS 213 Engineering Physics I 5
- PHYS 214 Engineering Physics II 5

Introductory and general chemistry courses
- CHM 110. General Chemistry. (3) I, II, S. 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.

- CHM 111. General Chemistry Laboratory. (1) I, II, S. A laboratory course to supplement the material of CHM 110. Three hours a week. Pr.: CHM 110 or conc. enrollment.

- CHM 195. Approved Techniques in Criminalistics. (3) Intersession only. Physical evidence at a crime scene and its examination in the laboratory. Soils, glass, hair fibers, drugs, explosives, poisons, castings, inks, and arson and rape situations are investigated.

- CHM 200. Undergraduate Seminar in Chemistry. (0,1) I, II. Programs and activities of interest to students in chemistry, including lectures given by chemistry majors.

- CHM 210. Chemistry I* (4) I, II. First course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. 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).

- CHM 211. Chemistry I Recitation. (1) I, II. An optional recitation class that requires conc. enrollment in CHM 210 Chemistry I. The object of the recitation is to reinforce the skills for solving chemical problems. Instruction will be via a small class format. Credit/no credit only. Credit independent of grade for Chemistry I.

Students entering the university with Advanced Placement chemistry examination credit may earn the following grades:

<table>
<thead>
<tr>
<th>Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>A in Chemistry I and A in Chemistry II</td>
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<tr>
<td>4</td>
<td>A in Chemistry I and B in Chemistry II</td>
</tr>
<tr>
<td>3</td>
<td>B in Chemistry I</td>
</tr>
</tbody>
</table>

Students may also earn 4 hours of credit with grade for CHM 210 by taking a comprehensive examination given by the instructor during the first week of the semester.

- CHM 215. Environmental Science: A Chemistry Perspective. (3) I. An analysis of important technological developments and their impact on society and on the earth’s environment; ethical issues raised by technological advances. History, matter and energy, ecosystems, population issues, air pollution, water pollution, hazardous substances, environmental policies, and decision making are discussed. Pr.: CHM 110 or CHM 210.

- CHM 220. Chemical Principles I, (5) I. First course of a two-semester study of chemical principles. For students in curricula with a major emphasis in chemistry. Three hours lec. and six hours lab a week. Pr.: High school chemistry (one year) and algebra (one and one-half years).
Inorganic chemistry courses

- **CHM 650. History of Chemistry** (2) II. in even years. Traces the beginnings of chemistry from 3500 B.C. to 1920 A.D. Early metallurgy, Greek thought about atoms, alchemy, atomic theory, discovery of gases; definition of elements, chemical bonds, organic, inorganic, and physical chemistry. Pr.: CHM 585.

- **CHM 657. Inorganic Techniques**. (1–2) II. The preparation, characterization, and study of transition metal, main group, and organometallic compounds using techniques commonly encountered in industrial and academic research. Three to six hours lab a week. Pr.: CHM 585.

- **CHM 711. Inorganic Chemistry I**. (3) I. Atomic and molecular structure, bonding concepts used in the practice of inorganic chemistry. Applications of symmetry and group theory to structure, bonding, and spectra. Three hours lec. a week. Pr.: CHM 550, 595.

- **CHM 712. Inorganic Chemistry II**. (3) II. Structure, reactivity, and mechanistic aspects of main group and transition metal complexes. Organometallic reactions, catalysis, and bioinorganic chemistry. Three hours lec. a week. Pr.: CHM 550, 595.

Organic chemistry courses

- **CHM 350. General Organic Chemistry**. (3) I, II. A survey of types of organic reactions important to biological science, including pre-veterinary and certain agricultural and human ecology programs. Conc. enrollment in CHM 351 is urged. Three hours lec. a week. Pr.: CHM 230.

- **CHM 351. General Organic Chemistry Laboratory**. (2) I, II. One five-hour lab and one hour of lec. a week. Pr. or conc. enrollment: CHM 350, II.

- **CHM 531. Organic Chemistry I**. (3) I. General principles of organic chemistry; study of the main types of aliphatic compounds, with an introduction to fats, carbohydrates, amino acids, proteins, and aromatic compounds. Required for chemistry curricula and for entrance to medical schools. Three hours lec.: a week. Pr.: CHM 230 or 250.

- **CHM 532. Organic Chemistry Laboratory**. (2) I, II. One five-hour lab and one hour of lec. a week. Pr.: CHM 550 or conc. enrollment.

- **CHM 550. Organic Chemistry II**. (3) I. Continuation of CHM 531, including additional aromatic chemistry, condensation reactions, and introduction to advanced topics, such as dyes, polymers, and heterocyclic chemistry. Three hours lec. a week. Pr.: CHM 531.

- **CHM 551. Advanced Organic Laboratory**. (2) I, II. One five-hour lab and one hour of lec. a week. Pr.: CHM 550 and 532.

- **CHM 752. Advanced Organic Chemistry**. (3) I. Advanced study of organic compounds and fundamental types of reactions. Three hours lec. a week. Pr.: CHM 550 and 595.

Physical chemistry courses

- **CHM 500. General Physical Chemistry**. (3) I. Elementary principles of physical chemistry. Three hours lec. a week. Pr.: CHM 350 or CHM 531 and MATH 211 or MATH 221, and PHYS 114 or equivalent.

- **CHM 585. Physical Chemistry I**. (3) I. Elementary chemical thermodynamics and kinetic theory of gases. Three hours lec. a week. Pr.: CHM 250 or CHM 371, MATH 222, PHYS 214, and CHM 531.

- **CHM 586. Physical Chemistry I Laboratory**. (2) I. Six hours lab a week. Pr.: CHM 250 or CHM 371, CHM 585 or conc. enrollment.

- **CHM 595. Physical Chemistry II**. (3) II. Elementary quantum chemistry, spectroscopy, statistical thermodynamics, and chemical kinetics. Three hours lec. a week. Pr.: CHM 585.

- **CHM 598. Physical Chemistry II Laboratory**. (2) II. Six hours lab a week. Pr.: CHM 250 or CHM 371 and CHM 595 or conc. enrollment.
Accelerated undergraduate and graduate programs
Students who begin graduate work after completing the B.A. or B.S. degree generally require more than one year to complete work for a master’s degree. However, a five-year program leading to a B.A. or B.S. in economics at the end of four years and a master of arts in economics at the end of five years is available for promising undergraduate students. Students who have completed their sophomore year and have outstanding scholastic records (GPA 3.2 or higher) are invited to join the program.

Each student, in consultation with a faculty advisor, will plan an individualized program of study that meets requirements for the B.A. or B.S. and the M.A. degrees. Features of the program include participation in research as an undergraduate and enrollment in graduate-level courses in the senior year. Students participating in the program will be considered for financial assistance in the form of scholarships, fellowships, research assistantships, and part-time work.

Economics minor
A minor in economics is also available. The requirements are as follows:

- **ECON 110** Principles of Microeconomics
- **ECON 120** Principles of Macroeconomics
- Four economics courses at the 500 level or higher

Students must have an overall GPA of 2.0 or higher in courses to satisfy the minor requirements.

Economics courses

**ECON 110. Principles of Macroeconomics.** (3) I, II, S. 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 101.

**ECON 120. Principles of Microeconomics.** (3) I, II, S. 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 101.

**ECON 330. Introductory Seminar in Industrial and Labor Relations.** (1) I. A multidisciplinary introduction to the field of industrial and labor relations. Examines the economic, legal, psychological, and sociological aspects of the field.

**ECON 399. Honors Seminar in Economics.** (3) For sophomores in honors program—scheduled irregularly. Readings and discussions. Open to students in the honors program not majoring in economics.
English

Lawrence Rodgers, * Head
T. Murray, * and L. Warren; * Associate Professors Brigham, * Dayton, * Dodd, *
McCarthy, Moses, Noonan, Nyberg, Rees, and M. Schneider; Associate Professors Adams, *
Ans dell, Brandell, Cohen, Crowow, Geissler, 
Grindell, and H. Schneider; Assistant Professor Glenn; Instructors Bergman, Bussing, Clark, Frazier, Felieksch, Rochat, and Vance.

E-mail: english@ksu.edu
www.ksu.edu/english

Bachelor of arts

Students may elect to earn a B.A. in the department through a course of study based on one of the following three patterns.

Note: Students must achieve a C or better in ENGL 252 for the course to count for major credit.

Literature track

ENGL 252 Introduction to Literary Studies ............ 3
One Shakespeare course ........................................... 3
One language course (430, 476, 490) ...................... 3
Two "Survey" courses in one national literature .......... 6
Three English courses numbered 320-599 ............... 9
Four English courses numbered 600 and above .......... 12

Students must take at least 6 hours of American literature and 6 hours of British literature other than Shakespeare. At least 15 of the 21 hours in courses numbered 320 and above must be literature courses.

Literature and creative writing track

ENGL 252 Introduction to Literary Studies ............ 3
One Shakespeare course ........................................... 3
One language course (430, 476, 490) ...................... 3
Any two "Survey" courses ................................. 6
ENGL 410 Introduction to Creative Writing ............ 3
Three advanced creative writing courses in at least two genres ................................................................. 9
Two literature courses numbered 600 and above ...... 6
One course in literature or language numbered 320 and above ................................................................. 3

Students must take at least 6 hours of American literature and 6 hours of British literature other than Shakespeare.

Literature with teaching certification track

ENGL 252 Introduction to Literary Studies ............ 3
One Shakespeare course ........................................... 3
ENGL 400 Advanced Expository Writing for Prospective Teachers .......................................................... 3
ENGL 430 The Structure of English ......................... 3
ENGL 490 Development of the English Language .... 3
Any two "Survey" courses ................................. 6
A world literature course ........................................ 3
ENGL 545 Literature for Adolescents ......................... 3
Three literature courses numbered 600 and above ...... 9
Composition elective ............................................. 3

Students must take at least 6 hours of American literature and 6 hours of British literature other than Shakespeare.

English minor

Students have two options for the minor in English, one emphasizing literature, the other emphasizing writing:

English minor with an emphasis in literature

ENGL 252 Introduction to Literary Studies ............ 3
Two of the four American and/or British survey courses (choose two: ENGL 361, 362, 381, 382) ...... 6
Any three courses ENGL 300 or above ............................. 3
One of these must be a literature course numbered 600 or above ................................................................. 3

English minor with an emphasis in writing

ENGL 252 Introduction to Literary Studies ............ 3
One American or British survey course ....................... 3
One or more American or British survey courses (choose one: ENGL 361, 362, 381, 382) .... 3
Any four writing courses ENGL 300 or above .......... 12

NOTE: ENGL 415 is open only to engineering majors.

Teacher certification

Students preparing to teach English in high school may adopt either of two programs: the major outline above, leading to the B.A. degree; or the College of Education major in secondary education, leading to the B.S. degree. Majors desiring certification should consult their advisors in both the English department and the College of Education.

For specific certification requirements in secondary education, see the College of Education section of this catalog.

English courses

ENGL 030. Writing Laboratory. (1–4) I, II, S. Credit/No Credit. Laboratory practice in writing for all students who need review in fundamentals of composition. Especially for students who have difficulty in meeting standards in Expository Writing I and II, but also designed to assist students who desire to improve their composition skills. Hours are not applicable toward degree requirements. May be repeated up to 6 hours maximum. Pr.: Consent of instructor.

ENGL 035. Special Studies in Intensive English. (2–12) I, II, S. Equivalent to enrollment in one or two segments (structure, writing, reading, or speaking and listening) of Intermediate Intensive English I or II. Placement by the English Language Program according to the student’s needs and ability level.

ENGL 036. Beginning Intensive English I. (15) I, II. Introduction to basic English syntax, writing, reading, speaking, and listening for native speakers of other languages. No prior knowledge of English required.

ENGL 038. Beginning Intensive English II. (15) I, II. Intensive study of basic English syntax, writing, reading, speaking, and listening for native speakers of other languages. Pr.: Minimum TOEFL score of 350.

ENGL 040. Intermediate Intensive English I. (15) I, II. Intensive study of basic English sentence structure, writing, reading, speaking, and listening for native speakers of other languages. Pr.: Minimum TOEFL score of 400.

ENGL 050. Intermediate Intensive English II. (15) I, II. Continued intensive study of English structure, writing, reading, speaking, and listening. Placement by the English Language Program.

ENGL 052. Advanced Intensive English. (15) I, II. Advanced intensive study of English writing, reading, speaking, and listening with emphasis on university-level tasks. Placement by the English Language Program.

DAS 060. Summer Intensive English. (10) S. Intensive study of English for native speakers of other languages. Instruction in English language structure, writing, reading, speaking, and comprehensions.

ENGL 070. Advanced English as a Second Language. (6) I, II. A support course required of international students whose performance on the English screening test indicates that they would still benefit from half-time instruction in English. Three specialized sections are offered: for undergraduates, for graduate students in technical fields, and for graduate students in non-technical fields. Placement by the English Language Program or on the recommendation of an advisor.

ENGL 075. English for International Students. (3) I, II. Distinguished from DAS 060 by being a nonintensive, 3-hour university support course. English structure, reading, and writing for graduate or undergraduate nonnative speakers who wish to reduce a written language deficiency or to prepare for Composition I. Required of students who do not pass the Written English Proficiency Test. Students may also be admitted on recommendation of their advisor. Repeatable if necessary.

Introductory courses not for major credit, except for the required ENGL 252, Repeatable once (where indicated) with change of syllabus.

ENGL 100. Expository Writing I. (3) I, II, S. Introduction to expository 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 110. Honors English I. (3) I, II, S. Critical reading and writing for first-year students with high ACT scores. Students may also be admitted at the discretion of the director of expository writing program. Each individual section will concentrate on themes determined by the instructor.

ENGL 125. Honors English II. (3) I, II, S. Advanced critical reading and writing. Students who receive A in ENGL 100 may, on the recommendation of their instructor and the director of the expository writing program, be admitted. Students who are members in good standing of one of the various college honors programs may also be admitted. Otherwise, admission is on the same basis as that for ENGL 110. Each individual section will concentrate on themes determined by the instructor.
Courses for major credit (except ENGL 300 and 399)

ENGL 300. Expository Writing III. (3) I, II, S. Advanced practice in writing a variety of expository forms: personal essays and informative and persuasive reports. Additional work on style and the demands of various rhetorical situations. Pr.: ENGL 125 or 200.

ENGL 320. The Short Story. (3) I, II, S. Study of short stories from world literature with emphasis on American, British, and Continental.

ENGL 330. The Novel. (3) I, II, S. Novels selected from various periods and cultures. Concern for form and critical analysis.

ENGL 340. Poetry. (3) I, II, S. Close reading of poems and analysis of poetic genres, with emphasis on modern poetry.

ENGL 345. Drama. (3) I, II. Study of drama from classical times to the present.

ENGL 350. Introduction to Shakespeare. (3) I, II, S. Study of representative comedies, histories, and tragedies.


ENGL 381. American Survey I. (3) I, II. American literature from the early accounts of colonization through the American Renaissance. Will apply to survey requirement for English majors.

ENGL 382. American Survey II. (3) I, II. American literature from the Civil War to the present. Will apply to survey requirement for English majors.

ENGL 390. Fable and Fantasy. (3) I, II, S. Study of modern works in the fabulous or fantastic modes in relation to the traditions underlying them. Pr.: ENGL 100 or 110.

ENGL 395. Topics in English. (1–3) I, II, S. Selected studies in literature and language. Repeatable with change in topic.

ENGL 399. Honors Seminar in English. (1–3) Readings and colloquia in selected masterpieces. May not be used for English major credit. Pr.: Honors students only.

Courses for major and non-major credit

ENGL 400. Advanced Expository Writing for Prospective Teachers. (3) I, II, S. Expository writing and a brief introduction to the history and theory of teaching writing, primarily for candidates for secondary certification in English. Pr.: ENGL 125 or 200.

ENGL 415. Written Communication for Engineers. (3) I, II, S. Study and intensive use of writing forms characteristic of professional practice. Pr.: Enrollment in the College of Engineering with junior or senior standing and ENGL 100 or equivalent with A or B credit or ENGL 200.

ENGL 420. Literature and Film. (3) I, II, S. Emphasizes such matters as the turning of a story, novel, play into film, the handling of point of view; the interrelating of techniques between fiction and film; and the comparing of the forms of fiction and film. Pr.: ENGL 125 or 200.


ENGL 445. Literary Kinds. (1–3) I, II, S. Examines the characteristics, the growth and development, or the uses of specified literary genres. Repeatable once. Pr.: ENGL 125 or 200.


ENGL 461. Introduction to Fiction Writing. (3) I, II, S. A practical introduction to short fiction writing. Pr.: ENGL 125 or 200.

ENGL 463. Introduction to Poetry Writing. (3) I, II, S. A practical introduction to poetry writing. Pr.: ENGL 125 or 200.

ENGL 470. English Bible. (3) I, II, S. The Bible as literature and history and the cultural and historical backgrounds of the Old Testament. Pr.: ENGL 125 or 200.

ENGL 476. American English. (3) I, II, S. A systematic study of the English language as it has been and is spoken in the continental United States. Topics may include Tall Talk, Americanisms, Colonial and Modern dialects, and American dictionaries. Pr.: ENGL 125 or 200.

ENGL 485. Introduction to History and Theory of Composition and Rhetoric. (3) I, II, S. Introduction to primary issues and representative writers on rhetoric from ancient Greece and Rome to the present. Emphasizes the relationship of such material to writing instruction in Western civilization. Pr.: ENGL 125 or 200.

ENGL 490. Development of the English Language. (3) I, II, S. Explores the development of the English language in its place among other world languages, and introduces students to the major ways in which English has changed through time. Considers both internal and external influences as causes of vocabulary change. Pr.: ENGL 125 or 200.

ENGL 492. Humanities Seminar. (3) I, II. Study in depth of selected major figures and movements in Western arts, ideas, and literature. Offered each semester within one of the chronological periods of the introductory courses. Pr.: Appropriate introductory humanities course (or an equivalent background, such as courses in Western civilization, art, or world literature, with consent of instructor).

ENGL 497. Special Investigations in English. (Var.) I, II, S. Individual investigation in authors, genres, periods of literature or language. Pr.: Background of preparation needed for investigation undertaken.

ENGL 498. Honors Tutorial in English. (1–3) I, II, S. Individually guided study in which the student will formulate and explore a narrowly defined topic in literature or language. May be used to initiate research for senior honors thesis. Pr.: Consent of tutorial instructor.

ENGL 499. Senior Honors Thesis. (2) I, II. S. Open only to seniors in the arts and sciences honors program.

Undergraduate and graduate credit in minor field


ENGL 525. Women in Literature. (3) I, II, S. Literary works by or about women. Treats writers considered within various traditions, themes, or formal issues. Pr.: ENGL 125 or 200.

ENGL 535. Literature of Aging. (3) I, II, S. Concerned with the problems of and the responses to aging as reflected in fiction, drama, and poetry. Pr.: ENGL 125 or 200.

ENGL 545. Literature for Adolescents. (3) I, II, S. Selecting, reading, and evaluating books for adolescents. For those seeking junior and senior high school certification and students of guidance for adolescents. Pr.: ENGL 125 or 200.

ENGL 562. Playwriting. (3) I, II, S. Theoretical study and practical application of techniques of playwriting with regard to plot, characters, and production; emphasis on the one-act form. Same as THTR 562.

ENGL 580. Selected World Literature. (3) I, II, S. This course primarily addresses writing by authors whose native
ENGL 600. Principles of Linguistics. (3) I, II. The scientific study of language, with examples from English, Spanish, French, German, and others. Overview of language origins, phonemics, phonology, syntax, semantics, language acquisition, dialects, language change, and writing systems. Same as LING 600 and LG 600.

ENGL 601. General Phonetics. (3) I or II, in alternate years. Description and classification of speech sounds according to point and manner of articulation. Transcription in the International Phonetic Alphabet. Includes sounds of English, French, Spanish, German, and others. Same as LING 601 and LG 601.

ENGL 602. Historical Linguistics. (3) I or II, in alternate years. Internal and comparative reconstruction of earlier forms of languages. Genetic relationships in language families, and various typological considerations. Includes French, Spanish, and others. Same as LING 602 and LG 602.

ENGL 603. Topics in Linguistics. (3) I or II, in alternate years. Seminar on a special topic in linguistics. Topic to be announced for semester in which offered. Repeatable for credit on a different topic. Same as LING 603 and LG 603.

ENGL 710. Studies in a Literary Genre. (3) I, II, S. An overview of selected approaches to the study of cultural and historical impacts on English studies, including psychoanalytic, feminist, Marxist, and structuralist approaches. Pr.: Junior standing.

ENGL 715–759. Studies Courses. Studies courses are designed primarily for graduate students, although advanced undergraduates may also enroll in them. Their specific contents will vary by semester and instructor, but the courses will reflect concerns with literary and rhetorical forms and genres; with specific authors, periods, or literary movements; with perspectives from social, intellectual, and cultural studies; or with literary themes; or with language or linguistics. Each semester’s offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.


ENGL 795. Literary Criticism. (3) I, II, S. Major points of view in modern American and British criticism, with practice in the analysis and judgment of individual literary works. Pr.: Senior standing.

ENGL 799. Problems in English. (Var.) I, II, S. Independent study in major authors, genres, and periods of English and American literature and language. Pr.: Background of courses needed for problem undertaken.

Linguistics courses
of a student. For example, a student may earn a teaching certificate while working toward a degree in geography.

Another curriculum leads to the bachelor of science degree in secondary education. For information concerning this program see the College of Education section of this catalog.

**Geography minor**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 100</td>
<td>World Regional Geography</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 200</td>
<td>Human Geography</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 220</td>
<td>Environmental Geography I</td>
<td>4</td>
</tr>
<tr>
<td>GEOG 440</td>
<td>Geography of Natural Resources</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 450</td>
<td>Geography of Economic Behavior</td>
<td>3</td>
</tr>
</tbody>
</table>

At least two additional geography courses at the 500 level and above are required to satisfy the minor.

Total credit hours required: **16**

**Geography: pre-planning option (B.A. or B.S.)**

Geography is an appropriate discipline for students who wish to pursue a career in a planning-related field or desire to take graduate training in planning. The geography pre-planning option provides a broad interdisciplinary background and a core curriculum in geography. Completion of the requirements will also yield a certificate in community planning from the Department of Regional and Community Planning.

The courses for the pre-planning option include all of those required for a geography major, and GEOG 750 Urban Geography, which will count as part of the 30 hours needed for a degree. In addition, students must take:

- Select one of the following (3 hours):
  - GEOG 700 Quantitative Analysis in Geography
  - GEOG 702 Computer Mapping
  - GEOG 705 Remote Sensing/Environment
  - GEOG 708 Geographic Information Systems

- Select one of the following (3 hours):
  - ECON 555 Urban and Regional Economics
  - POLSC 718 Urban Politics
  - SOCIS 531 Urban Sociology

From the Department of Regional and Community Planning (15 hrs.):

<table>
<thead>
<tr>
<th>Plan Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAN 315</td>
<td>Introduction to Planning</td>
<td>3</td>
</tr>
<tr>
<td>PLAN 715</td>
<td>Planning Principles</td>
<td>3</td>
</tr>
<tr>
<td>PLAN 736</td>
<td>Planning Implementation</td>
<td>3</td>
</tr>
<tr>
<td>PLAN 770</td>
<td>Planning Law</td>
<td>3</td>
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</tbody>
</table>

Three additional planning courses are required to satisfy the pre-planning option.

**Geography courses**

- **GEOG 100. World Regional Geography.** (3) I, II. Introduction to geography structured on a framework of major world regions and countries. With the regional approach is an explicit discussion of the essential concepts of certain systematic specialties, such as political, social, economic, and urban geography.

- **GEOG 200. Human Geography.** (3) I. A geographical assessment of the way human activities shape landscapes throughout the world. The course is especially appropriate for students interested in the social and behavioral sciences.

- **GEOG 201. Human Geography (Honors).** (3) I, in odd years. Spatial aspects of human organization and behavior are examined through selected concepts in modern geography. The course is especially appropriate for students interested in the social and behavioral sciences. Pr.: Membership in arts and sciences honors program.

- **GEOG 220. Environmental Geography I.** (4) I, II. A basic physical geography course emphasizing the atmosphere, weather, climate, and the biosphere. Includes human modification of atmospheric conditions, climate change, severe storms, and the association between global climate and plant distributions. Introduces map use, including isopleth and weather maps. Three hours lec. and one two-hour lab a week.

- **GEOG 221. Environmental Geography II.** (4) I, II. A basic physical geography course emphasizing the atmosphere and biosphere, including processes, patterns, and physical background as background for the problems and human hazards and human modification of physical conditions. Introduces remote sensing and the use of topographic maps in environmental study. Three hours lec. and one two-hour lab per week. Pr.: Environmental Geography I.

- **GEOG 300. Geography of Tourism.** (3) II. The geography of tourism is concerned with the structure, form, use, and conservation of the landscape as well as with such spatial conditions as the location of tourist areas and the movement of people from place to place. This course addresses such concepts as the economic, environmental, social, and cultural impacts of tourism as well as examining the tourist geography of each of the world’s regions, focusing on the major tourist areas.

- **GEOG 310. Geography of Kansas.** (3) I. Perceptions of Kansas, and a regional analysis of the state including discussion of climate, landforms, soil, water, and minerals as well as patterns of settlement, population, agriculture, industry, transportation, and urban development.

- **GEOG 399. Honors Seminar in Geography.** (2–3) Selected topics. Open to nonmajors in the honors program.

- **GEOG 440. Geography of Natural Resources.** (3) I. The distribution, significance, and environmental consequences of world agriculture, fishing, forestry, and mining, emphasizing the principles which account for the spatial variation in the extraction and consumption of natural resources.

- **GEOG 450. Geography of Economic Behavior.** (3) II. The location of manufacturing industries and patterns of commercial activity. Case studies and simulations are used with emphasis on modern concepts of site selection and community development.

- **GEOG 460. Future Worlds.** (3) S. Alternative future distributions of population, pollution, resource depletion, economic development, and human conflict will be treated in lectures and reading, and discussed by representatives of business, politics, religion, and academia.

- **GEOG 490. Problems in Geography.** (Var.) I, II. S. Pr.: Consent of instructor.

- **GEOG 498. Honors Tutorial in Geography.** (1–3) I, II. Individual directed research and study of a topic in geography, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of the instructor.

- **GEOG 499. Senior Honors Thesis.** (2) I, II. S. Open only to seniors in the arts and sciences honors program.

- **GEOG 500. Geography of the United States.** (3) I. A geographical survey of the United States with special attention to the historical, political, economic, and social factors which contribute to a real differentiation within the area.

- **GEOG 505. Introduction to the Civilization of South Asia I.** (3) I. Intersessional survey on the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including consideration of the geographical and demographic context, philosophical and social concepts, social and political institutions, literature, and historical movements. Same as ECON 505, HIST 505, POLSC 505, SOCIO 505, ANTH 505.

- **GEOG 506. Introduction to the Civilization of South Asia II.** (3) II. Interdisciplinary survey of recent and contemporary civilization of India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including recent history, current economy, religion, culture, language and literature, geography, social and political structure and ideas. Same as ECON 506, HIST 506, POLSC 506, SOCIO 506, ANTH 506.

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

- **GEOG 535. Fundamentals of Climatology.** (3) II. An examination of climatology on global, regional, and local scales, with emphasis on the physical processes and environmental factors that influence and control climate. Climatic change and its impact on human activities are explored. Pr.: GEOG 220 and MATH 100.


- **GEOG 610. Geography Internship.** (2–3) II. Faculty-supervised field experience, emphasis on the application of geographical topics and/or techniques. Student projects must be approved by both the on-site director and the faculty supervisor, and a report must be submitted at the end of the semester. Permission of the instructor and junior standing in geography is required.

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

- **GEOG 640. Geography of Europe.** (3) I. People and their environment, their cultures, problems, and prospects in Europe west of the Soviet Union; trends of development as affected by changing political and economic factors.

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

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

- **GEOG 700. Quantitative Analysis in Geography.** (3) II. Quantitative methods employed in modern geographical research. Applications of both statistical and mathematical approaches will be treated. Emphasis will be placed on interpretation and evaluation of techniques employed in spatial analysis. Pr.: One course in statistics.

- **GEOG 702. Computer Mapping.** (3) I. Familiarizes students with computer applications to mapping problems. Students will produce a series of maps on the printer and plotter using prepared programs, and in the process develop computer graphics skills to address problems in a real analysis, planning, and public administration. Pr.: One course in social science and one in natural science and junior standing.

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

- **GEOG 708. Geographic Information Systems.** (3) I. Examines both theoretical and applied dimensions of geographic information systems (GIS) in the contexts of environmental impact analysis, natural resource inventories, and community development studies. Applications of GIS...
Geology

Charles G. Oviatt, * Head
Professors Chaudhuri, * Clark, * Mullers, *
Oviatt, * and West; * Associate Professors
Archer* and Hubbard; * Assistant Professor
Gao; * Instructor Clement; Emeriti: Professors
Shenkel, * Twiss, * Underwood, * and
Walters; * Assistant Professor Riseman,*
www.ksu.edu/geology

Geology includes the study of the composition,
behavior, and history of the earth and of
other members of the solar system. On Earth,
geologists focus on interactions within and
among the solid earth, hydrosphere, atmos-
phere, and biosphere. In addition to provid-
ing an understanding of the past history of
these interactions as a context for future
changes, geologists examine the environmen-
tal effects of society’s actions, including pol-
lution of ground water, surface water, and soil
and the development and use of mineral,
energy, and water resources.

Geologists operate in two laboratories: the
earth itself (field laboratory) and the standard
chemical, physical, or biological laboratory.
However, geologists cannot control the vari-
ables affecting the natural processes operating
in the field, as a chemist can control the vari-
ables experimentally in a laboratory. Geo-
ologists are the observers of processes in opera-
ation or already concluded and often must
deduce conclusions from incomplete data or
by analogy with processes that may be repro-
duced only in part in a laboratory.

The Department of Geology offers a program
of study in geology and cooperates with the
College of Education in an earth science pro-
gram for high school teachers. It also cooper-
ates with the Department of Civil Engineering
in a dual degree in civil engineering and geo-
logy. For detailed plans of study, consult the
head of the department.

Students in geology must have an overall
average grade of C (not a C grade in each
course) in their geology, other natural science,
mathematics, and computer science courses.

Geology electives (two courses at the 600 or 700 level,
or one course at the 600 or 700 level and 3 hours of either
GEOG 499 Senior Honors Thesis or GEOG 599
Senior Thesis) .................................................. 6

MATH 220 Analytic Geometry and Calculus I .......... 4
PHYS 113 General Physics I ................................ 4
PHYS 114 General Physics II ................................ 4
CHM 210 Chemistry I ........................................ 4
CHM 230 Chemistry II ...................................... 4

Geology majors should consult their advisors
about elective courses to meet their career and
educational needs. Computer literacy is essen-
tial for all geologists. Departmental advisors
can recommend electives for students desiring
concentrations in energy and minerals, engi-
neering geology, environmental geology,
hydrogeology, sedimentary geology, and geo-
chemistry. Students intending to earn
advanced degrees should visit with the depart-
mental graduate advisor concerning entrance
requirements of graduate programs.

Minor in geology

GEOL 100 Earth in Action .................................. 3
GEOL 102 Earth Through Time ................................ 3
GEOL 103 Geology Laboratory ................................ 1
GEOL 301 Historical Geology Laboratory ............... 1
GEOL 502 Mineralogy ....................................... 3
Geology electives (three courses at the 500 level
or above, excluding GEOL 512, GEOL 305
may be substituted for one elective) .................. 7-10
Total credits .................................................. 18-20

Earth science option
for high school teachers

In addition to the general requirements for the
B.A. or B.S. degree, the teacher certification
requirements and the following must be
completed:

GEOL 100 Earth in Action .................................. 3
GEOL 103 Geology Laboratory ................................ 1
GEOL 502 Mineralogy ....................................... 3
GEOL 520 Geomorphology .................................. 2
GEOL 220 Environmental Geology I ..................... 4
MATH 100 College Algebra .................................. 3
MATH 130 Plane Trigonometry ............................. 3
PHYS 113 General Physics I ................................ 4
PHYS 114 General Physics II ................................ 4
PHIS 191 Descriptive Astronomy .......................... 3
BIOL 198 Principles of Biology ............................. 4
CHM 210 Chemistry I ........................................ 4
CHM 230 Chemistry II ...................................... 4

See the College of Education section of this catalog
for teacher certification requirements.

Dual degree in civil
engineering and geology

Engineering students interested in obtaining
the stronger geology background to enhance
careers in foundation, construction, or envi-
ronmental engineering may receive a dual
degree by completing the B.S. degree require-
ments in civil engineering, the general
requirements for a B.A. or B.S. degree in the
College of Arts and Sciences, and the follow-
ning: GEOL 102, 301, 502, 503, 520, 530, 630,
and 680 (see lists above).
Transfer students

In addition to the general instructions to transfer students, students planning to pursue a degree in geology should complete as many of the following courses or their equivalents as possible:

**GEOL 100. Earth in Action.** (3) I, II, S. An introduction to the materials making up the earth, and to the internal and surface processes that shape and change our planet. Three hours rec. a week.

**GEOL 101. Geology Colloquium.** (1–3) I, II, S. Topics in earth science chosen to illustrate current research of scientists and methods chosen to study the physical universe. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to geology majors.

**GEOL 102. Earth Through Time.** (3) I, II, S. An introduction to the immensity of geologic time and a review of the history of the earth and the life upon it. Three hours rec. a week. Pr.: GEOL 100.

**GEOL 103. Geology Laboratory.** (1) S. Independent reading; field or laboratory investigations, with an emphasis on earth-surface processes. One hour rec. a week. Pr.: GEOL 100 or GEOG 220 or junior standing.

**GEOL 104. General Physics I.** (4) MATH 140, MATH 150, or both, of geologic problems. Pr.: GEOL 102 and junior standing.

**GEOL 502. Mineralogy.** (3) I. Crystallography; physical and chemical properties of minerals; descriptive mineralogy. Two hours lecture and three hours lab a week. Pr.: GEOL 100 or 105, 103, and CHM 230.

**GEOL 503. Petrology.** (3) I. Petrology of igneous, metamorphic, and sedimentary rocks. Two hours lecture and three hours lab a week. Pr.: GEOL 502.

**GEOL 506. Geology and Environment.** (3) II. Fluxes of various elements between air, water, rocks, and biota; origin of surface water and ground water, ocean water, and atmosphere; interactions of hydrosphere, atmosphere, biosphere and lithosphere; changing atmosphere and global warming; cycles of various elements; migration of various pollutants in surface and subsurface environments; medical geology. Pr.: Any one of the following: GEOL 100, 105, 115, GEOG 222, CHM 110, BIOL 198, PHY 102.

**GEOL 510. Geology of Planets.** (3) I. Origin, evolution, and surficial geology of the extraterrestrial planets and satellites. Three hours rec. a week. Pr.: GEOL 100.

**GEOL 512. Earth Science.** (3) I. A critical study of the atmosphere, weather, climate, composition, and processes of the earth; the interaction of these processes with the biosphere and the human activity. Three hours rec. a week. Pr.: GEOL 100 or GEOG 220 or junior standing.

**GEOL 515. Geology of the National Parks.** (3) II. Study of the geology of the parks. Three hours rec. a week. Pr.: GEOL 100 or 105, 103, or 115.

**GEOL 520. Geomorphology.** (3) II. Laboratory exercises in reading and interpreting topographic maps and aerial photographs; field studies of the landforms and surficial deposits, with an emphasis on earth-surface processes. One hour rec. and three hours lab a week. Pr.: GEOL 100.

**GEOL 530. Structural Geology.** (3) II. Mechanics of the earth’s crust; origin and interrelation of structures of the earth. Two hours rec. and three hours lab a week. Pr.: GEOL 503.

**GEOL 540. Ice Ages and Environmental Change.** (3) I. Studies of the recent geologic past, especially of the last major ice age to the present. Causes of glaciation and climatic change, ways of reconstructing past geologic environments and geologic environments changes during the time when human civilization developed, including recent human history. Three hours rec. a week. Pr.: GEOL 100 or GEOG 221.

**GEOL 560. Field Methods.** (3) I. Introduction to methods used to collect geologic data in the field. Emphasis is placed on map-making, rock description, use of aerial photographs, and construction of geologic maps and cross sections. One hour rec. and four hours lab a week. Pr.: GEOL 503.

**GEOL 581. Paleobiology.** (4) I. Biological principles applied to fossils; introduction to contributions of pro- and eukaryotic organisms, especially algae and marine invertebrates to earth history. Two hours rec. and six hours lab a week. Pr.: GEOL 102 and 503; MATH 220; PHY 114.

**GEOL 599. Senior Thesis.** (1–3) I, II. Directed research and preparation of a senior thesis. May be repeated once to a maximum of 3 hours credit. Open only to seniors in geology.


**GEOL 605. Exploration Geophysics.** (3) I. Seismic, gravity, magnetic, and electrical methods used in geophysical exploration for petroleum accumulations and for mineral deposits. Three hours rec. a week. Pr.: PHYS 214; GEOL 530.

**GEOL 608. Optical Mineralogy-Petrography.** (3) I. Identification of minerals and rocks as crushed fragments and in thin section. Two hours lec. and one four-hour lab a week. Pr.: GEOL 503 and PHYS 214 or 114.

**GEOL 610. Sedimentary Geochemistry.** (3) I, II. Geochemical principles and processes in deposition and diagenesis of sediments; different chemical pathways in the evolutionary cycle. Two hours rec. and three hours lab a week. Pr.: GEOL 503 and MATH 220.

**GEOL 611. Hydrogeology.** (3) I, II. Origin, geologic occurrence, and migration of subsurface water; laws governing ground water flow and yield of aquifers. Three hours rec. a week. Pr.: GEOL 520.

**GEOL 630. Stratigraphy-Sedimentation.** (4) II. Descriptions, classification, correlation, chronology, and paleogeography of sedimentary rock systems and the depositional environments in which they formed. Three hours rec. and three hours lab a week. Pr.: GEOL 581.

**GEOL 680. Field Geology.** (3) S. Field projects in the Rocky Mountains designed to give students practical experience in applying geologic knowledge and skills. Three six-week days in the field. Pr.: GEOL 503, 530, and 560.

**GEOL 702. Economic Geology.** (3) I. Geology and origin of metallic mineral deposits and of some nonmetallic deposits. Three hours rec. a week. Pr.: GEOL 503.

**GEOL 703. Economic Geology Laboratory.** (1) S. Laboratory activities related to metallic and nonmetallic mineral deposits, including detailed studies of selected deposits. Pr.: GEOL 702 or conc. enrollment.

**GEOL 704. Paleocology.** (3) I. Application of biological, physical, and chemical factors in modern marine environments to the quantitative study of the structure and dynamics of fossil populations and communities. Two hours rec. and three hours lab a week. Pr.: GEOL 581.

**GEOL 705. Geobiology.** (3) II. Discussion and critique of current and classic research in geobiology. Three hours rec. a week. Pr.: GEOL 581.

**GEOL 711. Water Resources Geochemistry.** (2) II. Geochemistry of ground and surface waters; emphasis on mineralogic and hydrologic controls on inorganic constituents and properties. Two hours rec. a week. Pr.: GEOL 503 or AGRON 705 or 755.

**GEOL 712. Advanced Geochemistry.** (3) II. Application of chemical principles to igneous, metamorphic, and sedimentary systems; emphasis on equilibria, oxidation-reduction, crystal chemistry, and thermodynamics. Three hours rec. a week. Pr.: GEOL 503 and CHM 500 or 585.

**GEOL 720. Quaternary Geology.** (3) II. Quaternary stratigraphy as the framework for studying the geomorphic, climatic, archaeological, and biological changes of the last two million years, with emphasis on the North American record. Three hours rec. a week and one field trip a semester. Pr.: GEOL 630.

**GEOL 730. Petroleum Geology.** (3) I, II. Origin, migration, and accumulation of petroleum; stratigraphy and structure of important fields. Three hours rec. a week. Pr.: GEOL 530 and 630.

**GEOL 740. Regional Geology.** (3) I. Structure and stratigraphy of the major tectonic units of North America. Pr.: GEOL 530. 630.

**GEOL 770. Subsurface Methods.** (3) I. Principles and applications of subsurface geology. Two hours rec. and three hours lab a week. Pr.: GEOL 530 or conc. enrollment.

**GEOL 790. Problems in Geology.** (Var. I, II. S. Work is offered in mineralogy, paleontology, paleoecology, stratigraphy, structural geology, igneous, metamorphic, and sedimentary petrology, geomorphology, planetary geology, hydrogeology, geochemistry, and isotopes. Pr.: Background of courses needed for problem undertaken.
History courses

HIST 100. Introduction to History. (3) I, II. What history is, how it is produced, and what its functions are. Designed for freshmen who want an introductory course which explains the methodology, purposes, and career options of the discipline.

HIST 101. Western Civilization: The Rise of Europe. (3) I, II. Major trends in Western history from the beginnings of European civilization to the end of the seventeenth century. The scope of this course includes classical antiquity, the Middle Ages, the Renaissance, the Reformation, and early modern Europe, but chronological and topical emphases vary with individual sections. Required of all majors in history. Pr.: Not open to juniors and seniors except with consent of instructor.

HIST 102. Western Civilization: The Modern Era. (3) I, II. Principal developments in Western civilization from the beginning of the eighteenth century to the present. The scope of the course includes the Enlightenment, the French Revolution, the Industrial Revolution, nationalism, imperialism, communism, fascism, and the two world wars, but chronological and topical emphases vary with individual sections. Required of all history majors. Pr.: Not open to juniors and seniors except with consent of instructor.

HIST 103. Overseas European Studies. (2–3) Intersession only, in alternate years. Selected aspects of European history and culture with readings, lectures, and discussions which will relate historical events to places visited.


HIST 105. Western Civilization: The Modern Era (Honors). (3) II in alternate years. Course description same as HIST 102.

HIST 200. Topics in History for Freshmen and Sophomores. (1–3) In alternate years. Exploration of the historical dimensions of a particular topic or theme. Topics vary. May be repeated once.

HIST 259. Russian Culture and Civilization. (3) I, in alternate years. Russia’s past and present in the light of principle ideologies with emphasis upon fine arts, literature, music, religion, politics, and education. Equal time will be given to the Tsarist and the Soviet periods.

HIST 252. The United States Since 1877. (3) Includes ethnic, social, military, political, economic, diplomatic, and ideological themes. The chronological emphasis varies with instructor. The aim of the course is to achieve a broad understanding of American civilization to 1877.

HIST 252. The United States Since 1877. (3) Ethic, social, political, economic, and diplomatic history. The goal of the course is to achieve a broad understanding of American civilization since 1877.

HIST 297. Honors Introduction to the Humanities I. (3) Study of selected major works of history, literature, and philosophy which have been of central importance in the Western cultural tradition. Considerable emphasis is placed on classroom discussion and writing interpretive essays. Limited to entering freshmen students. Pr.: Consent of instructor. Same as ENGL 297, MLANG 297, PHIO 297.

HIST 298. Honors Introduction to the Humanities II. (3) II. Continuation of HIST 297. Pr.: HIST 297 or consent of instructor. Same as ENGL 298, MLANG 298, PHIO 298.

HIST 303. Latin American History and Civilization. (3) Introduces the history of Latin America from the earliest times to the present. Argentina, Brazil, Cuba, Mexico, and Peru will receive special attention. Themes treated will include race and ethnicity, cultural survival, revolution and authoritarianism, women and family, and the role of economic development in Latin American history.

HIST 350. Gandhi and the Indian Revolution. (3) II. In alternate years. An introduction to Mahatma Gandhi, his life and career in India, England, and South Africa, his techniques of nonviolent struggle, and the revolution which
destroyed the British Empire and created the new countries of India and Pakistan.

- HIST 399. Honors Seminar in History. (3) Selected topics in history. May be repeated once for credit. Pr.: Membership in honors program or consent of instructor.

- HIST 401. Technology, Science, and History. (3) II, in alternate years. A nontechnical historical survey of the more significant developments in science and technology and their influence on the course of life and thought in the Western world.

- HIST 459. History of Dance in Its Cultural Setting. (3) II, in alternate years. The study of developments and changes in the style, technique, and purpose of ceremonial and theatrical dancing from the Greeks to the present. Emphasis on the interaction between this art and the total culture—social, religious, artistic, and political—in which it is performed. Pr.: Sophomore standing. Same as DANCE 459.

- HIST 498. Senior Thesis. (3–6) I, II, S. May be repeated once to a maximum of 6 hours credit. Pr.: Senior standing.

- HIST 499. Senior Honors Thesis in History. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

- HIST 503. Overseas European Studies. (2–3) Inter-session only, in alternate years. Selected aspects of European history and culture with reading, lectures, and discussions which involve historical events to the places visited. Pr.: Sophomore standing.

- HIST 504. History of Hinduism. (3) I, in alternate years. Examines one of the world’s oldest religions from its origins to the present. Covers the fundamental ideas and practices of Hinduism and the development of related religions such as Buddhism, Jainism, and Sikhism. Pr.: Sophomore standing.

- HIST 505. Introduction to the Civilization of South Asia I. (3) In alternate years. Interdisciplinary survey of the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Nepal, including consideration of the geographical and demographic context, philosophical and social concepts, social and political institutions, literature and historical movements. Same as ECON 505, POLSC 505, SOCIO 505, ANTH 505.

- HIST 506. Introduction to the Civilization of South Asia II. (3) The history of India, Pakistan, and Bangladesh since 1500, beginning with Moghul rule and continuing through European colonialism, the anti-imperial struggle, and the troubled transition to independence.

- HIST 507. China Since 1644. (3) I, in even years. China from the founding of the Manchu Qing dynasty to the present. Includes the western imperialist challenge in the nineteenth and twentieth centuries, including consideration of the geographical and demographic context, philosophical and social concepts, social and political institutions, literature and historical movements. Pr.: Sophomore standing.

- HIST 508. Introduction to Modern East Asia. (3) In alternate years. The history of China, Japan, and surrounding countries including the arrival of Europeans in the sixteenth century, reactions to Western imperialism, the rise of nationalism, and revolution. The impact of the two world wars, the era of post-war developments, communism in China, democracy in Japan, and the end of Western colonialism are also examined. Pr.: Sophomore standing.

- HIST 509. Japan Since 1550. (3) I, in alternate years. Japan from reunification in the sixteenth century through the Tokugawa and Imperial eras to the postwar recovery. Emphasis on understanding modern Japan as the product of traditional culture, the Meiji Restoration, and World War II. Pr.: Sophomore standing.

- HIST 510. World War I. (3) I, in alternate years. Examines the origins, events and consequences of the “war to end all wars.” The impact and influence of the war on colonialism, imperialism, and popular culture will be discussed. Pr.: Sophomore standing.

- HIST 511. Environmental History. (3) I, in alternate years. An introduction to environmental history as an academic specialization through selected reading and topical lectures. The course emphasizes the study of people in nature through their interactions with people’s response to environmental change through three broadly defined periods: pre-industrial, modern industrial, and contemporary. Pr.: Sophomore standing.

- HIST 512. Women in European History. (3) I, in alternate years. A study of women in primitive European societies, in preindustrial times, and in the industrial era. Emphasis will be upon the position and role of women within the society. Pr.: Sophomore standing.

- HIST 513. Battles and Leaders. (3) I, in alternate years. The course will emphasize military organization, tactics and strategy, generalship and grand strategy, manpower and logistics, and the wartime ramifications of war on land, at sea, and in the air. Pr.: Sophomore standing.

- HIST 514. World War II. (3) I, in alternate years. Origins, conduct, and consequence of World War II. Films from the TV series “The World at War” form an integral part of the course. Pr.: Sophomore standing.

- HIST 515. History of Sport. (3) In alternate years. The historical development of sports (specially in Europe and North America) including the growth of competition, the rise of mass spectator sports, elitism, and the changing function of sport. History of sport as business and history of the relationship between sport and other institutions. Same as KIN 515. Pr.: Sophomore standing.

- HIST 516. History of Science I. (3) I, in alternate years. Scientific activity and thought from antiquity to the end of the sixteenth century, with emphasis on Greek, late medieval, and Renaissance science. No background in science required. Pr.: Sophomore standing.

- HIST 517. History of Science II. (3) II, in alternate years. Science in the seventeenth and eighteenth centuries, with emphasis on Galileo, Newton, philosophies of science, scientific societies, and developments in the physical, biological, and earth sciences, including the revolutions of science with technology, medicine, religion, exploration, and the enlightenment. No background in science required. Pr.: Sophomore standing.

- HIST 518. Science in the Modern Age. (3) I, in alternate years. Science since the eighteenth century, including major developments in the physical, biological, and earth sciences, and the relations of science to scientific societies, technology, medicine, exploration, religion, and archaeology. No background in science required. Pr.: Sophomore standing.

- HIST 519. Science in America. (3) I, in alternate years. A survey of American science from the colonial era to the present, with special attention to the historical context and the role of institutions and government. Some attention to the social problems faced by scientists and their responses to them. Pr.: Sophomore standing.

- HIST 520. Death and Dying in History. (3) I, II, in alternate years. Examines American and European attitudes toward death and dying in various historical periods. Topics include: death and dying in the European Middle Ages and in sixteenth and seventeenth century Europe, the impact of the Nazi Holocaust on modern opinions about death, suicide as a historical problem, the fear of cancer in modern times, and others. Pr.: Sophomore standing.

- HIST 521. History of Christianity. (3) I, in alternate years. A history of the Christian religion from the era of Jesus Christ to the present with special emphasis on people and ideas. Pr.: Sophomore standing.


- HIST 523. A History of the Occult and Witchcraft. (3) In alternate years. A study of the history of the occult and witchcraft in Western civilization with special attention to religiosity, esotericism, and social issues and influences. Pr.: Sophomore standing.

- HIST 524. The History of Baseball in American Culture. (3) In alternate years. The history of baseball from its origins in the early nineteenth century to the present, with emphasis on the major leagues and their collateral organizations but also with attention to semi-pro and amateur baseball and to the Old Negro Leagues. The history of the game will be examined in the context of American history with special reference to social issues, politics, religion, literature, music, and the media. Pr.: Sophomore standing.

- HIST 525. Colonial America. (3) In alternate years. About 1450 to 1763. Includes the European background of North American colonization, the rivalry for new world empire, seventeenth century English colonial foundations, and development of the various colonial societies. Pr.: Sophomore standing.

- HIST 526. The American Revolution. (3) In alternate years. Eighteenth century colonial background of the Revolution and the revolutionary era itself, 1763–1789. Stresses ideological and other causes of the Revolution, the course of the war, its social results, the Confederation and its demise. Pr.: Sophomore standing.

- HIST 527. The Early National Period. (3) In alternate years. Foundations of the new nation from the adoption of the Constitution to the conclusion of the War of 1812—approximately 1789–1815. Stresses the contest between Hamiltonians and Jeffersonians for philosophical dominion of institutions; other topics include diplomacy, westward expansion, military developments, the social and intellectual life of the era. Pr.: Sophomore standing.

- HIST 529. Civil War and Reconstruction. (3) I, in alternate years. 1848–1877. Examination of the sectional controversy, the failure of the political system to resolve peacefully the conflict between North and South, to arm and demoralize the nation, the nature of the post-war settlement. Emphasis is on the attempt of mid-nineteenth-century American leaders to deal with the complex problems of slavery and race. Pr.: Sophomore standing.

- HIST 531. The United States in the Twentieth Century. (3) In alternate years. An introduction to the history of America from 1890 to the present. Emphasis on the social and cultural roots, and political consequences, of Progressivism, World War I, the Great Depression, World War II, the Sixties, and Post-Vietnam America. Pr.: Sophomore standing.

- HIST 532. History of American Criminology and Penology. (3) II, in alternate years. The course traces the history of American criminology and penology from colonial times to the present. Examines the growth of sport (especially in Europe and North America) including the growth of competition, the rise of mass spectator sports, elitism, and the changing function of sport. History of sport as business and history of the relationship between sport and other institutions. Same as KIN 515. Pr.: Sophomore standing.

- HIST 533. Topics in the History of the Americas. (1–3) In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in the history of North, Central, or South America. May be repeated for credit. Pr.: Sophomore standing.

- HIST 534. Social History of Medicine. (3) In alternate years. An exploration of the development of American social thought and practices regarding health care from colonial times to the present. The course stresses changing cultural attitudes toward disease as well as alterations in social practices and institutions related to healing. Special emphasis is given to the institutional development and professionalization of modern medicine. Pr.: Sophomore standing.

- HIST 535. Science and Religion in America. (3) I, in alternate years. Explores the interaction between scientific thought and religious belief in America from colonial times to the present. Major topics considered include the European background to the American experience; the Puritan outlook on scientific thought in the colonial period; the American enlightenment and revival experience; the reception of evolutionary thought and the rise of social Darwinism; the impact of social science and the social gospel; the relationship between science and fundamentalism in the twentieth century; and the new physics and new cosmology. Pr.: Sophomore standing.

- HIST 536. The American West. (3) I, in alternate years. Primary emphasis on the nineteenth century when American culture rapidly spreading across the continent. Also...
examines the earlier developments of the frontier and considers the twentieth century role of the trans-Mississippi region. Pr.: Sophomore standing.

**HIST 537. History of the Indians of North America.** (3) In alternate years. A discussion of Indian-white relations from the Great Plains; the development of that region in historic terms. Pr.: Sophomore standing.

**HIST 538. The Great Plains.** (3) II, in alternate years. Concentration on the one-fifth of North America identified as the Great Plains; the development of that region in historic terms. Pr.: Sophomore standing.

**HIST 539. African-American History.** (3) In alternate years. An overview of the African-American experience from the seventeenth century through the civil rights movement. Emphasizes social, legal, economic, political, and governmental aspects of black history as well as African-American contributions to American life and culture. Pr.: Sophomore standing.

**HIST 540. Women in America, 1600 to the Civil War.** (3) II, in alternate years. An overview of the history of American women from the end of the Civil War to the present. Examines women’s changing role in modern industrial society with special emphasis upon the women’s rights movement of both the nineteenth and twentieth centuries. Pr.: Sophomore standing.

**HIST 543. The United States and World Affairs, 1776–Present.** (3) I, in alternate years. History of U.S. foreign policy since 1776, focusing on the development of theory and institutions of the American state. Emphasis is given to the role of the United States in the world order, and class variations among women. Pr.: Sophomore standing.

**HIST 542. Women in America, Civil War to the Present.** (3) II, in alternate years. An overview of the history of American women from the end of the Civil War to the present. Examines women’s changing role in modern industrial society with special emphasis upon the women’s rights movement of both the nineteenth and twentieth centuries. Pr.: Sophomore standing.

**HIST 544. History of U.S.–Soviet Relations Since 1917.** (3) II, in alternate years. History of U.S.-Soviet relations since 1917 with emphasis on WWII and the New Diplomacy; from nonrecognition to recognition, 1921–1933; the Grand Alliance and WWII; origins of the Cold War; economic and atomic diplomacy; the Cuban missile crisis; and prospects for détente. Pr.: Sophomore standing.

**HIST 545. War in the Twentieth Century.** (3) In alternate years. Considers the military theory and practice, the technology, and the political and ideological constraints of World War I, World War II, the Korean War, the Indochine wars. Students are to gain an understanding of the varieties of military experience in the twentieth century, including civil wars, “total war,” and military technology. Pr.: Sophomore standing.

**HIST 546. History of American Military Affairs.** (3) In alternate years. Deals with the development of military institutions in colonial America and the United States, civil-military relations and conflicts between political constraints and strategic demands, popular attitudes toward the military, and the rise of the military-industrial complex. Pr.: Sophomore standing.

**HIST 548. American Business History.** (3) In alternate years. The rise and development of the major commercial, financial, industrial, and transportation enterprises in the United States from the colonial period to the present. Emphasizes the gradual specialization of business through the Civil War, the movement from specialization to combination and integration and transformation along vertical/horizontal lines, the conglomerate movement and the development of multinational enterprises after World War II II. Pr.: Sophomore standing.

**HIST 551. History of Family Violence.** (3) Intersession only. Explores the history of family violence in America as a social, cultural, legal, and public policy issue from the colonial times to the present. Emphasizes the role of family and the development of domestic law. The development of state-controlled social welfare agencies as well as the emergence of the “battered women’s movement” is particularly emphasized. Pr.: Sophomore standing.

**HIST 552. Studies in American Social History.** (3) In alternate years. Exploration in depth of one specific topic in American social history, such as the impact of immigration, the impact of economic change, the culture of the urban working class, the growth of unions, development of the family, of education, or of medicine. Topics vary. May be repeated for credit. Pr.: Sophomore standing.

**HIST 553. History of American Culture.** (3) II, in alternate years. Main emphasis is on political, religious, and social thought and ideology, 1600 to present. Pr.: Sophomore standing.

**HIST 554. History of the South.** (3) II, in alternate years. Topical analysis of important issues in Southern history. Compares the plantation myth of popular films with interpretations by important historians. Emphasis on plantation agriculture, slavery, race relations, class, and gender in the Old South. Post-Civil War topics include federal Reconstruction efforts, segregation, economic reform, and the modern Civil Rights movement. Pr.: Sophomore standing.

**HIST 555. American Constitutional History.** (3) II, in alternate years. Survey of constitutional and legal development from colonial times to the present. English constitutional ideas and the common law in the American colonies, formation of the Constitution, the role of the Supreme Court, development of the modern American legal system, growth of the legal profession, the problem of civil liberties. The course offers insight into the relationship of constitutional-legal institutions to American society. Pr.: Sophomore standing.

**HIST 556. Bill of Rights in American History.** (3) This course provides a topical survey of the American Bill of Rights from the colonial era to the present. It begins with the origins of American rights in England and colonial America. An analysis of the need for a Bill of Rights at the founding and Supreme Court interpretations in 1835 and during the Reconstruction era follow. The bulk of the course is concerned with the nationalization and expansion of the Bill of Rights in the twentieth century and its meaning in the everyday lives of American citizens. Pr.: Sophomore standing.

**HIST 557. History of American Agriculture.** (3) In alternate years. Concentrates on the period since 1850 in an attempt to acquaint the student with the political and economic history of American agriculture. No attempt will be made to present the scientific or technological side of agriculture in detail, but agriculture will be shown in relation to the life of the entire United States. The life of the farmer and his family, the relationship between agricultural changes and other parts of the economy will be part of this course. Special attention will be paid to agriculture in Kansas and the Great Plains. Pr.: Sophomore standing.

**HIST 558. History of Kansas.** (3) I, II. Land, people, and cultural developments in Kansas from the earliest written records to the present. Provides the student with an intimate understanding of the state of Kansas. Pr.: Sophomore standing.

**HIST 559. Latin American Nations.** (3) In alternate years. Survey of economic, social, and political developments of the Latin American nations from independence to the present decade with emphasis on Argentina, Brazil, Peru, Chile, and Mexico. Stresses reform and revolution of the last 50 years. Pr.: Sophomore standing.

**HIST 561. Colonial Hispanic America.** (3) In alternate years. Iberian and indigenous American background, exploitation, conquest, settlement, and development of Latin America. Stresses growth of mestizo culture, colonial styles of living, and wars of independence. Pr.: Sophomore standing.

**HIST 562. Modern Mexico.** (3) In alternate years. Brief survey of phases of national development, 1821–1910, and major emphasis on the twentieth-century revolution and its reforms (1910–1940) as well as its subsequent implications. Pr.: Sophomore standing.

**HIST 563. Topics in Comparative History.** (1–3) In alternate years. Topic of each section in detail of a particular theme, event, or problem in comparative history. Topics vary. May be repeated once for credit. Pr.: Sophomore standing.

**HIST 565. History and Culture of Greece.** (3) In alternate years. The rise of civilization in the ancient Near East, the migrations of the Greeks and the Heroic Age, the Greek city-states, commerce and colonization, the Persian invasions, Alexander the Great, and the fall of Greece and Sparta, Alexander the Great, and the total Hellenic achievement. Pr.: Sophomore standing.

**HIST 566. History and Culture of Rome.** (3) III, in alternate years. Examines the various theories of Rome’s origin, the rise of the Roman Republic, the alterations of Roman government, political and economic problems of Roman expansion, and the Roman world. Various reforms including those of the Gracchi, Caesar, and Augustus. Contact with Greece and the older areas of civilization. The Roman imperial system, the many causes of Rome’s fall, and Rome’s role as a synthesizer of the ancient classical culture. Pr.: Sophomore standing.

**HIST 567. Europe in the Middle Ages.** (3) In alternate years. Europe from the fall of the Roman Empire to the thirteenth century. Investigates the conflict and interaction of Roman, Christian, and Germanic ideals and attitudes in the early Middle Ages, and the increasing complexity and sophistication of society, culture, religion, and government of the high Middle Ages. Pr.: Sophomore standing.

**HIST 568. The Renaissance.** (3) In alternate years. The Italian Renaissance as a major phase in the history of Western civilization and its spread to northern Europe. Pr.: Sophomore standing.

**HIST 569. The Reformation.** (3) In alternate years. A study of the Protestant, Catholic, and Radical Reformations with special attention to Luther, Calvin, the origins of the Church of England and the Presbyterian Church, the Anabaptists, the Puritans, and Roman Catholic Reform, and the impact of religious differences upon the political, economic, social, and intellectual history of the Western World. Covers the period from approximately 1500 to 1660. Pr.: Sophomore standing.

**HIST 570. Europe in the Seventeenth Century.** (3) I. In alternate years. Surveys the economic, social, political and intellectual history of western Europe in the seventeenth century, a period marked by economic depression, international conflict, and domestic revolutions as well as by cultural achievement. Emphasizes the complex interaction among social groups; the rise of a European state system; the development of constitutional monarchy in England and absolute monarchy in France; and the changes in values generated by the scientific revolution. Pr.: Sophomore standing.

**HIST 571. Revolutionary Europe.** (3) In alternate years. Europe from the death of Louis XIV in 1715 to the fall of Napoleon in 1815. The origins and development of the French Revolution and the Napoleonic legacy, also examines reform and counter-revolutionary movements in Ireland, Italy, Russia, Poland, and the Germanies. Pr.: Sophomore standing.

**HIST 572. Nineteenth Century Europe.** (3) In alternate years. The history of Europe from the French Revolution to the end of the first World War. Major topics covered will include the rise of conservatism as an ideology and its application in practice, the nature of liberalism and socialism, the impact of science and technology, the origins and course of World War I. Pr.: Sophomore standing.

**HIST 573. Twentieth Century Europe.** (3) In alternate years. Examines the political, economic, social, and intellectual developments of Europe in the period of the two world wars. Emphasis on the failure of democracy and the rise of competing antidemocratic and nondemocratic mass movements and ideologies. The course will also deal with the attempted system of collective security, its failure, and the origins and course of World War II. Pr.: Sophomore standing.

**HIST 574. Europe since World War II.** (3) In alternate years. Postwar European society, politics, economy, and culture. The effects of total war on the population; reconstruction and reconstruction. The rise of the EEC, the O.N.U. and U.S.S.R. on Europe. Capitalism, socialism, and communism in technological society. European unity movements and their conflicts with traditional values.

**HIST 576. European International Relations to 1815.** (3) In alternate years. The nature, evolution, and function of the diplomatic system for the Ancient World to 1815.
HIST 577. European International Relations Since 1815. (3) In alternate years. The diplomatic, military, political, cultural, and social aspects of the Holy Roman and Hapsburg empire in Central Europe from its foundation to its dissolution in the twentieth century. Pr.: Sophomore standing.

HIST 579. The British Isles to 1603. (3) In alternate years. English, Scottish, and Irish culture in the medieval and pre-modern periods. Early folk societies, feudalism, the church in Ireland, and political institutions and the religious reforms are studied topically. Pr.: Sophomore standing.

HIST 580. The British Isles Since 1603. (3) In alternate years. English society and politics in modern times with reference to Scotland and Ireland. Emphasis on topics such as the three orders of society (king, lords, and commons), the churches and religion, the appearance of parliamentary sovereignty, the industrial revolution, and the extension of democratic institutions. Pr.: Sophomore standing.

HIST 582. Eastern Europe Since 1914. (3) The growth of nationalism, the formation of nation-states after World War I, the devastation of World War II, the establishment of Soviet rule, the dramatic revolutions of 1989, and Yugoslavia’s ethno-national wars. Pr.: Sophomore standing.

HIST 583. History of France, 1400–1715. (3) In alternate years. France from the conclusion of the Hundred Years War to the death of Louis XIV. French economy, society, and royal administration, and the changes generated in these areas by significant events: the Reformations and the Wars of Religion; the rise of France to world power; peasant uprisings and constitutional crisis; and the reforms of Richelieu, Colbert, and Louis XIV. Trends in art, architecture, and urban development. Pr.: Sophomore standing.

HIST 584. History of France since 1715. (3) In alternate years. France from the death of Louis XIV to the present. The impact of the French Revolution and the Napoleonic legacy on the agrarian economy and aristocratic society of the eighteenth century; the evolution of liberalism and socialism; the development of parliamentary democracy and the impact of the Industrial Revolution; the French response to the devastation of World War I; the humiliation of World War II, and the colonial wars of the 1950s and 1960s. Pr.: Sophomore standing.

HIST 585. Medieval Religion and Politics. (3) In alternate years. The interrelationship of religion and politics from the late Roman Empire to the Conciliar Epoch. Christianity in the Roman Empire and the barbarian kingdoms, the development of royal theocracy, the rise of the papacy, the conflict of church and state, the secularization of government, the Avignon papacy, the Great Schism, and conciliarism. Pr.: Sophomore standing.

HIST 586. Advanced Seminar in History. (3) I, II. An undergraduate seminar that focuses on the intellectual principles of the historical discipline as well as the fundamental research techniques and writing skills used by historians. Each section of the seminar will center on a particular topic or historical problem. The students will prepare a research project pertinent to the seminar topic. All history majors must take this seminar to complete the requirements for their degree. Pr.: Six hours of history courses at or above the 500 level.

HIST 587. Nineteenth-Century Imperial Germany. (3) In alternate years. Central Europe in the French Revolutionary and Napoleonic era, the revolutions of 1848, German unification, imperial Germany, emphasizing social changes, especially the transition from agrarian to industrial society. Pr.: Sophomore standing.

HIST 588. Rise and Fall of Nazi Germany. (3) In alternate years. Examines the political, social, economic, and intellectual developments in Germany from World War I to the end of World War II. The establishment of the Weimar republic, the natures of its democratic system, the functioning of cultural activities and the attack on democratic theory and practice leading to the establishment of totalitarian dictatorship. National Socialism and its leader and alternative interpretations of National Socialism. Pr.: Sophomore standing.

HIST 590. History through Film. (3) I, in alternate years. A study of full-length, major production films to show how films can enhance, distort, or obscure our understanding of the past. Emphasizes historical development, using motion pictures as social documents.

HIST 591. The Russian Empire. (3) In alternate years. Imperial Russia from the earliest Slavic tribes through 1881, with emphasis on Russia’s heritage as a multi-ethnic state and the phenomenon of Russia’s revolutionary intellectual. Pr.: Sophomore standing.

HIST 592. Twentieth-Century Russia. (3) II, in alternate years. The turbulent history of modern Russia, including the upheaval of the Russian Revolution and Civil War, Stalin’s transformation of Soviet society, World War II, failed attempts to transform the Soviet system, and the fall of the Soviet Union. Pr.: Sophomore standing.

HIST 593. The Vietnam War. (3) In alternate years. This course examines the origins, actions and consequences of the Indochina wars fought by the French, Japanese, and Americans during the last century. Particular emphasis is placed on America’s experience in Southeast Asia. Videos from the PBS series: “Vietnam: A Television History,” are used in the course. Pr.: Sophomore standing.

HIST 596. Holocaust: The Destruction of the European Jews. (3) I, in alternate years. Analysis of the attempts by the National Socialist government of Germany to exterminate the Jewish population of Europe. Major issues discussed will include: nineteenth-century anti-Semitic and anti-Semitic movements; Hitler’s concept of anti-Semitism and personal sources of Hitler’s genocidal policy; evolution of the genocidal policy and its implementation; Jewish resistance and collaboration; long-range consequences of the Holocaust. Pr.: Sophomore standing.

HIST 597. Topics in European History, (1–3) In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in European history. Topics vary. May be repeated for credit. Pr.: Sophomore standing.

HIST 598. Topics in Non-Western History, (1–3) On sufficient demand. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in non-Western history. Topics vary. May be repeated for credit. Pr.: Sophomore standing.

HIST 599. Senior Seminar for Secondary Teachers. (3) II: Analysis of the historical content of teaching materials currently in use at the secondary level in public schools to determine the historical validity of the materials. Pr.: Sophomore standing.

HIST 648. Naval History. (3) I or II, in alternate years. Ships, technological developments, navies, tactics, warfare, strategy, and the interrelationship between naval thinking and national and international politics. Pr.: Junior standing or consent of instructor.

HIST 649. Introduction to the History of Aviation. (3) In alternate years. The development of aviation since the Wrights, providing a world view of man’s conquest of the air in both human and technological terms including the development of military, commercial, and general aviation. Pr.: Junior standing or consent of instructor.

HIST 650. Internship in History. (3) I, II, S. Practical professional experience involving at least three weeks in an archival, museum, historical library, or business. Student projects must be approved in advance and a report submitted at the end of the work period. May be repeated once for credit. Pr.: Junior standing.

HIST 703. Overseas European Studies. (2–3) Intersession only, in alternate years. Short-term, intensive, and in-depth study of various aspects of European history and culture with readings, lectures, discussions, and on-the-spot experiences which will relate historical events to the places visited. Pr.: Senior or graduate standing.

HIST 798. Readings in History. (1–3) Students will read on a central theme, attend weekly discussions, and write a final report.

HIST 799. Problems in History. (Var.) Intensive study of a particular phase of history. Students will attend weekly discussions and write a major research paper on their findings.

## Journalism and Mass Communications

Todd Simon, *Director


The study of mass communications provides students with the tools to function effectively in an information-intensive society, whether as creators or as consumers of information.

Students follow a general course of study in the College of Arts and Sciences and a specialized professional curriculum in the A.Q. Miller School of Journalism and Mass Communications. The general college curriculum prepares students to be knowledgeable persons in a complicated world. The professional curriculum educates students in skills, theory, law, ethics, and other essentials for a mass communications career.

The program offers a hands-on education that provides students with practical experience. Students can serve on the staffs of the Kansas State Collegian, the student newspaper published five days a week, and the Royal Purple yearbook. Twice, the Collegian and the Royal Purple have simultaneously won the prestigious national Pacemaker Awards, a combination achieved by only one other school.

Majors also have access to campus radio station KSDB-FM and to television studio and field equipment for producing programming for cable television.

The school is national headquarters of the Journalism Education Association for high school journalism educators and has created the Huck Boyd National Center for Community Media. The school offers more than $65,000 in scholarships each year to its outstanding majors, and students participate in the Society of Collegiate Journalists, the Advertising Club, the Public Relations Student Society of America, the Society of Professional Journalists, and Mass Communicators of Many Cultures.
The program is housed in Kedzie Hall, with radio-televison studios and offices in McCain Auditorium and in Bob Dole Hall.

Updated information on the school’s faculty and curriculum is available on the World Wide Web at jmc.ksu.edu.

**Entrance requirements**

To become a major, a student must have a 2.5 GPA based on at least 30 hours at the 100-level or above. A transfer student must have a 2.5 GPA on transferable coursework, plus a 2.5 GPA on at least 12 hours at K-State, for a total of 30 hours. If a transfer student does not have a transferable 2.5 GPA, the student must complete a 2.5 GPA on 30 hours at K-State to become a major.

While awaiting eligibility to become a major, all freshmen and new transfer students from other institutions are eligible to be a pre-major.

**Mass communication major**

Requirements for a mass communication major consist of 39 credit hours in the School of Journalism and Mass Communications and a total of 126 hours. National accreditation standards require all mass communication graduates to complete at least 3 hours of course work outside the school, with at least 45 hours of that coursework in the basic liberal arts and sciences.

A student must fulfill the general requirements of the College of Arts and Sciences for either the B.A. or the B.S. degree, in addition to completing ECON 110 Principles of Macroeconomics.

Beyond this, a student selects a 15-hour outside concentration. Two of the outside concentration courses must be advanced (500-level or above, or requiring a prerequisite course that the student has taken). Up to two of the courses also may apply toward general arts and sciences requirements.

To graduate, a student must achieve a 2.5 GPA in courses within the school.

Students in the A.Q. Miller School of Journalism and Mass Communications must complete the requirements of one of the school’s sequences in journalism, advertising, public relations, and radio-television.

A curriculum guide for majors and pre-majors is available in the K-State Student Union Bookstore.

**Print journalism**

- **MC 235** Mass Communication in Society .......... 3
- **MC 400** News and Feature Writing .................. 3
- **MC 440** Editing and Design ........................... 3
- **MC 500** Advanced News and Feature Writing ...... 3
- **MC 540** Advanced Editing and Design .......... 3
- **MC 565** Law of Mass Communications ............... 3
- **MC 595** Mass Communication Research .......... 3

Select one of the following:

- **MC 600** Public Affairs Reporting ................... 3
- **MC 535** Photojournalism ............................. 3

**Electronic journalism**

- **MC 235** Mass Communication in Society .......... 3
- **MC 400** News and Feature Writing .................. 3
- **MC 500** Advanced News and Feature Writing ...... 3
- **MC 505** Electronic News Reporting ................. 3
- **MC 585** Advanced Electronic News Reporting ........ 3
- **MC 565** Law of Mass Communications ............... 3
- **MC 595** Mass Communication Research .......... 3

Select one of the following:

- **MC 550** Journalism Internship ........................ 3
- **MC 570** Audio Techniques ................................ 3
- **MC 580** Video Techniques .............................. 3
- **MC 600** Public Affairs Reporting ................... 3

**Electives (at least 3 hours at 500-level or above) ........... 12–14**

**Advertising**

- **MC 235** Mass Communication in Society .......... 3
- **MC 320** Principles of Advertising ................... 3
- **MC 420** Advertising Writing .......................... 3
- **MC 545** Advertising Media Planning ................. 3
- **MC 555** Advertising Techniques ....................... 3
- **MC 565** Law of Mass Communications ............... 3
- **MC 595** Mass Communication Research .......... 3
- **MC 610** Advertising Campaigns ...................... 3

Select one of the following:

- **MC 520** Newspaper Advertising Sales ............... 3
- **MC 525** Electronic Media Advertising Sales .......... 3

**Electives (at least 3 hours at 500-level or above) ........... 12–14**

**Public relations**

- **MC 235** Mass Communication in Society .......... 3
- **MC 325** Fundamentals of Public Relations ............ 3
- **MC 400** News and Feature Writing .................. 3
- **MC 440** Editing and Design ........................... 3
- **MC 445** Public Relations Writing ...................... 3
- **MC 565** Law of Mass Communications ............... 3
- **MC 595** Mass Communication Research .......... 3
- **MC 615** Public Relations Techniques ................. 3
- **MC 645** Public Relations Campaigns ................. 3
- **MC 550** Public Relations Internship .................. 1–3

**Electives (at least 3 hours at 500-level or above) ........... 9–11**

**Radio-television**

- **MC 235** Mass Communication in Society .......... 3
- **MC 410** Writing for Electronic Media ................. 3
- **MC 475** Concepts of Electronic Production .......... 3
- **MC 490** Junior Seminar in Electronic Media ......... 3
- **MC 565** Law of Mass Communications ............... 3
- **MC 595** Mass Communication Research .......... 3
- **MC 550** Radio-TV Internship .......................... 1–3

Select one of the following:

- **MC 570** Audio Techniques ............................. 3
- **MC 575** Multimedia Techniques ....................... 3
- **MC 580** Video Techniques .............................. 3

**Select one of the following:**

- **MC 525** Electronic Media Advertising Sales .......... 3
- **MC 655** Electronic Media Programming ............... 3
- **MC 685** Electronic Media Management ................ 3

**Electives (at least 3 hours at 500-level or above) ........... 12–14**

**Credit through quiz-out**

Any student may apply to test out of professional practice courses in journalism and mass communications by presenting to the appropriate sequence head a portfolio, tapes, or other suitable evidence of performance that would allow assessment of course-related experience. After review of the material, the sequence head may refer the application to the appropriate instructor who will determine the number of credit hours, if any, and the method of examination or evaluation to be employed to determine whether credit shall be given. Such credit shall be granted on a Credit/No Credit basis. No more than 12 semester hours may be earned through quiz-out and at least 24 of the student’s journalism credit hours must be K-State resident hours.

**Transfer course work**

Students may transfer a maximum of 12 semester hours in the major. Courses in journalism and mass communications above the 12-hour maximum will not be accepted as electives outside the major and will not be accepted as part of the graduation requirement. No journalism and mass communications course will transfer to K-State without a grade of C or better.

When transfer students present an accumulation of credits in courses that consist of laboratory work, the school may accept a maximum of 3 credit hours for such work, equivalent to courses such as Publications Practice.

No transfer credit will be given for Editing and Design, Advanced News and Feature Writing, or Law of Mass Communications unless such work was taken at a college or university accredited by the Accrediting Council on Education in Journalism and Mass Communications.

**Mass communications courses**

- **MC 010. Pre-Major Orientation.** (0-0) I. An orientation to studies in mass communications for pre-majors. Provides an overview of the curriculum electives, extracurricular activities in mass communications, the advising process, and career options.


- **MC 300. Journalism in a Free Society.** (3) II. Emphasizes the role of journalism in building an informed citizenry in a democracy, serving as a watchdog of government, providing news in a context that gives meaning to the people, and being socially responsible in the midst of a changing economic structure. Open to majors and nonmajors.

- **MC 305. Radio-Television and Society.** (3) I. Influence of electronic media in today’s culture. Examination of the dynamics of telecommunications including production techniques. Open to majors and nonmajors.

- **MC 320. Principles of Advertising.** (3) I, II. An examination of the advertising field and its relationship to marketing and journalism. Open to majors and nonmajors.

- **MC 325. Fundamentals of Public Relations.** (3) I, II. Contemporary persuasive social science principles, pro-
cesses, and issues involved in the management of communications between an organization and its publics. Open to majors and nonmajors.

MC 360. Publications Practice. (1–4) I, II. Practical work in newspaper and yearbook production, and photography on student-initiated projects under supervision of an instructor. Three hours lab a week for each hour of credit.

MC 365. KSDB Audition. (0) I, II. S. Production of music, news, and/or sports audio tapes to be evaluated by faculty in preparing students for an on-air position with KSDB-FM.

MC 399. Honors Seminar in Mass Communications. (3) Pr.: Honors students only.

MC 400. News and Feature Writing. (3) I, II. S. Instruction in information gathering and writing techniques for the various media. Pr.: MC 235 and a 2.5 GPA upon completion of 30 or more hours. Typing proficiency is necessary.

MC 410. Writing for the Electronic Media. (3) I, II. Study of forms and the preparation of written material for news, commercial announcements, and promotion for the electronic media, and of the regulations concerning advertising copy. Pr.: MC 235 and a 2.5 GPA upon completion of 30 or more hours. Typing proficiency is necessary.

MC 420. Advertising Writing. (3) I, II. Fundamentals of writing for the various media to solve advertising problems. Setting communication goals within the context of writing to persuade and inform mass audiences. Pr.: MC 235 and 320, and a 2.5 GPA upon completion of 30 or more hours. Typing proficiency is necessary.

MC 430. Digital Photography for the Mass Media. (3) I, II. Basic camera and laboratory techniques of photography. Pr.: 2.5 GPA upon completion of 30 or more hours.

MC 440. Editing and Design. (3) I, II. Survey of graphic arts principles, fundamentals of the editing process, and the relationship to the elements of newspaper design and the editing function. Pr.: MC 400 with grade of C or better and a 2.5 GPA upon completion of 30 or more hours.

MC 445. Public Relations Writing. (3) I, II, S. Examines various forms of contemporary public relations writing, with special emphasis on preparation of messages for different media and audiences. Pr.: MC 325 and MC 400 with a grade of C or better.

MC 450. Topics in Mass Communications. (1–3) I, II. Selected topics in the study of mass communication practices and principles. May be repeated for credit when topic varies.

MC 460. KSDB Participation. (1–3) I, II. S. Supervised participation in the university’s student FM radio station, emphasizing music announcing, board production, recorded production, news and sports play-by-play, and FCC operating regulations. Pr.: MC 365.

MC 475. Concepts of Electronic Media Production. (3) I, II. Covers aesthetics, vocabulary, and preproduction planning for audio, video, and multimedia production, with an emphasis on developing critical analysis skills. Pr.: MC 400, 410, or 420 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 485. Video Participation. (1–3) Supervised participation in program production for entertainment, news, and corporate videos. Scripted, supervised group projects. Three hours of lab participation a week required for each hour of credit. Pr.: MC 475.

MC 490. Junior Seminar in Electronic Media. (3) I, II. S. Issues in electronic media, including regulation, law, technology, and programming. Preparation for careers in the electronic media. Pr.: MC 410 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 499. Senior Honors Thesis. (2) Pr.: Honors students only.

MC 500. Advanced News and Feature Writing. (3) I, II. Intensive course emphasizing reportorial principles and practices, and professional practice in gathering news and features. Pr.: Kansas State Collegant, writing for an audience of 20,000 readers daily. Pr.: MC 440 with grade of C or better.

MC 505. Electronic News Reporting. (3) I. Practical experience in gathering, writing, editing, producing, and presenting news for the electronic media, and study of related issues. Pr.: MC 500 with grade of C or better.

MC 510. Yearbook Editing and Management. (2) I. Planning, editing, layout, writing, and financing a publication.

MC 520. Newspaper Advertising Sales. (3) I. Basics of retail advertising applied to newspapers including sales, design, copy writing, production, budgeting, and legal and ethical issues. Pr.: MC 320 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 525. Electronic Media Advertising Sales. (3) I, II. Retail advertising applied to radio, television, and cable systems. Retail ad campaigns, media buying, selling techniques. FTC and FCC ad regulations covered. Pr.: MC 320 or MKTG 400 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 530. Media, Race, and Social Change. (3) Examines how the media cover social change, particularly racial issues, and studies the development and current status of selected ethnic media in the United States. Pr.: Junior standing.

MC 535. Photojournalism. (1–3) The materials, principles, and processes of photography directed toward visual reporting in newsprint and other media. Content and credit vary. Potential topics include documentary picture story, essay, and sequence; spot news, feature, and sports photography; combining words and pictures effectively; marketing techniques; legal restrictions. Lectures, demonstrations, and laboratory. Pr.: MC 400 and 430 with grades of C or better. May be repeated for a maximum of 4 semester hours.

MC 540. Advanced Editing and Design. (3) I, II. Advanced study of the editing processes with emphasis on handling the story, writing headlines, use of all elements for packaging the news, and creative use of the editing tools. Students work on the Kansas State Collegen about six hours each week. Pr.: MC 500 with grade of C or better.

MC 545. Advertising Media Planning. (3) I, II. The selecting, scheduling, and buying of the various advertising media. Pr.: MC 420 with grade of C or better.

MC 550. Mass Communications Internship. (1–3) I, II, S. The student works in a professional capacity under proper professional and faculty supervision with reports from student and supervisor required. Pr.: 12 specified semester hours of MC courses and consent of instructor.

MC 555. Advertising Techniques. (3) I, II, S. The planning, creation, and production of advertising messages for the various mass communication media. Pr.: MC 420 with grade of C or better.

MC 565. Law of Mass Communications. (1–3) I, II, S. A study of legal issues relating to mass communications. Emphasis on defamation, privacy, copyright, administrative controls, and other areas related to the mass media. Pr.: Junior standing, with a 2.5 GPA.

MC 570. Audio Techniques. (3) I, II. Theory and practice of radio remote, automation, and multimedia recording and editing in the production of commercials, dramatic narrative, documentary programs, and multimedia. Pr.: MC 475 with grade of C or better.

MC 575. Multimedia Techniques. (3) I. Theory and practice of multimedia mass communication, with an emphasis on preproduction planning and development of computer-based audio, video, and graphic materials. Pr.: MC 475, MC 500, MC 555 or MC 635 with grade of C or better.


MC 595. Mass Communication Research. (3) I, II. Formulation of mass communication research design and execution. Appropriate methods of data collection and data analysis. Pr.: MC 235, a 2.5 GPA upon completion of 30 or more hours, and completion of a mathematics or statistics course.

MC 600. Public Affairs Reporting. (3) I, II. Investigative reporting of local, state, and national affairs. Pr.: MC 500 with grade of C or better.

MC 605. Supervision of School Publications. (3) A methods course for those planning to teach secondary or community college journalism classes and advise high school or community college publications.

MC 612. Gender Issues and the Media. (3) I, II. The portrayal of women and men by the media, and media employment issues based on gender. Pr.: Junior standing and one course in MC or women’s studies.

MC 615. Magazine Article Writing. (3) I. Preparation of feature stories and articles; techniques of market analysis, and marketing of articles written in course. Pr.: MC 500.

MC 620. Magazine Production. (3) I, II. The practical application of theory to writing, editing, graphic reproduction, layout, and management of magazines. Pr.: MC 500.

MC 630. Public Relations Case Studies. (3) Study of historic and contemporary public relations situations using a case-method approach. Attention is directed at strategic planning and implementation by public relations managers. Students establish criteria on what constitutes a public relations campaign, and and institutional advertising campaigns. Pr.: MC 545, 555, and 595 with grades of C or better; senior standing.

MC 640. Advertising Campaigns. (3) I, II. The management and development and execution of consumer, industrial, and institutional advertising campaigns. Pr.: MC 545, 555, and 595 with grades of C or better; senior standing.

MC 645. Public Relations Campaigns. (3) I, II. Advanced study of an organization’s public relations needs. Includes researching the situation, analyzing audiences, and preparing strategic plans for approved clients. Pr.: MC 595 and 635 with grades of C or better.

MC 650. Newspaper Management. (3) I, II. The management of newspapers dealing with organization, ownership, promotion, research, production, equipment, marketing, personnel, legal aspects, advertising, buying, and selling of newspaper properties, business practices, and news policy. Pr.: MC 540 or concurrent enrollment.

MC 655. Electronic Media Programming. (3) I, II. The principles, planning, and development of radio-television-cable programming, schedules, and contests. Pr.: MC 410 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 670. Advertising and Social Responsibility. (3) Examines social, ethical, and legal issues and problems facing the advertising industry, and its relationship to the consumer. Pr.: Junior standing with a 2.5 GPA and completion of MC320.

MC 680. Readings in Mass Communications. (1–4) I, II. Investigation of the literature of mass communications. Three books per credit hour. Pr.: Senior or graduate standing and consent of professor.

MC 685. Electronic Media Management. (3) I, II. I. Management practices of broadcast, cable, and nonbroadcast facilities including regulation and sales. Pr.: MC410 or MANGT 420 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 690. Problems in Mass Communications. (1–4) I, II. Pr.: Background of courses needed for problem undertaken.

MC 705. Fund Raising by Non-Profit Organizations. (3) I. Theory and practice of fund raising as a function of public relations in non-profit organizations. Focuses on why and how people give to philanthropic causes. Pr.: Graduate standing, or senior standing with a 2.5 GPA and completion of MC 325.

MC 710. History of Journalism. (3) I, II. Growth and development of the news media in the United States and
their economic, political, and social significance. Pr.: Graduate standing, or senior standing with a 2.5 GPA and completion of a U.S. history course.

MC 715. History of the Electronic Media. (3) I. Growth and development of the electronic media in the United States and their economic, political, and social significance. Pr.: Graduate standing, or senior standing with a 2.5 GPA and completion of a U.S. history course.

MC 720. Ethics in Mass Communications. (3) I. Moral analysis, argument, and decision-making by the mass communicator, with linkage of ethics to the conduct of media professionals in the United States. Pr.: Graduate standing, or senior standing with a 2.5 GPA and completion of a philosophy course.

MC 725. International Communications. (3) I. Comparative study of world media systems and the role of mass communications in national development. Pr.: Graduate standing, or senior standing with a 2.5 GPA.

MC 730. Seminar on Issues in the Media. (3) A study of philosophical and technological advances in mass communications with emphasis on projected patterns of future growth and development. Pr.: Graduate standing, or senior standing with a 2.5 GPA.

MC 740. Colloquium in Mass Communications. (1–3) Discussion of selected topics in mass communications research and practice. May be repeated once for credit when topic varies. Pr.: Senior or graduate standing.

MC 765. Communication Theory. (3) I. An examination of major communication theories as they relate to mass communications. Pr.: Graduate standing, or senior standing with a 2.5 GPA.

MC 770. Professional Journalism Practicum. (1–4) For advanced students. Supervised practical work in professional journalism and mass communications. Includes laboratory investigation, field work, and internships. Pr.: MC 440 or 505 and consent of supervising instructor.

MC 780. Research Methods in Mass Communications. (3) I. Survey of research methods used in the study of the mass media. For graduate students.

Kinesiology

David A. Dzwaltowski, * Head

www.ksu.edu/kines

Kinesiology is the study of human movement across a range of tasks including exercise, daily living, play, sport, and work. Course work integrates biological and behavioral approaches using biomechanical, physiological, psychological, and sociological perspectives to study human movement from cell to society.

Kinesiology promotes an understanding of the necessity of movement activities for an individual’s physical and psychological health.

Kinesiology

Students may earn a B.A. or B.S. degree in kinesiology and a B.S. dual degree with majors in nutrition and exercise sciences. Graduates seek careers in corporate and community settings in fitness and wellness and in hospital settings in cardiopulmonary rehabilitation.

Many students enter graduate and professional schools for preparation for careers in physical therapy, pharmacy, medicine, dietetics, biomechanics, exercise physiology, sport psychology, sport sociology and other related fields. Kinesiology majors must take a minimum of 35 kinesiology hours that include 20 hours from the lower level core, 9 hours from the upper level core (one course from Categories A, B, or C), and the remaining 6 hours from the upper level core and/or elective kinesiology courses at the 300 level or above.

A minimum grade of C and GPA of 2.2 are required for all kinesiology courses meeting degree requirements.

Lower-level core (20 hours)

KIN 220 Biobehavioral Bases of Exercise 3
KIN 250 Measurement and Research Techniques 3
KIN 330 Biomechanics 3
KIN 335 Physiology of Exercise 4
KIN 336 Physiology of Exercise Lab 1
KIN 340 Physical Activity in Contemporary Society 3
KIN 345 Psychological Dynamics of Physical Activity 3

Upper-level core (9 hours; one course each from Category A, B, C)

Category A (Select one course from the biological basis of human movement)

KIN 601 Cardiorespiratory Exercise Physiology 3
KIN 603 Cardiovascular Exercise Physiology 3
KIN 605 Topics in Biological Basis of Kinesiology 3

Category B (Select one course from the behavioral basis of human movement)

KIN 600 Exercise Psychology 3
KIN 602 Gender Issues in Sport and Exercise 3
KIN 604 Exercise and Mental Health 3
KIN 606 Topics in the Biobehavioral Basis of Kinesiology 3

Category C (Select one course from the following list that integrates the biological and behavioral bases of human movement)

KIN 590 Seminar in Kinesiology 3
KIN 630 Design and Analysis of Exercise and Sport Equipment 3
KIN 635 Nutrition and Exercise 3
KIN 650 Development of Motor Control 3
KIN 657 Therapeutic Use of Exercise in the Treatment of Disease 3

Basic science prerequisites

Prerequisites for several of the Category A, B, and C courses are identified in the course descriptions. Below is an overview of basic science prerequisites. Courses in biochemistry and chemistry are strongly encouraged for some areas of study.

BIOL 198 Principles of Biology 4
BIOL 340 Structure and Function of the Human Body 8
MATH 100 College Algebra 3
MATH 150 Trigonometry 3
PHYS 113 General Physics I 4
PSYCH 100 General Psychology 3
PSYCH 211 Measurement and to Sociology 3

Pre-professional curricula

Students seeking admission to physical therapy, medical, and other health professional schools may major in kinesiology (or another discipline) provided the required pre-professional course work is completed. Students should seek a pre-professional health professions advisor from the College of Arts and Sciences dean’s office and a kinesiology advisor for proper planning to meet academic and professional goals.

Emphasis in fitness promotion

This emphasis prepares students to design, implement, and administer physical fitness programs in YMCAs, private corporations, hospitals, clinics, and fitness clubs. Included is course work in basic nutrition, nutrition and exercise, exercise testing and prescription, adult exercise programs, and supervised field experiences. Students completing this course work are prepared to seek certification from the American College of Sport Medicine as an exercise professional.

Dual degree in nutrition and exercise science

This degree provides preparation for professional careers in wellness and careers that interface the roles of nutrition and physical performance. Principles of nutrition, food science, community nutrition, clinical nutrition, concepts of personal health, and nutrition needs throughout the life cycle are included in this degree. Consult with advisors in the Department of Foods and Nutrition and Kinesiology for more detailed information.

Kinesiology courses

The following courses may be taken by students majoring in kinesiology or other students meeting prerequisite requirements.

KIN 200. Kinesiology: An Introductory Analysis. (3) A survey of key areas of study within kinesiology emphasizing the multifaceted nature of the field; to encourage an understanding and appreciation of the disciplinary, professional, and personal perspectives of the subject.


KIN 206. Water Exercise and Water Exercise Instructor Training. (1) Skills and knowledge to develop competency in participating, designing, and leading different types of water exercise, as well as administering all aspects of water fitness classes. One hour lec. and one hour lab each week. Pr.: KIN 104.

KIN 220. Biobehavioral Bases of Exercise. (3) I, II.

A critical examination of the role and impact of physical activity in contemporary society. Current perspectives from the biological and behavioral domains of kinesiology will be used to explore the significance of physical activity with particular emphasis placed on implications for health-related fitness. Theory and research will be used to help students make personal applications conducive to lifelong commitment to physical activity. Topics include health-fitness assessment, physiology of physical activity, biomechanics of physical activity and social/psychological determinants of sedentary vs. physically active lifestyles. Two hours of lec. and two hours of lab experiences.


KIN 320. Motor Learning and Development. (3) Issues of motor learning and development as they relate to the application of instructional techniques. Two hours lecture and two hours lab a week. Pr.: PSYCH 110 or EDUC 215.

KIN 325. Introduction to Physical Culture in the Western World. (3) A survey of the historical and philosophical foundations of physical culture in western civilization.

KIN 335. Physiology of Exercise. (4) I. The responses of the human body to exercise. Emphasis will be placed on understanding the structure-function relationships of the respiratory, cardiovascular, and muscular systems and how their function is integrated to support the dynamics of muscular contraction. Limitations to exercise performance will be examined in health and disease and the adaptability of the human body to physiological (i.e., exercise training) and environmental (e.g., hypoxia) stressors will be examined. Four hours lecture per week. Pr.: BIOL 340.

KIN 336. Physiology of Exercise Lab. (1) II. A laboratory course to supplement the material of KIN 335. Two hours lab per week. Pr.: KIN 335 or core enrollment.

KIN 340. Physical Activity in Contemporary Society. (3) I, II. Theories and research on the social significance of physical activity in American Society. Includes a focus on play, games, sport, fitness, and exercise in contemporary society. Pr.: SOCIO 211.

KIN 345. Psychological Dynamics of Physical Activity. (3) I, II. Theories and research on the cognitive, emotional, and behavioral dynamics of physical activity and their application to changing behavior in a movement context. Pr.: PSYCH 110.

KIN 398. Topics in Kinesiology. (1–3) On sufficient demand. Study of a selected topic in an area not covered in the curriculum or involving application of theory presented in a related subject core course. May be repeated as topic varies. Pr.: KIN 399. Honors Seminar. (1–3) Selected topics in kinesiology. Open to nonmajors in the honors program.

KIN 405. Choreographing Aerobic Dance and Exercise Routines. (2) A study of choreography and methodology in teaching aerobic dance and exercise routines in various educational settings with emphasis on preparation and progression of routines. Selecting music, designing routines, and methods of presenting to various age groups. Pr.: KIN 330 and 335.

KIN 430. Practicum in Lifetime Sports. (2) I, II. Supervised students assist in lifetime sports classes. Four hours lab a week. Pr.: Junior standing and appropriate background for problem undertaken.

KIN 498. Honors Tutorial in Kinesiology. (1–3) I, II. Individually directed research in kinesiology, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of three hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of instructor.

KIN 515. History of Sport. (3) The historical development of sport (especially in Europe and North America) including the growth of competition, the rise of mass spectator sports, elitism, and the changing function of sport. History of sport as business and history of the relationship between sport and other institutions. Cross-listed with History, see HIST 515.

KIN 520. Practicum in Exercise Science. (1–3) I, II. Practical experiences in the fitness setting such as observation and participation in exercise testing and prescription, exercise leadership, and record keeping and program management. Pr.: Consent of instructor.

KIN 598. Topics in Kinesiology. (1–3) On sufficient demand. Study of a selected topic in kinesiology involving either an in-depth study or application of theory presented in a related core course. May be repeated as topic varies. Pr.: Related core course.


KIN 600. Exercise Psychology. (3) I. An examination of the theory and research related to the biopsychosocial antecedents of exercise participation. Topics will include exercise motivation, models of exercise perception and intervention strategies used to increase exercise participation. Pr.: KIN 250, KIN 340 and KIN 345.

KIN 601. Cardiorespiratory Exercise Physiology. (3) I. An examination of the structure and function of the respiratory system and the manner in which oxygen passes from the atmosphere to its site of utilization in the mitochondria. Exercise and environmental stresses will form the basis for examining the capacity, plasticity, and limitations to respiratory function. Pr.: KIN 250 and KIN 335. Cross-listed with Anatomy and Physiology.

KIN 602. Gender Issues in Sport and Exercise. (3) An examination of the impact of exercise and fitness trends on women in contemporary society with particular emphasis on how society presents obstacles to exercise and fitness. Topics include the relationship between exercise patterns and family structure, cosmetic fitness, eating disorders, and social class. Pr.: KIN 250, KIN 340, and KIN 345.

KIN 603. Cardiovascular Exercise Physiology. (3) I. Study of the structure and function of the cardiovascular system as it pertains to acute and chronic exercise. Topics include the control of blood pressure, vascular volume, and blood flow during orthostasis and exercise. Pr.: KIN 250 and KIN 335. Cross-listed with Anatomy and Physiology.

KIN 604. Exercise and Mental Health. (3) II. Study of research and theory related to mental health consequences of physical activity. Topics will include the role of exercise in developing self-esteem and body image as well as the use of exercise as a therapy for emotional and behavioral disorders. Pr.: KIN 250, KIN 340, and KIN 345.

KIN 605. Topics in the Biological Basis of Kinesiology. (1–3) Study of a selected topic in the biological basis of kinesiology involving either an in-depth study or application of theory presented in a related core course. Pr.: KIN 250 and KIN 335.

KIN 606. Topics in the Behavioral Basis of Kinesiology. (1–3) Study of a selected topic in the behavioral basis of kinesiology involving either an in-depth study or application of theory presented in a related core course. Pr.: KIN 250, KIN 340, and KIN 345.

KIN 625. Exercise Testing and Prescription. (3) II. Benefits and risks of exercise testing and prescription with healthy populations, individuals at risk, and patients with cardiovascular and metabolic diseases. Includes experiences with exercise test technology and methods of exercise prescription. Two hours recitation and two hours lab a week. Pr.: KIN 250, KIN 335, proof of current CPR, BLS, and First Aid certification.

KIN 630. Design and Analysis of Exercise and Sport Equipment. (3) I. Design and analysis of equipment used in selected sports and equipment used in both resistive and aerobic exercise. Relevant biomechanical and physiological principles will be reviewed and applied to evaluate the quality and effectiveness of equipment now available on the open market and to consider potential improvements in design. Three hours rec. a week. Pr.: KIN 250, KIN 330, and KIN 335.

KIN 635. Nutrition and Exercise. (3) I. The interrelationships between diet, nutrition, and exercise. Topics covered include physical fitness, weight control, nutrient metabolism during exercise, and athletic performance. Pr.: KIN 250, KIN 335, and FN 132 or FN 502. Cross-listed with foods and nutrition; see FN 635.

KIN 650. Development of Motor Control. (3) A multi-level analysis of the neurophysiological activation of muscle, reflexes, sensory integration during movement, and theories of voluntary movement. Two hours lecture and two hours lab a week. Pr.: KIN 250 and BIOL 340.

KIN 655. Fitness Promotion. (3) II. The study of the implementation and promotion of preventive health programs for populations at work, hospitals, and community fitness settings. Pr.: KIN 250 and KIN 335.

KIN 657. Therapeutic Use of Exercise in the Treatment of Disease. (3) II. Analysis of pathophysiology associated with a number of different diseases and the impact on exercise performance as well as the use of exercise as a therapeutically modal. Pr.: KIN 250 and KIN 335.

KIN 700. Physical Culture in the Western World. (3) A seminar on selected topics in the historical and philosophical foundations of physical culture in Western Civilization. Pr.: Three hours of Western Heritage.

KIN 703. Minority Groups in Sports. (3) The contributions by, problems of, and discrimination against minority groups in sports. Pr.: SOCIO 211, KIN 340, PSYCH 435, or HIST 539.


KIN 792. Internship in Exercise Science. (6–8) I, II. Supervised field experience in the exercise profession in major training settings such as YMAC, YWCA, municipal recreation agency, or industrial fitness agency. May be completed with half-time assignment for 12–16 weeks or full-time assignment for 6–8 weeks. Pr.: KIN 655.

KIN 796. Topics in Kinesiology. (1–4) On sufficient demand. Intensive study of a selected topic in kinesiology involving either a greater in-depth study, or application of theory presented in a related course. May be repeated as topic varies. Pr.: 6 hours in kinesiology per year. Only 6 hours may be counted toward degree. Cross-listed with Anatomy and Physiology.

Lifet ime sports and exercise activity courses

For students in the College of Arts and Sciences, no more than 4 credit hours in lifetime sports and exercise activity classes may be applied toward a degree.

KIN 100. Adaptive Physical Activities. (1) I, II. Exercise programs adapted to the needs of the special student.

KIN 104. Swimming I. (1) Beginning instruction for students who have no previous experience with swimming.

KIN 105. Swimming II. (1) For the beginning swimmer who has had some previous swimming experience.

KIN 106. Swimming III. (1) Pr.: KIN 105 or consent of instructor.

KIN 107. Fitness Swimming. (1) Pr.: KIN 106 or consent of instructor.

KIN 120. Basketball. (1)

KIN 122. Flag Football. (1)

KIN 123. Soccer. (1)

KIN 124. Softball. (1)

KIN 126. Volleyball I. (1)

KIN 127. Volleyball II. (1) Pr.: KIN 126 or consent of instructor.

KIN 135. Archery. (1)

KIN 136. Badminton. (1)

KIN 140. Golf. (1)

KIN 143. Handball. (1)

KIN 144. Judo I. (1)

KIN 145. Judo II. (1) Pr.: KIN 144 or consent of instructor.

KIN 148. Racquetball. (1)

KIN 150. Self Defense. (1) Instruction in selected self-defense techniques derived from judo, karate, and other martial arts.
For the B.A. degree, students must take 15 additional hours in mathematics numbered 400 and above; MATH 570 may not be used to meet this requirement.

All students should enroll in MATH 199 in their first fall on campus.

Students may choose one of the following four programs, depending on their career interests.

**Applied mathematics program**

Students who intend to seek employment in business, government, or industry, should take Introduction to Modern Algebra and Advanced Calculus I (MATH 512 and 633). In addition, the following courses are recommended:

- MATH 510 Discrete Mathematics ................................. 3
- MATH 540 Advanced Ordinary Differential Equations ........ 3
- MATH 551 Applied Matrix Theory ................................ 3
- MATH 632 Elementary Partial Differential Equations ....... 3
- MATH 634 Advanced Calculus II .................................. 3
- MATH 655 Elementary Numerical Analysis I .................. 3

Students also should take as many additional computer science and statistics courses as possible.

**Pre-graduate program**

Students who intend to enter graduate school to work toward an advanced degree in either pure or applied mathematics should take Introduction to Modern Algebra and Advanced Calculus I (MATH 512 and 633). In addition, the following courses are recommended:

- MATH 515 Introduction to Linear Algebra ..................... 3
- MATH 560 Introduction to Topology ............................. 3
- MATH 634 Advanced Calculus II .................................. 3
- MATH 721 Analysis I ............................................ 3
- MATH 722 Analysis II ............................................ 3
- MATH 730 Abstract Algebra I .................................... 3
- MATH 731 Abstract Algebra II .................................... 3

Students should also take additional courses in related fields, such as computer science and statistics, and at least one foreign language, preferably French, German, or Russian.

**Actuarial mathematics program**

Students who intend to become actuaries or work in the financial sector should take as many of the following courses as possible:

- MATH 500 Actuarial Mathematics .................................. 3
- MATH 510 Discrete Mathematics ................................. 3
- MATH 512 Introduction to Modern Algebra .................... 3
- MATH 540 Ordinary Differential Equations .................... 3
- MATH 551 Applied Matrix Theory ................................ 3
- MATH 633 Advanced Calculus I .................................. 3
- MATH 655 Elementary Numerical Analysis I .................. 3
- STAT 510 Introductory Probability and Statistics I ........... 3
- STAT 511 Introductory Probability and Statistics II .......... 3
- STAT 770 Theory of Statistics I .................................. 3
- STAT 771 Theory of Statistics II .................................. 3

Students should also take courses in fields such as accounting, economics, and finance.

**Teacher preparation program**

Students who intend to become secondary school mathematics teachers may prepare for teacher certification through the College of Education while completing the requirements for a degree in mathematics. The following courses are recommended for such students:

- MATH 312 Finite Applications of Mathematics ................. 3
- MATH 506 Introduction to Number Theory ...................... 3
- MATH 510 Discrete Mathematics ................................. 3
- MATH 511 Introduction to Algebraic Systems .................. 3
- MATH 520 Foundations of Analysis ................................ 3
- MATH 551 Applied Matrix Theory ................................ 3
- MATH 570 History of Mathematics ................................ 3
- MATH 572 Foundations of Geometry ............................. 3
- MATH 591 Topics in Mathematics for Teachers ................ 3

For specific certification requirements for secondary education, see the College of Education section of this catalog.

Students majoring in elementary education who wish to use mathematics as an area of concentration should consider taking their 15 hours of mathematics from among the following courses:

- MATH 150 Plane Trigonometry .................................... 3
- MATH 160 Introduction to Contemporary Mathematics ........ 3
- MATH 205 General Calculus and Linear Algebra ............. 3
- MATH 312 Finite Applications of Mathematics ................. 3
- MATH 313 Computational Number Theory ...................... 3
- MATH 320 Mathematics for Elementary School Teachers ...... 3
- MATH 591 Topics in Mathematics for Teachers ................ 3

**Dual majors and dual degrees**

Students may major in mathematics and another discipline within the College of Arts and Sciences. The degree requirements of both departments must be met.

Students may obtain a degree in mathematics and a second degree in a field in another college such as business administration or engineering. The degree requirements of both colleges must be met.

**Information for nonmajors**

Most colleges and departments require at least one mathematics course. Students should check with their advisors to determine which mathematics courses to take. Advisors are provided information that will aid them in using a student’s ACT score to select the appropriate entry-level mathematics course. Advisors also have access to expanded mathematics course descriptions that will help them advise students.

**Mathematics courses**

- **MATH 010. Intermediate Algebra.** (3) I, II, S. 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 and quadratic), and geometry (area, perimeter, and the Pythagorean Theorem). Pr.: Two units of mathematics in grades 9-12 and a College Algebra PROB 2 C of 43 or more on the ACT assessment; or a score of at least 7 on the mathematics placement test; or a score of at least 26 on the arithmetic placement test.

- **MATH 100. College Algebra.** (3) I, II, S. 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 College Algebra PROB 2 C of...
MATH 101. The Metric System. (1) Introduction only, on sufficient demand. A systematic study of the metric system including historical background of various systems, structure of the metric system itself, and relation to existing systems; attention to competent use of metric terms in problem solving.

MATH 150. Plane Trigonometry. (3) I, II. S. Trigonometric 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 test.

MATH 199. Undergraduate Mathematics Seminar. (1) I. Topics of special interest to undergraduates in mathematics, including orientation to the mathematics curriculum, possible careers in mathematics, and cultural and professional aspects of mathematics.

MATH 205. General Calculus and Linear Algebra. (3) I, II. 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).

MATH 210. Technical Calculus I. (3) I. A condensed course in analytic geometry and differential calculus with an emphasis on applications. Pr.: B or better in MATH 100 and C or better in MATH 150; or three years of college preparatory mathematics including trigonometry and a Calculus I PROB ≥ C of 55 or more on the ACT assessment; or a score of at least 26 on the mathematics placement test.

MATH 211. Technical Calculus II. (3) II. A continuation of MATH 210 to include integral calculus with an emphasis on applications. Pr.: C or better in MATH 210.

MATH 220. Analytic Geometry and Calculus I. (4) I, II. S. 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 a Calculus I PROB ≥ C of 55 or more on the ACT assessment; or a score of at least 26 on the mathematics placement test.

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

MATH 222. Analytic Geometry and Calculus III. (4) I, II. S. Continuation of MATH 221 to include functions of more than one variable. Pr.: C or better in MATH 221.

MATH 240. Elementary Differential Equations. (4) I, II. S. Elementary techniques for solving ordinary differential equations and applications to solutions of problems in science and engineering. Pr.: C or better in MATH 222.

MATH 312. Finite Applications of Mathematics. (3) II. Systems of equations, vector operations, linear algebra, and linear programming. Practice in setting up, solving, and interpreting mathematical models which arise in social sciences and business. Pr.: MATH 100.

MATH 313. Computational Number Theory. (3) I, II, S. Topics in number theory selected from: divisibility, primes, modular arithmetic and special types of numbers. Emphasis is on computation. Primarily for prospective elementary school teachers of mathematics, or students transferring to MATH 100.

MATH 320. Mathematics for Elementary School Teachers I. (3) I. Mathematical problem solving and reasoning, development of whole number concepts and the whole number system, computation and estimation with whole numbers, number patterns and number theory, integers, fractions and rational numbers, decimals and real numbers, geometry and measurement. Pr.: MATH 100. For education majors only.

MATH 330. Intuitive Geometry. (3) Geometric figures and patterns, properties of geometric figures, transformation and coordinate geometry, measurement. Pr.: MATH 320.

MATH 395. Academic Excellence Workshop. (1–2) This course provides enriched supplementary instruction to selected students enrolled in selected lower-division courses. Pr.: Concurrent enrollment in qualifying lower-division mathematics course and written permission of instructor.

MATH 399. Honors Seminar in Mathematics. (1–3) Pr.: Membership in honors program.

MATH 498. Senior Honors Thesis. (2) I, II. S. Open only to seniors in the arts and sciences honors program.

MATH 499. Undergraduate Topics in Mathematics. (Var.) I, II. S. Reading courses in advanced undergraduate mathematics. Pr.: Background of courses needed for topic undertaken and consent of instructor. Repeatable for credit.

MATH 500. Actuarial Mathematics. (3) I. Extensive review of calculus and linear algebra including material not covered in the calculus sequence or linear algebra courses; futures and present value; annuities; amortization; yield rates; bonds and related funds; application of calculus and probability to the study of interest. Prepares students to take two of the professional examinations administered by the Society of Actuaries and the Casualty Actuarial Society. Pr.: MATH 240, MATH 551, or conc. enrollment in MATH 551.

MATH 506. Introduction to Number Theory. (3) II. Divisibility properties of integers, prime numbers, congruences, multiplicative functions. Pr.: MATH 221.

MATH 510. Discrete Mathematics. (3) I, II. S. Combinatorics and graph theory. Topics selected from counting principles, permutations and combinations, the inclusion/ exclusion principle, recurrence relations, trees, graph coloring, Eulerian and Hamiltonian circuits, block designs, and Ramsey Theory. Pr.: Sophomore standing and MATH 221.

MATH 511. Introduction to Algebraic Systems. (3) I. Properties of groups, rings, domains, and fields. Examples selected from subsystems of the complex numbers, elementary number theory, and solving equations. Pr.: MATH 222.

MATH 512. Introduction to Modern Algebra. (3) I. Introduction to the basic algebraic systems, viz., groups, rings, integral domains, fields, elementary number theory. Special emphasis will be given to methods of theorem proving. Pr.: MATH 222.

MATH 515. Introduction to Linear Algebra. (2–3) I. Finite dimensional vector spaces; linear transformations and their matrix representations; dual spaces, invariant subspaces; Euclidean and unitary spaces; solution spaces for systems of linear equations. Pr.: MATH 512.

MATH 520. Foundations of Analysis. (3) A study of sets and sequences, neighborhood, limit point, convergence, and open and closed set in the real line and in the plane, the concept of continuous function. Pr.: MATH 222.

MATH 521. The Real Number System. An extensive development of number systems, with emphasis upon structure. Includes systems of natural numbers, integers, rational numbers, and real numbers. Pr.: MATH 221.

MATH 540. Advanced Ordinary Differential Equations. (3) I. First order scalar equations; geometry of integral curves, symmetries and exactly solvable equations; existence; uniqueness and dependence on parameters with examples. Systems of first order equations, Hamilton’s equations and classical mechanics, completely integrable systems. Higher order equations. Initial value problems for second and higher order linear equations, series solutions and special functions. Boundary value problems with applications. Introduction to perturbation theory and stability. Pr.: MATH 220.


MATH 560. Introduction to Topology. (3) An introduction to the basic topological concepts. Topological spaces, metric spaces, closure, interior, and frontier operators, subspaces, separation and countability properties, bases, subbases, convergence, continuity, homeomorphisms, compactness, connectedness, quotients and products. The course will include a brief introduction to proof techniques and set theory. Other topics in topology also may be included. Pr.: MATH 222.

MATH 570. History of Mathematics. (3) I. A survey of the development of mathematics from ancient to modern times. Cannot be used as part of the advanced mathematics needed for the B.S. degree in mathematics. Pr.: MATH 220.

MATH 572. Foundations of Geometry. (3) Euclidean, non-Euclidean, and finite geometries; role of axioms; practice proving theorems in a formal system; synthetic, metric, and transformation approaches to Euclidean geometry. Pr.: MATH 221.

MATH 591. Topics in Mathematics for Teachers. (1–3) I, II. Topics of importance for teachers of mathematics. May be repeated for credit. Pr.: Consent of instructor.

MATH 615. Advanced Engineering Mathematics I. (3) I. Vector calculus; higher dimensional calculus; topics in ordinary differential equations; complex analysis. Pr.: MATH 240 and 551.

MATH 616. Advanced Engineering Mathematics II. (3) II. Fourier series; Fourier and Laplace transforms; basic partial differential equations; basic calculus of variations. Pr.: MATH 240 and 615.

MATH 630. Introduction to Complex Analysis. (3) I, II. Complex analytic functions and power series, complex integrals. Taylor and Laurent expansions, residues, Laplace transformation, and the inversion integral. Pr.: MATH 240.


MATH 634. Advanced Calculus II. (3) II. Functions of several variables: partial differentiation and implicit function theorems, curvilinear coordinates, differential geometry of curves and surfaces, vectors and vector fields, line and surface integrals, double and triple integrals, Green’s Theorem, Stokes’ Theorem, and Divergence Theorem. Pr.: MATH 633.

MATH 655. Elementary Numerical Analysis I. (3) I. Error analysis, root finding, interpolation, approximation of functions, numerical integration and differentiation, systems of linear equations. Pr.: MATH 221, a computer language, and either MATH 515 or 551.


MATH 670. Mathematical Modeling. (3) Introduction of modeling procedures. Case studies in mathematical modeling projects from physical, biological, and social sciences. Pr.: Four mathematics courses numbered 500 or above.

MATH 700. Set Theory and Logic. (3) An introduction to logic, mathematical proof, and elementary set theory; elementary logic, the basic constructions of set theory; relations, partitions, functions, cartesian products, disjoint unions, orders, and a construction of the natural numbers; arithmetic and cardinal numbers, the Axioms of Choice and transfinite induction. Special emphasis will be given to proving theorems. Pr.: MATH 511 or 512.

MATH 701. Elementary Topology I. (3) I. Introduction to axiomatic topology including a study of compactness, connectedness, local properties, separation axioms, and metrizability. Pr.: MATH 633.

MATH 702. Elementary Topology II. (3) II. Path connectedness, fundamental groups, covering spaces, introduction to topological and differentiable manifolds. Pr.: MATH 701.
MATH 704. Introduction to the Theory of Groups. (3) Introduction to abstract group theory; to include permutations, homomorphisms, direct products, Abelian groups. Jordan-Holder and Sylow theorem. Pr.: MATH 512.

MATH 706. Theory of Numbers. (3) II. Divisibility, congruences, multiplicative functions, number theory from an algebraic viewpoint, quadratic reciprocity, Diophantine equations, prime numbers. Pr.: MATH 221 and either 511 or 512.

MATH 710. Introduction to Category Theory. (3) Categories, duality, special morphism, functors, natural transformations, limits and colimits, adjoint situations, and applications. Pr.: MATH 701 and 730.

MATH 711. Category Theory. (3) Set valued functors and concrete categories, factorization structures, algebraic and topological functors, categorical completions, Abelian categories. Pr.: MATH 710.


MATH 721. Analysis I. (3) II. Metric spaces, limits, continuity, completeness, compactness, Baire category, uniform convergence, theorems of Stone-Weierstrass and Arzela. Pr.: MATH 240 or graduate standing.

MATH 722. Analysis II. (3) Lebesgue and Riemann-Stieljes integration on the real line, differentiation on the real line, elementary transcendental functions. Pr.: MATH 721.

MATH 730. Abstract Algebra I. (3) I. Groups, rings, fields, vector spaces and their homomorphisms. Elementary Galois theory and decomposition theorems for linear transformations on a finite dimensional vector space. Pr.: MATH 512 or consent of instructor.

MATH 731. Abstract Algebra II. (3) II. Continuation of MATH 730. Pr.: MATH 730 or consent of instructor.


MATH 757. Mathematical Control Theory. (3) Mathematical analysis of dynamical systems governed by differential equations and their optimal processes, feedback and filtering. Topics include dynamical systems with controls, axioms of control systems, input-output behaviors, stability and instability, reachability and controllability, dynamic feedback and stabilization, optimal control processes, piecewise constant control and bang-bang principle. Pontryagin maximum principle, tracking, filtering. Pr.: MATH 560, 615.


MATH 772. Elementary Differential Geometry. (3) Curves and surfaces in Euclidean spaces, differential forms and exterior differentiation, differential invariants and frame fields, uniqueness theorems for curves and surfaces, geodesics, introduction to Riemannian geometry, some global theorems, minimal surfaces. Pr.: MATH 240.

MATH 789. Combinatorial Analysis. (3) II. In alternate years. Permutations, combinations, inversion formulae, generating functions, partitions, finite geometries, difference sets, and other topics. Pr.: MATH 512.

MATH 791. Topics in Mathematics for Secondary School Teachers. (3) Topics of importance in the preparation of secondary school teachers to teach modern mathematics. May be repeated for credit.

Military Science

Lieutenant Colonel Robert Kennedy, Head
Assistant Professors Major Riehle, Captain Graves, and Captain Wallace; Instructors Master Sergeant Vasquez and Sergeant First Class Hedges.

E-mail: armyrotc@ksu.edu
www.ksu.edu/armyrotc

The Army Reserve Officers’ Training Corps program emphasizes the leadership and management skills required for success in military or civilian careers. Students find that their interaction with faculty improves self-confidence and overall academic performance.

Army ROTC prepares students to serve as officers in the U.S. Army, Kansas National Guard, and U.S. Army Reserve.

The courses are open to all students. Students, both undergraduate and graduate, with two years remaining at K-State are eligible to pursue an officer commission through Army ROTC.

Discharge of duty

Federal laws provide that ROTC graduates may discharge their military obligation in one of two ways: (1) two to four years of active duty with the remainder of the statutory eight-year obligation completed with the Army Reserve or National Guard organizations; or (2) three to six months active duty for training with the remainder of an eight-year obligation completed with Army Reserve or National Guard organizations. Preferences indicated by the graduate for a particular form of service are normally respected. Members of Army National Guard and Army Reserve units may enter the Simultaneous Membership Program. This program allows cadets to serve with a National Guard or Army Reserve unit while in Army ROTC, receiving both financial assistance and valuable experience.

Scholarships

The Army provides two-, three- and four-year scholarships to selected high school and college students. These scholarships provide full tuition and fees, an allowance for books and supplies, and $200 per school month. The scholarships are available on a competitive basis to all students, regardless of present enrollment in Army ROTC, who wish to receive commissions as officers. They must have two years remaining towards undergraduate or graduate programs. These scholarships, applied for during the spring semester,
become effective the following fall. In addition to the Army ROTC scholarships, the Kansas Army National Guard offers one-, two-, three-, or four-year scholarships to selected high school and college students. The Kansas Army National Guard ROTC Scholarship is for Kansas residents and pays in-state tuition only.

Voluntary organizations

The department sponsors two voluntary organizations, KSU Battalion Honor Guard, and the ROTC Ranger Company. The Honor Guard performs both university and non-university ceremonies as well as home football and basketball games. The ROTC Ranger Company provides additional tactical training and leadership experience. It supplements ROTC classroom instruction and field training to better prepare cadets for Advanced Camp and to be Army officers.

Recommended courses

In recognition of leadership’s many facets, the department requires that students enrolled in ROTC select from a number of university courses that complement the leadership program. One course each in written communication skills, human behavior, military history, computer literacy, and math are required. In addition to the required courses, one course each in national security policy and management is recommended. The majority of these courses may be applied as elective classes for the student’s degree requirements and the leadership studies minor. A list of acceptable courses is available at the Department of Military Science.

Basic course

MSCI 100. Introduction to Military Science and ROTC. (V) I. Basic drill, physical fitness, rappelling, army values, first aid, military presentations and Basic marksmanship. Two classroom hours, required leadership lab, optional participation in a one hour session for physical fitness. Participation in a weekend exercise is optional, but highly encouraged.

MSCI 101. Introduction to Military Leadership. (V) II. Principles of effective leading. Communication skills to improve individual performance and group interaction. Relation of military organizational ethical values to the effectiveness of a leader. Two classroom hours, required leadership lab, optional participation in a one hour session for physical fitness. Participation in a weekend exercise is optional, but highly encouraged.

MSCI 102. Basic Riflery. (1) I. II. Basic riflery and three-position match shooting. Includes brief introduction to U.S. Army ROTC program.

MSCI 107. Rappel Master Skills. (1) I. II. Students will be exposed to all the skills needed to conduct a rappelling session from a fixed facility. Skills to be taught will include: proper knots, anchoring techniques, rappel master duties and responsibilities, safety, equipment inspection, correct rappel procedures, and overall supervision of rappelling. Instructor permission required.

MSCI 201. Self/Team Development. (V) I. Ethics-based military leadership skills that develop individual abilities and contribute to building effective teams. Oral presentations, advanced first aid, land navigation and basic military tactics. Two classroom hours; a required leadership lab; optional, but encouraged, participation in two one-hour physical fitness sessions. Participation in a weekend exercise is optional, but highly encouraged.

MSCI 202. Individual/Team Military Tactics. (V) II. Introduction to individual and team aspects of military tactics in small unit operations. Radio communications, safety assessments, movement techniques. Two classroom hours; a required leadership lab; optional, but encouraged, participation in two one-hour physical fitness sessions. Participation in a weekend exercise is optional, but highly encouraged.

MSCI 206. Basic Camp (Camp Challenge). (V) S. A five-week summer camp conducted at Fort Knox, Kentucky. The U.S. Army provides pay, travel, lodging and meal costs. No military obligation incurred. Open only to students who have not completed all four of MSCI 101, 102, and 201, and who pass a physical examination (paid for by ROTC). Prerequisite: Completion of the basic course. Instructor permission required for enrollment.

MSCI 301. Leading Small Military Organizations I. (V) I. Series of practical opportunities to lead small groups in situations of increasing complexity. Uses small unit defensive tactics and opportunities to plan and conduct training. Three classroom hours, a leadership lab, participation in three one-hour physical fitness sessions. Participation in one weekend exercise is required, and one or two additional weekend exercises are offered for optional participation. Prerequisite: Completion of the basic course. Instructor permission required for enrollment.

MSCI 302. Leading Small Military Organizations II. (V) II. Continues methodology of MSCI 301. Military missions and task analysis. Ethical decision making and lessons from leadership case studies. Three classroom hours, a leadership lab, participation in three one hour physical fitness sessions. Participation in one weekend exercise is required; two other weekend exercises optional. Prerequisite: Completion of MSCI 301. Instructor permission.

MSCI 306. ROTC Advanced ROTC Training Camp (Camp Adventure). (V) S. A five-week camp conducted at Fort Lewis, Washington, by members of Kansas State University and other university Army ROTC faculty. The U.S. Army provides pay, travel, lodging and most meal costs. Highly structured and demanding, stressing leadership at small unit levels under varying, challenging conditions. Prerequisite: MSCI 301 and 302.

MSCI 351. Military Leadership Studies and Practical Applications. (V) I. II. Independent research, analysis and monthly discussion on related military topics. Small unit tactics and practical application of leadership skills and individual research projects. Three classroom hours per week, a leadership lab, participation in three one-hour physical fitness sessions. Participation in one weekend exercise is required; two other weekend exercises optional. Prerequisite: MSCI 301 or 302. Instructor permission.

MSCI 401. Leadership Challenges and Objective Setting. (V) I. Plan, conduct, and evaluate activities of the ROTC cadet organization. Articulate goals, put plans into action to attain them. Assess organizational cohesion and develop strategies to improve it. Develop confidence in skills to lead people and manage resources. Learn and apply various Army policies and programs. Three classroom hours, a two-hour leadership laboratory, and weekly physical fitness activities. Cadets will also participate in a weekend field training exercise (FTX) and a dining-in. Prerequisite: MSCI 301 and 302 or department head permission.

MSCI 402. Transition to Lieutenant. (V) II. Continues the methodology from MSCI 401. Identify and resolve ethical dilemmas. Refine counseling and motivating techniques. Examine aspects of tradition and law as relate to leading as an officer in the U.S. Army. Prepare for a future as a successful U.S. Army lieutenant. Cadets will also participate in a weekend field training exercise (FTX) and a dining out or military ball.

MSCI 501. Advanced Transition to Lieutenant I. (V) I. Independent research, analysis and monthly discussion on related military topics. Personal, academic, and professional goals and objectives, development and maintenance of an officer evaluation report support form. Pr.: MSCI 401 and 402 or department head permission.

MSCI 502. Advanced Transition to Lieutenant II. (V) II. Independent research, analysis and monthly discussion on related military topics. Personal, academic, and professional goals and objectives, development and maintenance of an officer evaluation report support form. Pr.: MSCI 501.

Modern Languages

Michael Ossar, Head

Professors Corum, * Dehn, * and Ossar,* Associate Professors Benson,* Clark,* Garavito,* Irie,* Kolonosky,* McGraw,* Oropesa,* Sauter,* Shaw,* and Tunstall;* Assistant Professors Arnds,* Hippolyte,* and Miller;* Instructor Kellar, Pigno; Emeriti: Alexander* and Driss.

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All regular courses offered by the Department of Modern Languages may be taken by non-majors on an A/Pass/F basis, subject to the provisions of the university policy. Language laboratories are offered only on a Credit/No-Credit basis.

Students majoring in languages should enroll for the bachelor of arts degree.

Within the modern language major, French, German, and Spanish are offered; in highly unusual cases, a major in classics or Russian may be arranged.

Major

A major consists of classes above the 100 level taken in the same language. Students majoring in a modern language must either (a) receive a grade of C or higher in all courses counted toward the major or (b) have a GPA of at least 2.50 in all courses counted toward the major. Note: Literature courses in translation may not be applied toward the major.

French: 32 hours Required:

FREN 511 and FREN 512: Masterpieces of French Literature I and II
At least three 700-level literature courses

German: 30 hours

GERM 521 and GERM 522: Introduction to German Literature I and II
At least three 700-level literature courses

Spanish: 33 hours

Note: Elementary Conversation 3A (262) and 4A (264) do not count toward the major.

Required:

SPAN 570: Structure of the Spanish Language
SPAN 563 and 567: Introduction to the Literature of Spanish America and Spain (take in either order)
At least three 700-level courses, one each in Spanish literature, Spanish American literature, and Hispanic culture/language.

Major option “with distinction” (3.5 GPA in all courses taken toward the major)

French: 38 hours Required, in addition to the regular major:
Two additional courses, one of which must be at the 700 level.
German: 36 hours
Required, in addition to the regular major:
Two additional courses, one of which must be at the 700 level.
Spanish: 39 hours
Required, in addition to the regular major:
Spanish or Spanish American Civilization (SPAN 565 or 566)
One additional 700-level Spanish course, any category

Minor
A minor consists of classes above the 100 level taken in the same language. Students minoring in a language must either (a) receive a grade of C or higher in all courses counted toward the minor or (b) have a GPA of at least 2.50 in all courses counted toward the minor. The minor must include one literature course, except in Japanese. See recommended literature courses in parentheses:

Note: Literature courses in translation may not be applied toward the minor.

French:
20 hours (FREN 511 or 512, Masterpieces of Literature I or II)

German:
18 hours (GERM 521 or 522, Introduction to Literature I or II)

Japanese:
18 hours (no literature course required)

Russian:
18 hours (RUSSN 551 or 552, Russian V or Survey of Russian Literature)

Spanish:
21 hours (SPAN 574, Hispanic Readings)
Note: in Spanish, Elementary Conversation 3A (262) and 4A (264) do not count toward the minor.

Double majors and dual degrees
Students are encouraged to combine their modern language major with a major in a different field or college. To accomplish this, the student needs to complete the requirements for a B.A. in modern languages as well as those for the other major or degree.

Entering students who have had previous language experience and who plan to continue language study are required to take a language placement examination before or at the beginning of the first semester of language study. If there is any doubt as to proper placement, the head of the Department of Modern Languages should be consulted.

Students wishing to acquire retroactive credit for language proficiency gained before coming to K-State should consult with the head of the Department of Modern Languages.

Financial aid for undergraduates
The department offers scholarships to undergraduate majors and double majors for study at K-State or on the study abroad programs. For details, contact the head of the Department of Modern Languages.

Programs abroad
The department sponsors summer study programs in Zacatecas/Cuernavaca, Mexico, and Granada, Spain, and cooperates with German exchange programs in Germany and Switzerland. All inquiries should be addressed to the head of the department.

In addition, students may choose to participate in other programs, such as the International Student Exchange Program, the ERASMUS program, or the Community Service Program.

Honors program courses

MLANG 297. Honors Introduction to the Humanities I. (3) I. Study of selected major works of history, literature, and philosophy which have been of central importance in the Western cultural tradition. Considerable emphasis is placed on classroom discussion and writing interpretive essays. Limited to entering freshman students. Pr.: Consent of instructor. Same as ENGL 297, HIST 297, PHIL 297.

MLANG 298. Honors Introduction to the Humanities II. (3) II. Continuation of MLANG 297. Pr.: MLANG 297 or consent of instructor. Same as ENGL 298, HIST 298, PHIL 298.

MLANG 399. Honors Seminar in Modern Languages. (1–3) Reading and discussion of selected masterpieces of European literature in English translation. Open to non-language majors in the honors program.

MLANG 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

Modern language courses

MLANG 001. Study Abroad. (0)

MLANG 110. Hebrew for Beginners. (2) An introduction to the Hebrew language and the culture of the people who speak the language. This general introduction includes skill development in reading, writing, and speaking basic Hebrew. Designed specifically for English-speaking students. To be offered during Intersessions only.

MLANG 507. European Literature in Translation. (3) Selected readings in English from the major authors of Europe and the Spanish-speaking world.

MLANG 710. Introduction to Foreign Language Pedagogy. (3) The fundamentals of language learning as described by current research, and teaching strategies that facilitate the acquisition of foreign language skills. Taught in English. Pr.: Acceptance as GTA or instructor in ML.

FREN 502. French Literature in Translation. (3) Selected readings in English from the works of such major French authors as Flaubert, Zola, Sartre, Camus, and Ionesco. Not accepted for major credit in French.

FREN 503. Black African Francophone Literature in Translation. (3) Selected readings in English from the works of important writers of black francophone Africa, including Ba, Beti, Lopes, and Sow Fall. Not accepted for credit in French major.

FREN 510. Modern French Culture. (2) French culture since World War II with special emphasis on social, economic, historical, and artistic developments of that period. Taught in English. Not accepted for major credit in French.

GRMN 503. German Literature in Translation. (3) Selected readings in English from such major German authors as Thomas Mann, Brecht, Hesse, Grass, and Kafka. Not accepted for major credit in German.

LATIN 501. Classical Literature in Translation. (3) Selected readings in English from the works of such major classical authors as Homer, Euripides, Vergil, Horace, and Terence.

RUSSN 250. Russian Culture and Civilization. (3) Russia’s past and present in the light of principal ideologies with emphasis upon fine art, literature, music, religion, politics, and education. Equal time will be devoted to the

Tarasist and Soviet periods. Knowledge of Russian is not required. Same as HIST 250.

RUSSN 504. Russian Literature in Translation: The Nineteenth Century. (3) Survey of the principal writers of Tarasist Russian with emphasis on Turgenev, Dostoievsky, Tolstoy, and Chekhov.

RUSSN 508. Russian Literature in Translation: The Soviet Period. (3) The development of Russian literature since the Revolution, with emphasis on Mayakovsky, Sholokhov, Pasternak, and Solzhenitsyn.

SPAN 505. Spanish Literature in Translation. (3) Selected readings in English from the works of such major Spanish and Latin American authors as Garcia Lorca, Borges, Neruda, and Garcia Marquez. Not accepted for major credit in Spanish.

Arabic courses


ARAB 182. Arabic II. (4) Continuation of Arabic I. Pr.: ARAB 181 or equiv.

ARAB 281. Arabic III. (4) Further development of language skills. Pr.: ARAB 182 or equiv.

ARAB 282. Arabic IV. (3) Continuation of Arabic III. Pr.: ARAB 281 or equiv.

ARAB 540. Special Studies in Arabic. (Var.) Pr.: Consent of the department head and instructor involved.

French courses

FREN 001. Orientation for Summer School Program. (0)

FREN 111. French I. (5) Introduction to the structure of modern French, emphasizing the spoken language with practice in the language laboratory.

FREN 112. French II. (5) Continuation of French I, completion of basic presentation of the structure of French. Emphasis on spoken language, use of language lab. Pr.: FREN 111 or equiv.


FREN 212. Elementary French Conversation IIIA. (2) Course not open to fluent speakers of French. Normally to be taken concurrently with French III. Pr.: FREN 112 or equiv.


FREN 214. French Conversation IVA. (2) Continued practice in conversational French. Not open to fluent speakers of French. Normally to be taken concurrently with French IV. Pr.: FREN 211 or equiv.

FREN 298. Intermediate Studies in French. (1–6) Offered only to participants in study abroad programs. Prior consultation for approval is expected. At the discretion of the department, the course may be repeated for a maximum of 6 credit hours.

FREN 503. Black African Francophone Literature in Translation. (3) Selected readings in English from the works of important writers of black francophone Africa, including Ba, Beti, Lopes, and Sow Fall. Not accepted for credit in French major.


FREN 510. Modern French Culture. (2) French culture since World War II with special emphasis on social, economic, historical, and artistic developments of that period. Taught in English. Not accepted for major credit in French.

FREN 511. Masterpieces of French Literature I. (3) The reading and discussion of major works of French literature from the Middle Ages to the end of the eighteenth
FREN 512. Masterpieces of French Literature II. (3) The reading and discussion of major works of French literature from the early nineteenth century to the present. Pr.: At least one course taught in French at the 500 level or equiv.


FREN 514. French Civilization. (3) Introduction to French culture with special emphasis on social, historical, and artistic developments. Pr.: FREN 213 or equiv.

FREN 516. Readings in French. (3) Practice in reading a variety of literary, journalistic, and specialized texts from France and Francophone countries. Pr.: FREN 213.

FREN 517. Commercial French. (3) Advanced grammar necessary for adequate oral and written expression in international business and diplomatic situations, including specialized terminology, conversation and discussion, and translation. Pr.: FREN 213.

FREN 518. Advanced French Conversation. (3) II. Practice in spoken French, with emphasis on idiomatic expression. Course not open to students whose primary language is French and whose competence has been demonstrated in the language at this level. Pr.: FREN 213.

FREN 519. Special Studies in French. (Var.) Pr.: FREN 213 or equiv. and consent of department head and instructor.

FREN 709. Medieval French Literature. (3) An introduction to literary forms, style, and thought from the eleventh to the fifteenth century in France. Readings in modern French include Chanson de Roland, Chretien de Troyes Romances de la Rose, etc. Pr.: FREN 511 and 512 or equiv. background as determined by the modern language faculty.

FREN 710. Sixteenth-Century French Literature. (3) Reading and discussion of selected prose and poetry of the French Renaissance. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 711. Seventeenth-Century French Literature I. (3) I. Various literary forms of the French Baroque period. Reading of representative texts by Corneille, Pascal, Descartes, and others. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 712. Seventeenth-Century French Literature II. (3) II. Various literary forms of the French classical period. Reading of representative texts by Moliere, Racine, Lafayette, La Fontaine, and others. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 713. Eighteenth-Century French Literature. (3) Critical study of the literature of the Enlightenment. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 714. Nineteenth-Century French Literature I. (3) A study of preromanticism and romanticism. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 715. Nineteenth-Century French Literature II. (3) A study of realism, naturalism, and symbolism. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 716. Twentieth-Century French Literature I. (3) The study of major themes and trends in the novel, drama, and poetry as reflected in representative works of such authors as Proust, Mauriac, Cocteau, Claudel, Valery, and others. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 717. Twentieth-Century French Literature II. (3) Reading and analysis of recent innovations in literary theory and practice as found in the works of such authors as Sartre, Camus, Beckett, Ionesco, Robbe-Grillet, Sarraute, and others. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 718. The French Novel. (3) The development of the novel from the seventeenth century to the present, seen through selected masterworks. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 719. Advanced Spoken and Written French. (3) II. An advanced, intensive study of French prose style. Introduction to the techniques of translation from English to French. Intensive practice in oral style and diction. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 720. Seminar in French. (3) A seminar with variable topics. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 742. French-Speaking Culture and Literature in Second-Language Learning. (3) Analysis and interpretation of cultural and literary texts from French-speaking countries, with emphasis on the development of interpretive skills and materials, and their application to the French curriculum at all levels. May be repeated once with a change in focus and texts. Pr.: At least one course taught in French at the 500 level or equiv.

FREN 791. Problems in Modern Languages. Pr.: At least one course taught in French at the 500 level or equiv.

**German courses**

GRMN 002. Orientation for Summer School Program. (0)

GRMN 119. German I. (1) Language laboratory. Strongly recommended for students taking German I. Concurrent enrollment in German I required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of German I.

GRMN 120. German III. (1) Language laboratory. Strongly recommended for students taking German II. Concurrent enrollment in German II required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of German II.

GRMN 121. German I. (4) Introduction to the structure of modern German. Practice of the spoken language with additional experience in the language laboratory.

GRMN 122. German II. (4) Continuation and conclusion of the introduction to modern German, reading of selected prose texts. Pr.: GRMN 121 or equiv.

GRMN 221. German III. (4) Reading and discussion of a selection of modern German prose and review of the structure of German. Pr.: GRMN 122 or equiv.

GRMN 222. Elementary German Conversation IIIA. (2) Practice in beginning conversational German. Course not open to fluent speakers of German. Course normally taken concurrently with German III. Pr.: GRMN 122 or equiv.

GRMN 223. German IV. (3) Reading and discussion of modern German prose and review of the more difficult points of German grammar. Pr.: GRMN 222 or equiv.

GRMN 224. German Conversation IVA. (2) Continued practice in conversational German. Course not open to fluent speakers of German. Normally taken concurrently with German IV. Pr.: GRMN 222 or equiv.

GRMN 398. Intermediate Studies in German. (Var.) Offered only to participants in study abroad programs. Prior consultation for approval is expected. At the discretion of the department, the course may be repeated for a maximum of 6 credit hours.

GRMN 503. German Literature in Translation. (3) Selected readings in English from such major German authors as Thomas Mann, Brecht, Hesse, Grass, and Kafka. Not accepted for major credit in German.

GRMN 520. Readings in German. (3) Practice in reading a variety of literary, journalistic, and specialized texts. Pr.: GRMN 223 or equiv.

GRMN 521. Introduction to German Literature I. (3) Literary movements of the nineteenth century are introduced through the reading and discussion of texts in various forms and by representative authors. Pr.: GRMN 223 or equiv.

GRMN 522. Introduction to German Literature II. (3) Discussion of some significant works of twentieth-century prose, poetry, and drama. Special emphasis is placed on the literature of recent decades. Pr.: GRMN 223 or equiv.

GRMN 523. German Composition. (3) A study of German syntax and exercises in composition. Pr.: GRMN 223 or equiv.

GRMN 524. German for Reading Knowledge I. (3) The grammar and syntax of German and the reading of basic material selected from modern German texts. Not for fulfillment of humanities distribution requirement. Pr.: GRMN 524 or equiv.

GRMN 525. German for Reading Knowledge II. (3) Continued reading of material from modern German texts. Not for fulfillment of humanities distribution requirement. Pr.: GRMN 524 or equiv.

GRMN 526. Business German. (3) Advanced grammar necessary for adequate oral and written expression in international business and diplomatic situations, including specialized terminology, conversation and discussion, and translation. Pr.: GRMN 523.

GRMN 527. Advanced German Conversation. (3) Intensive practice in conversation. Course not open to students whose primary language is German and whose competence has been demonstrated in the language at this level. Pr.: GRMN 223 or equiv.

GRMN 529. Special Studies in German. (Var.) Pr.: Consent of department head and instructor involved.

GRMN 530. German Civilization. (3) II. The political and cultural development of the German-speaking peoples and their role and influence in the history of the Western world. Pr.: 18 hours of college German.

GRMN 721. German Classicism. (3) I. Reading and discussion of late eighteenth-century texts, including works by Goethe, Schiller, Hoelderlin, etc. Pr.: 21 hours of college German or equiv.

GRMN 722. German Romanticism. (3) II. A study of representative works of German romantic literature by such authors as Schlegel, Tieck, Eichendorff, Novalis. Pr.: 21 hours of college German or equiv.

GRMN 723. Goethe and Faust. (3) I. The writings of Goethe and his masterpiece, Faust. Pr.: 21 hours of college German or equiv.

GRMN 724. German Prose and Drama of the Nineteenth Century. (3) II. A consideration of post-romantic German literature with special emphasis on the novel. Authors including Grillparzer, Keller, and Meyer are discussed. Pr.: 21 hours of college German.

GRMN 725. Early Twentieth-Century German Literature. (3) I. A study of the drama and lyric of naturalism, neoclassicism, neo-romanticism, and expressionism. Pr.: 21 hours of college German.

GRMN 726. German Literature since 1945. (3) I. A discussion of the postwar writings of the Gruppe 47, Swiss playwrights, and others. Pr.: 21 hours of college German.

GRMN 727. The Modern German Novel. (3) II. Theory of the German novel with examples from authors such as Thomas Mann, Hesse, Grass, and others. Pr.: 21 hours of college German.

GRMN 728. History of the German Language. (3) I. A study of the development of the sounds, forms, and syntax of standard German. Fullfills distribution requirements for major. Pr.: Senior standing.

GRMN 729. Seminar in German. (3) A seminar with variable topics, including literature of social and political protest, Austrian and Swiss literature, literature of the Middle Ages, émigré literature, etc. Pr.: Senior standing or consent of instructor.

GRMN 731. Advanced Spoken and Written German. (3) Intensive practice in conversation and diction, with considerable practice in the writing of essays in German. Pr.: 24 hours of college German.

GRMN 732. Methods in German Literary Criticism. (3) Introduction to the various theories of literary analysis. Interpretation of representative German texts. Pr.: 24 hours of college German.

GRMN 733. The Enlightenment and Storm and Stress. (3) A study of representative texts from various movements in German literature and culture of the eighteenth century, including Empfindsamkeit and Rococo. Such authors as Gottsched, Klopstock, Lessing, Lichtenberg, Wieland,
and the young Goethe and Schiller will be discussed. Pr.: 21 hours of college German.

GRMN 734. Literature of the German Democratic Republic. (3) A study of the literary developments within the German Democratic Republic. The course will consider the writers' role in a socialist society and their impact upon the cultural scene. Readings will include representative works from all genres. Pr.: 21 hours of college German.

GRMN 735. German Lyric Poetry. (3) A study of Ger-
man lyric poetry from the Middle Ages to the present with special emphasis on the historical development of such genres as the lied, sonnet, and ballad. In addition to learn-
ing basic interpretive techniques intrinsic to poetry, the stu-
dent will learn to identify the literary periods. Pr.: 21 hours of college German.

GRMN 740. German Culture and Literature in Second-Language Learning. (3) Analysis and interpreta-
tion of cultural and literary texts from German-speaking coun-
tries, with emphasis on the development of interpretive skills and materials, and their application to the German curriculum at all levels. May be repeated once with a change in focus and texts. Pr.: 24 credits in German at

GRMN 799. Problems in Modern Languages. (Var.)

Italian courses
ITAL 129. Italian I. (1) Language laboratory. Strongly recommended for students taking Italian I. Concurrent enrollment in Italian I required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of Italian I.

ITAL 130. Italian II. (1) Language laboratory. Strongly recommended for students taking Italian II. Concurrent enrollment in Italian II required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of Italian II.

ITAL 131. Italian I. (4) Introduction to the structure of modern Italian. Offered in alternate years.

ITAL 132. Italian II. (4) Continuation and completion of the study of modern Italian grammar, using the facilities of the language laboratory for audiolingual practice. Pr.: ITAL 131 or equiv. Offered in alternate years.

ITAL 231. Italian III. (4) Grammar review and reading selections from Italian literature. Pr.: ITAL 132 or equiv. Offered in alternate years.

ITAL 232. Italian IV. (3) Selective review of grammar and reading of examples of modern Italian literature. Pr.: ITAL 231 or equiv. Offered in alternate years.

ITAL 520. Special Studies in Italian. (Var.) Pr.: Consent of department head and instructor involved.

Japanese courses
JAPAN 191. Japanese I. (4) Introduction to the funda-
mental linguistics and cultural characteristics of the Japanese language and its writing systems (Hiragana, Katakana, and Kanji).


JAPAN 291. Japanese III. (5) Introduction to grammatic-
al patterns and sentence structure. Extensive practice of spoken and written Japanese, both in the classroom and the


JAPAN 591. Japanese V. (4) Development of commu-
nication skills through application activities such as problem-solving tasks and role plays. Enhancement of vocabulary, structures, and their usage. Emphasis on extended dis-
course. Practice in the language learning center included. Pr.: JAPAN 292 or equiv.

JAPAN 592. Japanese VI. (4) Continuation of Japanese V. Development of functional skills for general situations. Completion of the presentation of major 500 Kanji charac-
caters and 1,800 Kanji compounds. Practice in the language learning center included. Pr.: JAPAN 591 or equiv.

JAPAN 599. Special Studies in Japanese. (Var.) Pr.: Consent of department head and instructor.

Latin courses
LATIN 105. Latin and Greek for Scientists. (1) The course is designed specifically to provide students of the biological sciences with a background in Latin and Greek roots of scientific terms. Emphasis on prefixes, suffixes, and word derivations. No prior knowledge of either Latin or Greek is required. Course may not be applied toward the fulfillment of either language or humanities requirements for any degree.


LATIN 142. Latin II. (4) Continuation and completion of the study of the structure of Latin. Pr.: LATIN 141. Offered in alternate years.


LATIN 242. Latin IV. (3) Continuation of the study of Latin syntax and grammar, based upon the reading of Roman prose and poetry. Pr.: LATIN 241. Offered in alternate years.

LATIN 501. Classical Literature in Translation. (3) Se-
lected readings in English from the works of such major authors as Homer, Euripides, Vergil, Horace, and Terence.

LATIN 549. Special Studies in Latin. (Var.) Pr.: Consent of the department head and instructor involved.

Linguistics courses
LG 730. Foundations of Semiotics. (3) II. The general theory of signs; detailed classification of signs and exami-
nation of several semiotic systems such as language, litera-
ture, culture, and society. The semiotics of communication and signification. Pr.: Senior standing.

Undergraduate and graduate credit
LG 600. Principles of Linguistics. (3) Same as LING 600 and ENGL 600.
LG 601. General Phonetics. (3) Same as LING 601 and ENGL 601.
LG 602. Historical Linguistics. (3) Same as LING 602 and ENGL 602.
LG 603. Topics in Linguistics. (3) Same as LING 603 and ENGL 603.
LG 783. Phonology I. (3) Same as LING 783 and ENGL 783.
LG 785. Syntax I. (3) Same as LING 785 and ENGL 785.
LG 792. Field Methods in Linguistics. (3) Same as LING 792.

Portuguese courses
PORT 163. Portuguese I. (4) I. Introduction to the struc-
ture of the Portuguese language, stressing Brazilian usage and emphasizing oral and written skills.

PORT 164. Portuguese II. (4) II. Continuation of Portuguese I. completion of the basic presentation of struc-
tural and linguistic principles of the Portuguese language. Pr.: PORT 163 or equiv. course.

PORT 266. Portuguese III. (4) I. Intensive review of syn-
tax and a comprehensive structural review of modern Portuguese, stressing Brazilian usage, with emphasis on composition and conversation. Pr.: PORT 164 or equiv.

PORT 267. Portuguese IV. (3) I. Reading and discussion of selections from contemporary prose, emphasizing Brazilian writings, and review of grammatical structures as needed. Pr.: PORT 266 or equiv.

PORT 572. Special Studies in Portuguese. (1-3) Pr.: 15 hours of Portuguese and consent of instructor.

Russian courses
RUSSN 149. Russian II. (1) Language laboratory. Strongly recommended for students taking Russian II. Con-
current enrollment in Russian I required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of Russian I.

RUSSN 150. Russian III. (1) Language laboratory. Strongly recommended for students taking Russian III. Con-
current enrollment in Russian II required. For Credit/No Credit only. Credit given only upon receiving a passing grade for the concurrent section of Russian II.

RUSSN 151. Russian IV. (4) I. Introduction to the structure of modern Russian. Emphasis on the sounds of Russian, the use of the Cyrillic alphabet, and oral drills with added prac-
tice in the language laboratory.

RUSSN 152. Russian IV. (4) II. Continuation of the study of Russian grammar and oral communication. Pr.: RUSSN 151 or equiv.

RUSSN 250. Russian Culture and Civilization. (3) Russia’s past and present in the light of principal ideologies with emphasis upon fine art, literature, music, religion, pol-
tics, and education. Equal time will be devoted to the Tsarist and Soviet periods. Knowledge of Russian is not required. Same as HIST 250.

RUSSN 251. Russian III. (4) I. Completion of the study of Russian grammar. Reading of selected prose on the inter-
medieate level. Pr.: RUSSN 152 or equiv.

RUSSN 252. Russian IV. (3) II. Intensive review of Russian grammar. Exercises in reading selected modern Russian texts in the original. Pr.: RUSSN 251 or equiv.

RUSSN 398. Intermediate Studies in Russian. (Var.) Offered only to participants in study abroad programs. Prior consultation for approval is expected. At the discre-
tion of the department, the course may be repeated for a maximum of 6 credit hours.

RUSSN 504. Russian Literature in Translation: The Nineteenth Century. (3) Survey of principal writers of Tsarist Russia with emphasis upon Turgenev, Dostoevsky, Tolstoy, and Chekhov.

RUSSN 508. Russian Literature in Translation: The Russian Period. (3) The development of Russian literature since the Revolution, with emphasis upon Mayakovsky, Sholokhov, Pasternak, and Solzhenitsyn.

RUSSN 551. Russian V. (3) Reading of Russian short sto-
ries of the nineteenth and twentieth centuries, including works by Pushkin, Lermontov, Dostoevsky, and Chekhov.

RUSSN 552. Survey of Russian Literature. (3) A history of Russian literature from its beginnings until the present, with emphasis on the works of the nineteenth century, including those of Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, and Tolstoy.

RUSSN 553. Russian Conversation and Composition. (3) Discussion in Russian. Extensive practice in writing Russian compositions.

RUSSN 559. Special Studies in Russian. (Var.) Pr.: Consent of department head and instructor involved.

South Asian languages courses
URDU 171. Hindi/Urdu I. (4) I. Introduction to the struc-
ture of Hindi and Urdu, two languages which are nearly


URDU 274. Hindi/Urdu IV. (4) II. Continuation of Hindi/Urdu III with readings in Hindi or Urdu literature according to needs of students. Pr.: URDU 273.

URDU 575. Hindi/Urdu V. (4) I, II. Individual study in Hindi or Urdu. Readings, composition, or conversational
practice relevant to the student’s interests and disciplinary needs. May be repeated for credit. Pr.: URDU 274.

URDU 799. Problems in Modern Languages. (Var.)

Spanish courses

SPAN 903. Orientation for Summer School Abroad Program in Zacatecas/Cuernavaca, Mexico. (0)

◆ SPAN 161. Spanish I. (5) Basic introduction to the structures of the Spanish language, emphasizing practice in the four skills: listening, speaking, reading, writing. Includes selected aspects of the cultures of Spanish speakers and practice in the language learning center.

◆ SPAN 162. Spanish II. (5) Continuation of Spanish I. Basic introduction to the structures of the Spanish language, emphasizing practice in the four skills: listening, speaking, reading, writing. Includes selected aspects of the cultures of Spanish speakers and practice in the language learning center. Pr.: SPAN 161 or equiv.

◆ SPAN 261. Spanish III. (5) Review of structures of the Spanish language, emphasizing intermediate-level practice in the four skills: listening, speaking, reading, writing. Includes selected aspects of the cultures of Spanish speakers and practice in the language learning center. Pr.: SPAN 162 or equiv.

SPAN 262. Elementary Spanish Conversation IIIA. (2) Practice in beginning conversational Spanish. Emphasis on oral communication within the classroom. Course not open to fluent speakers. Should be taken concurrently with Spanish III.

◆ SPAN 263. Spanish IV. (4) Continuation of Spanish III. Review of structures of the Spanish language, emphasizing intermediate-level practice in the four skills: listening, speaking, reading, writing. Includes selected aspects of the cultures of Spanish speakers and practice in the language learning center. Pr.: SPAN 261 or equiv.

SPAN 264. Elementary Spanish Conversation IVA. (2) Continuation of Elementary Spanish Conversation IIIA. Should be taken concurrently with Spanish IV.

SPAN 398. Intermediate Studies in Spanish. (Var.) Offered only to participants in study abroad programs. Prior consultation for approval is expected. At the discretion of the department, the course may be repeated for a maximum of 6 credit hours.

SPAN 505. Spanish Literature in Translation. (3) Reading and analysis of representative works of Spanish-American literature from its beginnings to the present. Pr.: Minimum of 3 hours at 500 level or equiv. background as determined by modern languages faculty. SPAN 550 strongly recommended.

SPAN 569. Special Studies in Spanish. (Var.) Pr.: Consent of department required.

SPAN 570. Structure of the Spanish Language. (3) Introductory description of the grammatical structure of Spanish with its main components: phonological, morphological, syntactic, and semantic. Spanish pronunciation, dialectal variation and some other aspects are analyzed in contrast. Pr.: SPAN 564 or equiv. facility as determined by modern languages faculty.

SPAN 571. Advanced Spanish Conversation. (3) Intensive practice in conversation. Course not open to those students whose primary language is Spanish and whose competence has been demonstrated in the language at this level. Pr.: SPAN 263 or equiv. facility as determined by modern languages faculty.

SPAN 573. Spanish for Professionals. (3) Advanced grammar necessary for adequate oral and written expression in selected professional disciplines (such as business, health professions, and human services), including specialized terminology, conversation and discussion, and translation. Pr.: SPAN 564 or equiv. facility as determined by modern languages faculty.

SPAN 574. Hispanic Readings. (3) Practice in reading a variety of literary and historical texts. Pr.: SPAN 263 or equiv. facility as determined by modern languages faculty.

SPAN 750. Spanish–American Literature from Its Origins to the Nineteenth Century. (3) Analysis and discussion of literary manifestations from pre-Columbian civilizations, the Spanish colonies, and independent nations. Literary movements include early forms of narrative, the Baroque, Neo-Classicism, and Romanticism. Texts by writers such as Arteaga, O'Higgins, Sor Juana, Fernández de Lizardi, Hernández, Isacs, Gómez de Avellaneda, Echeverria, and others. Pr.: SPAN 563 and 567 or equiv. facility determined by modern languages faculty.

SPAN 751. Spanish–American Literature: Late Nineteenth Century to Early Twentieth Century. (3) Analysis and discussion of significant literary trends and movements, including Realism, Naturalism, "Modernism," and the Avant-Garde, including writers such as Blest Gana, Cumbercure, Maritza, Dario, Gutiérrez, Azuela, Malagó, Rivero, and others. Pr.: SPAN 563 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 752. Contemporary Spanish–American Narrative. (3) Analysis and discussion of the narrative from the period of the Boom to the present. Includes writers such as Borges, Shátto, García Márquez, García Márquez, Salgari, Fuentes, Allende, and Valenzuela. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 755. Spanish–American Drama. (3) Analysis and discussion of the drama of Spanish-speaking American nations, with emphasis on the nineteenth century. Readings from such leading playwrights as Uslz, Marquez, Carballo, Ortiz, Jiménez, and others. Pr.: SPAN 563 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 756. Nineteenth-Century Spanish Literature. (3) The reading and study of nineteenth-century Spanish literature: drama, essay, novel, poetry, and short story. Such authors as Larra, Zorrilla, el Duque de Rivas, Espronceda, Cervantes, and others. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 761. Medieval and Renaissance Literature. (3) Reading and interpretation of the principal literary works of Medieval and Renaissance Spain, from the jarchas and oral poetry to the Chansons and the Mucho de Mi Cual to the cronacas and La Celestina, studied within the historical and cultural context of each period. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 763. Twentieth-Century Spanish Literature. (3) The major writers and directions of twentieth-century literature in Spain. Analysis and discussion of the works of such representative authors as Unamuno, Jiménez, Guillel, Lorca, Cela, Bueno Vallejo, and Delibes. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 764. Spanish Literature of the Golden Age. (3) Reading and analysis of the works of such major writers as Lope de Vega, Calderón de la Barca, Gharliso, Fray Luis de León, San Juan de la Cruz, Góngora, and Quevedo, as well as selected works from the picarosque tradition. Pr.: SPAN 563 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 766. Spanish Poetry. (3) The development of the poetry of Spain from the Middle Ages to the 20th century. Includes poets such as Beroce, the romancers, Manrique, Góngora, Quevedo, Espronceda, Bécquer, Machado, Lorca, Guillén, Otero, Fuentes, Rosseti, and others. Taught as a seminar. Pr.: SPAN 563 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 767. Spanish–American Poetry. (3) The development of poetry from its early pre-Columbian manifestations to the present time with emphasis on the twentieth century. Taught in Spanish by such as Sor Juana, Martí, Dario, Borges, Vallejo, Neruda, Paz, Storm, Agustini, and Castellanos. Taught as a seminar. Pr.: SPAN 563 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 770. Introduction to Hispanic Linguistics. (3) Linguistic theory as it is applied to the Spanish language. Linguistic topics include syntax, phonology, morphology, semantics, sociolinguistics, and psycholinguistics. Other topics include dialectology, bilingualism, and the creative use of language. Of interest to students of the Spanish language acquisition and literature. Taught in Spanish. Pr.: SPAN 563 and 567 or equiv. facility as determined by modern languages faculty.

SPAN 771. Introduction to Spanish Translation. (3) Translation theory and practice as applied to Spanish. Translations from Spanish to English and English to Spanish, involving unique problems related to science, business, reporting, and literature. Pr.: 6 hours of college Spanish at the 500 level or equiv. facility as determined by modern languages faculty.

SPAN 772. The Hispanic World Today. (3) An investigation of selected social, political, and humanistic aspects of contemporary Hispanic culture. Pr.: Minimum of 6 hours of college Spanish at the 500 level or equiv. background as determined by modern languages faculty.

SPAN 775. Cervantes. (3) Reading of the Quijote and other pertinent primary texts and discussion of the literary and cultural background of the period. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 777. Spanish and Spanish–American Culture and Literature in Spanish Language and Literature. (3) Analysis and interpretation of cultural and literary texts from Spanish-speaking countries, with emphasis on the development of interpretive skills and materials, and their application to the Spanish curriculum at all levels. May be repeated once with a change in focus and texts. Pr.: Minimum of 6 hours of college Spanish at the 500 level or equiv. background as determined by modern languages faculty.

SPAN 779. Seminar in Spanish. (3) A seminar with variable topics. Pr.: Senior standing or consent of the instructor.

SPAN 799. Problems in Modern Languages. (Var.)

Music

Paul Hunt, Head
Professors A. Cochran,* R. Edwards,* Flouer,* Fallin,* Hunt,* Jackson,* Littrell,* Sloop,* Sutton,* and Walker,* Associate Professors Cooper,* J. Edwards,* Gartner,* House,* Morton,* Parker,* Polich,* Royse,* and Tracz,* Assistant Professors M.L. Cochran, Ganz, Goins,* T. Kerstetter,*
and Pittman; Instructors J. Kerstetter, Gbur, and Wingfield: Adjunct Betton; Emeriti: Professors Brookhart, Funkhouser, Langenkamp, Steinbauer, W. Walker, and White; Associate Professor Sidorsky; Assistant Professors Caine and M. Walker.

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The Department of Music is a member, with institutional accreditation, of the National Association of Schools of Music.

Curricula in music education and performance with majors in music theatre, composition, voice, piano, organ, strings, woodwind, percussion, and brass instruments are offered. Courses in music are available to any student enrolled in the university, subject to prerequisites listed in the course descriptions. Courses in performance do not require prerequisites for those not majoring in music; however, availability of instructor and fees for nonmajors are factors in securing performance instruction. This elective credit cannot be used later toward a music degree unless it meets the requirements of that course as they apply to those majoring in music. No more than two credits a semester will be granted for performance as an elective.

**Entrance requirements**

New and transfer students

Preliminary placement examinations in piano, the performance major, and theory must be taken by all students majoring in music regardless of the curriculum selected. Students will be advised as to the most appropriate field of concentration and the proper level of study as a result of examination.

Divisional hearings will determine the number of upper-level hours that will be accepted for transfer students.

Students who, on the basis of auditions in their major performance area, have been determined by the faculty to perform at a level lower than that acceptable for MUSIC 255 will not be allowed to declare a major in music. They will be required to enroll in MUSIC 251 Pre-Applied Study until such time that their proficiency level is acceptable for MUSIC 255.

If, on the basis of audition, a music major is determined by the faculty to lack sufficient proficiency to be a member of a major performing ensemble that student must enroll in Voice Class. A maximum of two semesters of Voice Class may be substituted for the major ensemble requirements.

**Music minor**

**MUSIC 201** Styles II, Textures ................................. 4
**MUSIC 202** Styles, III, Classical ................................. 4
**MUSIC 255** L-D Perf ........................................ 4
(MUSIC 111, 115, 116, 117, 130, 135, 140, 400, 401, 402, 403, 404, 408, 409, 411)
Guided electives* ................................................... 3–4

*Guided electives:

MUSIC 213 Styles, IV, Romantic or
Any music history course or literature course above 300 for which MUSIC 201 or 250 is a prerequisite.

or ANTH 515, 516, 517

**Bachelor of arts**

120 hours required for graduation

The bachelor of arts with a major in music emphasizes the liberal arts tradition. The program provides enough flexibility in electives for students to meet other preprofessional requirements, and it thus may appeal to students whose professional goals do not terminate with music. The minimum requirement in music is 48 hours, including the following:

**MUSIC 201** Styles II, Textures of Music ................. 4
**MUSIC 202** Styles III, The Classical Period ............ 4
**MUSIC 213** Styles IV, The Romantic Period ........... 4
**MUSIC 218** Aural Skills Proficiency ...................... 0
**MUSIC 398** Musical Style of the Baroque ................. 4
**MUSIC 406** Musical Style to 1600 (Medieval and Renaissance) ........................................ 4
**MUSIC 407** Musical Style of the Twentieth Century ................................................... 4

Recital attendance is required for seven semesters (transfer students’ records will be evaluated). The major program of music leading to the degree bachelor of arts may be elected with an emphasis in the areas of music literature, composition, or performance. The music literature area requires 8 hours of electives in music history and music literature. In addition, 8 semester hours in a single performance area are required, of which half must be from the 400 level.

The composition area calls for MUSIC 521 (three hours), 615, 616, 714, 3 semester hours in music literature, and 8 semester hours of piano, of which half must be from the 400 level.

The performance area calls for MUSIC 615 and 616 plus 16 hours of an instrument or voice, of which half must be from the 400 level.

Participation in a music organization (instrumental or choral, depending on the major performance area) is required each semester, and the piano proficiency requirement must be passed before graduation.

**Bachelor of music**

129–134 hours required for graduation

A four-year program is offered with concentrations in piano, organ, voice, strings, wind or percussion instruments, music theatre, and composition.

The general education requirements for this degree are listed in the College of Arts and Sciences section of this catalog.

The basic requirements for all options are:

**Basic requirements**

**MUSIC 201** Styles II, Textures of Music ................. 4
**MUSIC 202** Styles III, The Classical Period ............ 4
**MUSIC 213** Styles IV, The Romantic Period ........... 4
**MUSIC 218** Aural Skills Proficiency ...................... 0
**MUSIC 398** Musical Style of the Baroque ................. 4
**MUSIC 406** Musical Styles to 1600 (Medieval and Renaissance) ........................................ 4
**MUSIC 407** Musical Styles of the Twentieth Century ................................................... 4
**MUSIC 473** Seminar in Comprehensive Music Theater or Conducting .................................. 2
**MUSIC 417** Conducting ........................................ 2
**MUSIC 427** German Diction .................................. 1
**MUSIC 465** French Diction .................................. 1
**MUSIC 428** Major performing organization ............ 4
**MUSIC 475** Opera Workshop .................................. 4
**MUSIC 492** Methods and Materials for the Studio or Projects ........................................... 4
**MUSIC 706** Song Literature .................................... 2–3
**MUSIC 650** History of Opera .................................. 3
**MUSIC 206** Piano Class I ..................................... 1
**MUSIC 207** Piano Class II ..................................... 1

Music electives ..................................................... 2

**THTRE 260** Stage Movement .................................. 3
**THTRE 261** Fundamentals of Acting ....................... 3
**THTRE 268** Techniques of Makeup ....................... 1
**THTRE 361** Intermediate Acting ......................... 3
**THTRE 369** Fundamentals of Technical Productions ........................................... 3
**THTRE 211** Drama Participation ............................. 1
**THTRE 761** Advanced Acting ................................. 3

Theatre electives selected from the following .................................. 3

**THTRE 161** Fundamentals of Improvisation or Projects ........................................... 2

Secondary modern language ........................................... 4

**Additional requirements for vocal performance**

**MUSIC 255** Voice ............................................... 8
**MUSIC 455** Voice ............................................... 11

**Music electives** ..................................................... 2

**THTRE 560** Advanced Stage Movement or Projects ........................................... 2
**THTRE 664** Creative Dramatics .............................. 3

**DANCE 165** Ballet I ............................................ 2
**DANCE 120** Modern Dance .................................... 2

**DANCE 171** Jazz Dance ........................................... 2

**Dance electives** ..................................................... 2

Secondary modern language ........................................... 4

**Additional requirements for instrumental performance**

(Keyboard, strings, wind, and percussion instruments):

**MUSIC 255** Voice ............................................... 8
**MUSIC 455** Voice ............................................... 14

**Piano Class or Piano** ........................................ 4

**MUSIC 474** Problems in Musical Style and Music Pedagogy ....................................... 2
**MUSIC 615** Canon and Fugue .................................. 2
**MUSIC 616** Twentieth Century Counterpoint ............ 4
**MUSIC 492** Methods and Materials of the Studio or Projects ........................................... 4

Major performing organization each semester

**Diction** ................................................................. 4

Vocal ensemble or Opera Theatre .................................. 4

Additional music electives ........................................... 3

Primary modern language (1 additional course) .................. 4

Secondary modern language (1 course) .......................... 4

**Additional requirements for music theatre option**

**MUSIC 255** Voice ............................................... 8
**MUSIC 455** Voice ............................................... 11

**Music electives** ..................................................... 2

**THTRE 260** Stage Movement .................................. 3
**THTRE 261** Fundamentals of Acting ....................... 3
**THTRE 268** Techniques of Makeup ....................... 1
**THTRE 361** Intermediate Acting ......................... 3
**THTRE 369** Fundamentals of Technical Productions ........................................... 3

**THTRE 211** Drama Participation ............................. 1
**THTRE 761** Advanced Acting ................................. 3

Theatre electives selected from the following .................................. 3

**THTRE 161** Fundamentals of Improvisation or Projects ........................................... 2

Secondary modern language ........................................... 4
MUSIC 474 Problems in Musical Style and Music Pedagogy .......................... 2
MUSIC 714 Advanced Orchestration ......................................................... 2
MUSIC 615 Canon and Fugue ................................................................. 2
MUSIC 616 Twentieth Century Counterpoint ........................................... 2
Additional music electives ...................................................................... 3
Additional non-music electives ............................................................. 10

Additional requirements for composition
MUSIC 255 and/or 455 Major Instrument ................................................ 8
Piano (or minor instrument if keyboard is the major instrument) .......... 4
MUSIC 474 Problems in Musical Style and Music Pedagogy ............. 2
MUSIC 714 Advanced Orchestration ......................................................... 2
MUSIC 521 Composition ........................................................................ 12
MUSIC 615 Canon and Fugue ................................................................. 2
MUSIC 616 Twentieth Century Counterpoint ........................................... 2
MUSIC 631 Technology of the Electronic Music Studio ....................... 2
MUSIC 632 Digital Sound Synthesis ....................................................... 2
Major performing organization each semester ........................................ 7
Additional music electives ...................................................................... 7
Additional non-music electives ............................................................. 10

Bachelor of music education
136–139 hours required for graduation, depending on emphasis
The program of study leading to this degree is a nine-semester curriculum designed to prepare music teachers for grades K–12. With careful planning and enrollment during summer session(s) all requirements may be completed in four years. Within this curriculum, there are two emphases—vocal/choral music, and instrumental music.

Professional educational requirements
EDSEC 102
EDCEP 315, 525
EDCP 310, 455
EDETC 318
EDSEC 376, 477, 582
EDSP 323
For the College of Education certification, the following GPA requirements exist:
Overall GPA
Full admission: 2.5 is required in all college work attempted, including transfer and K-State credits.
A 2.75 grade point average is required on a 35-hour general education core which is specified by each department.
Students should consult with their advisors or inquire in 13 Bluemont Hall for specific requirements.

Music requirements for all options
Comprehensive musicianship:
MUSIC 200, 201, 202, 213, 218, 398, 406, 407, 417, and 473
Music education:
MUSIC 511, 512, and 670
Performance:
MUSIC 060, 501 or 502, and study of the major instrument or voice and enrollment in a major choral or instrumental organization each semester except the professional semester. In addition, at least one semester in a small ensemble is required.
A half recital or an extended “jury” recital is required before graduation. Divisional recommendation determines the methods of satisfying this requirement.
Instrumental majors are required to participate in marching band for at least two semesters (preferably during the freshman and sophomore years).
Piano proficiency requirements must be met one semester before scheduling student teaching.

Additional music requirements for instrumental emphasis
Performance:
MUSIC 203, 204, 206, 207, and 9 semester hours chosen according to the major instrument from: MUSIC 232, 233, 234, 235, 427, 428, and 429
Enrollments in major organizations must include at least two semesters in a choral organization; upon the recommendation of the advisor, one additional semester of individual or class instruction in voice may be substituted.

Additional requirements for vocal/choral emphasis
Performance:
If voice is the major performance area, MUSIC 232, 233, 234, 235, 285, and 287 or 465; 4 hours of keyboard. If keyboard is the major performance area, MUSIC 203, 204, 232, 233, 234, 235, 350 (two semesters), 410, and 450
Enrollments in major organizations must include at least two semesters in an instrumental organization; upon the recommendation of the advisor, one semester of advanced instrumental techniques classes may be substituted.
Requirements in general education are stated earlier in the College of Arts and Sciences section.

General regulations for all performance areas
As a part of performance requirements, studio and divisional seminars and general student recitals are held regularly. Each student is required to perform at least once a semester either in a studio seminar or in a student recital. All private study for credit will culminate in a jury exam each term.
Each division faculty maintains the right to advise students to discontinue performance study in that particular curriculum if the students have not demonstrated the necessary degree of progress.
For specific divisional requirements, each student should request a copy of detailed policies.
Participation in a major ensemble in the student’s major performance area selected with the advice of a departmental advisor is required each semester. Piano and organ majors may elect either instrumental or choral major ensembles to satisfy requirements.
As an extension of the study of an instrument or voice, attendance at studio and division seminars is required each semester.
Attendance at a minimum of 15 recitals and concerts is required for seven semesters. This attendance is to be divided among the various performance areas.
Piano is required as a performance minor for all degrees unless piano is the performance major. If the performance major is piano, then voice, any instrument, or organ may substitute for the performance minor.

Required recital attendance
Attendance at a minimum of 15 recitals or concerts per semester for seven semesters is required for graduation. Transfer students’ records will be evaluated.

Proficiencies
Music majors will enroll in MUSIC 218 Aural Proficiency concurrently with MUSIC 202. Credit for MUSIC 218 is earned by passing the aural proficiency exam. Successful completion of MUSIC 218 is a prerequisite for enrollment in MUSIC 398, MUSIC 406, MUSIC 407, MUSIC 473 and MUSIC 474.
(Except for placement of transfer students.)
MUSIC 060 Piano Proficiency requirements must be met prior to graduation.

Fees for private music lessons
University students enrolled in the bachelor of music, bachelor music education, bachelor of arts in music degrees or who are minoring in music, are exempt from fees for private music lessons and music practice facilities.

Comprehensive musicianship courses
The musical styles courses are required of all undergraduate music majors and coordinate the many facets of the student’s musical training. The structure of this program removes the traditional division between history and theory and integrates the student’s study by stylistic periods, prefaced by a concentrated introduction to musical textures and basic technical skills. Included in each course are lectures in theory and history as well as laboratory work in performance, conducting, keyboard application, aural skills, analysis, and creative writing.

Styles courses are governed by the philosophy that all musicians need practical skills in performance, composition, and analysis; music students should recognize a coherent link between all facets of musical training (including those requirements outside the styles courses); and all musical studies should, as closely as possible, relate to one’s own time.


MUSIC 201. Styles II, Textures of Music. (4) I, II. An introduction to musical elements and historical practice with emphasis on texture as a unifying force; stylistic procedures as applied to sound parameters by the major composers. Pr.: MUSIC 200 or tested knowledge of basic music theory.


MUSIC 218. Aural Skills Proficiency. (0) I, II. Required for graduation of all music majors. Pr.: MUSIC 202 or conc. enrollment.

MUSIC 398. Musical Styles of the Baroque Period. (4) II. Historical survey from 1600 to 1750; counterpart with emphasis on notation, canton, and fugue; scoring for strings. Pr.: MUSIC 213 and MUSIC 218.


MUSIC 473. Seminar in Comprehensive Musicianship. (2; R.S.) A study of music technology and computer applications; popular and non-Western styles. Pr.: MUSIC 213 and MUSIC 218. Required for music education and performance majors.

MUSIC 474. Problems in Musical Style and Music Pedagogy. (2; I, II, S.) Individual projects relating to a specific style or pedagogical problem of the performance major or minor. Pr.: MUSIC 213 and MUSIC 218.

MUSIC 599. Special Studies in Music. (1–3) I, II, S. Pr.: Background of courses needed for studies undertaken.

Music history, literature, and theory courses

MUSIC 100. Music Fundamentals. (3) I, II. Elements of music as represented in selected masterpieces of the standard concert repertoire, designed to heighten the perception and the enjoyment of the listener who has limited musical knowledge. For nonmusic majors only.

MUSIC 160. Music Listening Laboratory. (2; I, II, S.) A basic introduction to music. Overview of Medieval, Renaissance, Baroque, Classic, Romantic, and Twentieth Century stylistic periods; elements of music (melody, rhythm, harmony, form, timbre); and instrument recognition. The focus of the class is on developing listening skills and learning to write basic program notes using the new language that has been acquired. Performances are provided by university ensembles, faculty artists, and special guests.

MUSIC 220. Topics in Music. (1–3) Offered on demand. Exploration of the musical dimensions of a particular topic or theme chosen by the instructor and repeated once.

MUSIC 245. Introduction to American Music. (3) I, II, S. An introduction to the functions of music in American society and the elements of music, including a survey of the development of various types and styles of music in America. For nonmusic majors only.

MUSIC 250. Introduction to Music. (3) I, II, S. Elements of music as represented in selected masterpieces of the standard concert repertoire, designed to heighten the perception and the enjoyment of the listener who has limited musical knowledge. For nonmusic majors only.

MUSIC 310. History of Musical Instruments. (2) Offered on demand, only in intersessions, through TELENET, or off-campus. The development of musical instruments in each period of Western music. Pr.: MUSIC 160 or 250.

MUSIC 385. History of the American Popular Song. (2) Offered on sufficient demand. The vocal and musical aesthetic of the American pop song and its historical development, from the early eighteenth century up to the present day. Pr.: MUSIC 160 or MUSIC 250.


MUSIC 399. Honors Seminar. (3) On sufficient demand. For selected sophomores.


MUSIC 424. Jazz in Kansas City and the Southwest. (2–3) Offered on demand, only in intersessions, through TELENET, or off-campus. The history and development of jazz styles in Kansas City and the southwestern United States, emphasizing the influence of styles of other geographic areas. Pr.: MUSIC 160.

MUSIC 425. Topics in Jazz. (Var.) Offered on sufficient demand. Big bands; jazz pianists and styles; survey of combos and jazz stye. Pr.: MUSIC 407 and MUSIC 424.

MUSIC 470. Songwriting. (3) Offered on sufficient demand. Composition of original small song forms including preparation of lead sheet and vocal score using guitar chord symbols. Pr.: MUSIC 100. For nonmusic majors only.

MUSIC 498. Honors Tutorial in Music. (1–3) I, II. Individual directed research study of a topic in music, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of the instructor.

MUSIC 499. Senior Honors Thesis. (2; I, II, S. Open only to seniors in the arts and sciences honors program.

MUSIC 550. Musical Comedy. (3) On sufficient demand. The history of operetta and music comedy from Offenbach to the present. Offered jointly by Departments of Music and Speech. Same as THTRE 570.


MUSIC 614. Harmony and Tonal Counterpoint. (1) Recommended for graduate students in music who desire additional work in the harmonic aspects of 18th-century counterpoint. Concurrent enrollment in MUSIC 615 is required.


MUSIC 616. Twentieth-Century Counterpoint. (2; II, S.) A study of the development of Western music from the late Baroque to the present. Pr.: MUSIC 398, consent of instructor.

MUSIC 620. Music Calligraphy and Score Preparation. (2; Tools and processes of preparation of music manuscript in facsimile editions. Computer applications for typesetting and music publishing. Pr.: MUSIC 201.


MUSIC 650. History of the Opera. (3) On sufficient demand. A study of selected masterpieces of opera, drama, and on the unique qualities of opera as a collective art. Pr.: MUSIC 201 or 250. Same as THTRE 671.


MUSIC 704. Symphonic Literature. (3) I. The development of orchestral music from the late Baroque to the present, with emphasis on selected symphonies of the late eighteenth and nineteenth centuries. Pr.: MUSIC 407.

MUSIC 705. Chamber Music Literature. (3) II. In alternate years. A selection of chamber music from the eighteenth century to the present. Pr.: MUSIC 407.

MUSIC 706. Song Literature. (3) II, in alternate years. Pr.: MUSIC 407.

MUSIC 708. Opera Literature. (3) II, in alternate years. A study of standard choral masterpieces in both large and small forms from 1450 to the present. Pr.: MUSIC 407.

MUSIC 711. Practical Composition and Arranging. (2) On sufficient demand. Explanation of styles and techniques applicable to contemporary commercial music. Practical arranging for the stage band. Pr.: MUSIC 213 or consent of instructor.

MUSIC 714. Advanced Orchestration. (2) On sufficient demand. The study of orchestra and band scores. Exercises in orchestrating this type of music for different choirs of instruments, as well as scoring for full orchestra and symphonic band. Pr.: MUSIC 407 or consent of instructor.

MUSIC 737. Organ Literature. (3) I, in alternate years. A survey of significant compositions from the Renaissance to the present, with emphasis on performance practice. Pr.: MUSIC 407.


Music education courses

MUSIC 232. Woodwind Techniques and Materials. (1) I. A beginning course in the fundamentals of playing and methods for teaching woodwind instruments. For music majors only, and not open to woodwind majors.

MUSIC 233. Brass Techniques and Materials. (1) I. A beginning course in the fundamentals of playing and methods for teaching brass instruments. For music majors only, and not open to brass majors.

MUSIC 234. String Techniques and Materials. (1) I. A beginning course in the fundamentals of playing and methods for teaching stringed instruments. For music majors only, and not open to string majors.

MUSIC 235. Percussion Techniques and Materials. (1) I. The fundamentals of playing and methods of teaching percussion instruments. For music majors only, and not open to percussion majors.

MUSIC 405. Music for Elementary Teachers. (3) I, II, S. The contribution of music to child development in elementary schools. A study of music literature suited to children through the development of protective listening and the expressive phases of music including rhythm response, singing, playing, reading, and writing. Pr.: Junior standing or consent of instructor.

MUSIC 427. Advanced String Techniques and Materials. (1–2) II. Playing and teaching skills beyond fundamentals and presentation of materials suitable for private and public school instruction at the secondary level. Required of all instrumental majors in music education. Pr.: MUSIC 234.


MUSIC 511. Music in the Schools, K–6. (4) II. The music curriculum in grades K–6, including a study of the musical characteristics of children and materials and techniques for teaching instrumental, vocal, and general music

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at this level. Pr.: Admission to teacher education and junior standing in music.

MUSIC 512. Music Program in Junior/Senior High Schools. (4) I. Organization and administration of the comprehensive music program in junior and senior high schools; including the study of vocal and instrumental ensemble development, as well as techniques and materials for other types of music classes. Pr.: Admission to teacher education and junior standing in music.

MUSIC 670. Advanced Studies in Music Education. (2) I, II, S. Advanced undergraduate studies of various topics related to the teaching of music in grades K–12. May be repeated for credit when topics vary. Pr.: MUSIC 511 or 512.

Workshops in music

MUSIC 489. Workshop in Music. (1–2) S. Specialized interest areas for undergraduate students only. Pr.: Consent of instructor.

Organizations and ensembles

MUSIC 111. Concert Choir. (0–1) I, II. Admission by audition.

MUSIC 113. University Band. (0–1) II. Open to all interested wind and percussion performers without audition.

MUSIC 114. Pep Band. (0–1) II. Admission by audition.

MUSIC 115. Marching Band. (0–1) I. Admission by audition.

MUSIC 116. Concert Band. (0–1) II. Open to all interested wind and percussion performers without audition.

MUSIC 117. Symphony Band. (0–1) I, II, S. Admission by audition.

MUSIC 120. Chamber Singers. (0–1) I, II, S. Admission by audition.

MUSIC 121. Collegiate Chorale. (0–1) I, II, S. Open to all interested singers. Audition determines membership in other choral organizations.

MUSIC 125. K-State Singers. (0–1) I. Admission by audition. (Not open to music majors.)

MUSIC 130. Symphony Orchestra. (0–1) I, II, S. Admission by audition.

MUSIC 131. Theatre Orchestra. (0–1) I, II. Admission by audition.

MUSIC 135. Men's Glee Club. (0–1) I, II. Admission by audition.

MUSIC 140. Women's Glee Club. (0–1) I, II. Admission by audition.

MUSIC 287. German Diction. (2) Offered in alternate years. Pr.: MUSIC 391 or consent of instructor. Pre-proficiency in German required.

MUSIC 299. Jazz Improvisation II. (1) I, II. Continuation of Jazz Improvisation I, with emphasis on more complex chord progressions, altered scales, and other modes. May be repeated once for credit. Pr.: Concert credit in piano or organ. Pr.: MUSIC 410.

MUSIC 390. World Music. (2) I, II. Study of music from various regions of the world. Pr.: Consent of instructor.

MUSIC 391. Keyboard Pedagogy. (2) I, II. Principles and techniques of operatic and musical theatre production, with emphasis on class rehearsal and performance of selected scenes from opera and musical drama; brief survey of the history of opera. Offered jointly by the Departments of Music and Speech. Vocal ensemble credit may be earned in this course. Same as THTRE 475.

MUSIC 480. Upper-Division Ensemble Performance. (1) I, II. S. Instruction is offered each semester in the following areas: brass, chamber music, concert jazz, jazz combo, strings, winds, percussion, and vocal ensemble. Admission is by audition and students may enroll in more than one ensemble simultaneously.

MUSIC 490. Conducting. (2) I. Techniques of the baton; gestures, signs, and cues as generally used in conducting choral and instrumental organizations. Includes essentials of technique and interpretation in both choral and instrumental types of ensemble performance. For music majors only. Required before admission to student teaching. Pr.: MUSIC 406.

MUSIC 512. Music Program in Junior/Senior High Schools. (Var.) I, II, S. Advanced undergraduate studies of various topics related to the teaching of music in grades K–12. May be repeated for credit when topics vary. Pr.: MUSIC 511 or 512.

Performance classes

MUSIC 050. Recital Attendance. (0) I, II.

MUSIC 060. Piano Proficiency. (0) I, II, S. Required for graduation of all music majors.

MUSIC 103. Voice Class I. (1) I, II. A beginning course in the basics of singing for nonmusic majors.

MUSIC 104. Voice Class II. (1) I, II. Singing technique skills beyond the basics to include performance skills for nonmusic majors. Pr.: MUSIC 103.

MUSIC 203. Vocal Techniques I. (1) I, II. A beginning course in the basics of singing and teaching skills. For music education majors whose emphasis is instrumental music.

MUSIC 204. Vocal Techniques II. (1) I, II. Singing and teaching skills beyond the basics and presentation of materials suitable for private and public school instruction at the secondary level. For music education majors whose emphasis is instrumental music. Pr.: MUSIC 203.

MUSIC 305. Studio Accompanying. (1) On sufficient demand. Piano student assigned to studio instructor. Accompanies lessons for at least two hours a week. Ensemble credit for pianists. Pr.: Consent of instructor.

MUSIC 351. Recital Accompanying. (1) On sufficient demand. Piano student assigned to a music major preparing for graduation recital. Pianist accompanies student in lessons and presents the formal public program as course requirement. Pr.: Consent of instructor.

MUSIC 400. Concert Choir. (0–1) I, II. Admission by audition.

MUSIC 401. Concert Band. (0–1) I, II, S. Open to all interested wind and percussion performers without audition.

MUSIC 402. Symphony Band. (0–1) I, II, S. Admission by audition.

MUSIC 403. Collegiate Chorale. (0–1) I, II, S. Open to all interested singers. Audition determines membership in other choral organizations.

MUSIC 404. Symphony Orchestra. (0–1) I, II, S. Admission by audition.

MUSIC 408. Men's Glee Club. (0–1) I, II. Admission by audition.

MUSIC 411. Marching Band. (0–1) I. Admission by audition.

MUSIC 414. Theatre Orchestra. (0–1) I, II. Admission by audition.

MUSIC 415. Chamber Singers. (0–1) I, II, S. Admission by audition.

MUSIC 416. Pep Band. (0–1) II. Admission by audition.

MUSIC 475. Opera Workshop. (Var.) I, II. S. Principles and techniques of operatic and musical theatre production, with emphasis on class rehearsal and performance of selected scenes from opera and musical drama; brief survey of the history of opera. Offered jointly by the Departments of Music and Speech. Vocal ensemble credit may be earned in this course. Same as THTRE 475.

MUSIC 480. Upper-Division Ensemble Performance. (1) I, II. S. Instruction is offered each semester in the following areas: brass, chamber music, concert jazz, jazz combo, strings, winds, percussion, and vocal ensemble. Admission is by audition and students may enroll in more than one ensemble simultaneously.

MUSIC 490. Conducting. (2) I. Techniques of the baton; gestures, signs, and cues as generally used in conducting choral and instrumental organizations. Includes essentials of technique and interpretation in both choral and instrumental types of ensemble performance. For music majors only. Required before admission to student teaching. Pr.: MUSIC 406.

MUSIC 450. Vocal Techniques IV. (1) I. More advanced singing skills. Practice in teaching private singing lessons. For music education majors whose emphasis is piano or organ. Pr.: MUSIC 410.


MUSIC 467. French Diction II. (1) II. Rules for pronouncing and translating French vocal texts.

MUSIC 492. Methods and Materials for the Studio. (2) I, II, S. Methods of teaching fundamental techniques; selection of teaching materials outlining courses of study. For undergraduate students in performance curricula. Taught in divisions according to the major. Practical application through supervised studio teaching. Pr.: MUSIC 391, or consent.

MUSIC 501. Half Recital. (0) I, II. S. Public performance; vocal or instrumental with suggested performing time of 25 minutes.

MUSIC 502. Full Recital. (0) I, II. S. Public performance; vocal or instrumental with suggested performing time of 50 minutes.

Studio performance

MUSIC 251. Pre-Performance Study. (Var.) I, II. S. For students who do not meet standards for regular performance study.

MUSIC 255. Lower-Division Performance. (Var.) I, II. S. Instruction is offered every semester in voice and each of the following instruments: baritone, bassoon, clarinet, double bass, early winds, flute, french horn, guitar, harp, harpsichord, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, viola da gamba, violin, and violoncello. Students may enroll in more than one instrument simultaneously and may earn 1 to 4 hours per semester in each instrument.

MUSIC 455. Upper-Division Performance. (Var.) I, II. S. Instruction is offered every semester in voice and each of the following instruments: baritone, bassoon, clarinet, double bass, early winds, flute, french horn, guitar, harp, harpsichord, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, viola da gamba, violin, and violoncello. Students may enroll in more than one instrument simultaneously and may earn 1 to 4 hours per semester in each instrument.

MUSIC 521. Composition. (Var.) I, II. S.

MUSIC 641. Secondary Performance Area. (1–2) For graduate students who wish to study an instrument (or voice) other than the major performance area. Pedagogical methods and fundamentals are stressed.
Philosophy

James R. Hamilton,* Head
Professor Reagan,* Associate Professors
Draper,* Exdell,* Hamilton,* and
Rozemond,* Assistant Professors Clark,*
Foran, Glymour,* Pieper,* Sabatés,* and
Wall,* Emeritus: Professors Scheer* and
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Philosophy is the study of the intellectual foundations of virtually every area of human thought and endeavor. Over the centuries philosophers have examined, for example, the nature and justification of moral values, religious and scientific explanations of the world, the rationality of social institutions, and the nature of reasoning and argument.

The program in philosophy gives students an understanding of traditional philosophical subjects such as these. It also helps students develop critical habits of thinking and skill in understanding complex issues. Consequently, philosophy is an appropriate subject around which to organize a general education for any purpose.

The Department of Philosophy offers a variety of options within the major program to provide flexibility in organizing a course of studies with philosophy at its center, and a minor.

Philosophy minor
One logic course (PHILO 110 or 320)
Three courses from: PHILO 300, PHILO 301, PHILO 305,
PHILO 330, PHILO 340
2 philosophy electives, one of them at the 500 level or above

There are five degree options: traditional philosophy, philosophy/pre-law, philosophy/pre-business, philosophy/pre-ministry, and philosophy/interdisciplinary.

Philosophy major
Core curriculum
All philosophy majors must take the following six courses:

PHILO 300 History of Ancient Philosophy
PHILO 301 History of Modern Philosophy
PHILO 305 Philosophical Methods and Perspectives
PHILO 320 Symbolic Logic I
PHILO 330 Ethical Theories
PHILO 340 Theories of Knowledge and Reality

Traditional philosophy option
(B.A. only)
36 hours in philosophy
This option is for students who are interested in a traditional liberal arts course of study or who desire to do graduate study in philosophy.

Philosophy course requirements:
Core curriculum .............................................................. 18
2 courses from: PHILO 525, PHILO 535,
PHILO 570, PHILO 585, PHILO 650, PHILO 660,
PHILO 665 ................................................................. 6
2 courses from: PHILO 601, PHILO 615, PHILO 620,
PHILO 625, PHILO 635, PHILO 640, PHILO 645,
PHILO 655, PHILO 660, PHILO 665, PHILO 670,
PHILO 675 ................................................................. 6
2 philosophy electives (one of them at the 500 level or above). Electives can be from groups above .......................... 6

Pre-graduate school option
(B.A. only)
42 hours in philosophy
The option is for students who are mainly interested in doing graduate study in philosophy.

Philosophy course requirements:
Core curriculum .............................................................. 18
PHILO 620 ................................................................. 3
2 courses from: PHILO 525, PHILO 535, PHILO 570,
PHILO 585, PHILO 650, PHILO 660 .................................. 6
3 courses from: PHILO 510, PHILO 601, PHILO 625,
PHILO 635, PHILO 640, PHILO 645, PHILO 665,
PHILO 685 (one of them must be PHILO 635 or
PHILO 640) ................................................................. 9
2 philosophy electives (one of them at the 500 level or above). Electives can be from groups above .......................... 6

Pre-law options
(B.A. or B.S.)
While no one major is given preference by law school admission committees, law schools recognize the value of philosophy for refining skills in expression, comprehension, and critical thinking. According to the Pre-Law Handbook, "the free and spirited consideration of philosophical questions is almost the model for legal training."

The Department of Philosophy offers two degree options for students planning to study law: a double-major option, intended as a complement to a second major in another department, and a single-major option, which does not require a second major.

Single major option
39 hours in philosophy

Core curriculum .............................................................. 18
PHILO 525. ................................................................. 3
PHILO 535. ................................................................. 3
2 courses from PHILO 365, PHILO 370, PHILO 380,
PHILO 585, PHILO 595, PHILO 650, PHILO 660,
PHILO 665, PHILO 670, PHILO 675 .................................. 6
3 philosophy electives (two of them at the
500 level or above) .................................................. 9

Double major option
30 hours in philosophy plus second major.

Core curriculum .............................................................. 18
PHILO 525. ................................................................. 3
PHILO 535. ................................................................. 3
1 course from PHILO 585, PHILO 595, PHILO 650,
PHILO 660, PHILO 670, PHILO 675 .................................. 3
1 philosophy elective (at the 500 level or above) .................. 3

Additional requirement: Completion of another major in a department of the College of Arts and Sciences.

Pre-law options
(B.A. or B.S.)
30 hours in philosophy

The pre-law option is for students who plan to do further work leading to a master’s in business administration.

Core curriculum .............................................................. 18
PHILO 525 or 535 .......................................................... 3
PHILO 665 ................................................................. 3
2 philosophy electives (one of them at the 300 level or above, and one of them at the 500 level or above) .................. 6

Students may combine a philosophy/pre-business degree with an undergraduate degree in the College of Business Administration.

Philosophy/pre-ministry
(B.A. only)
33 hours in philosophy

This is a nonsectarian program for students who are interested in the religious ministry as a profession. Students in this program will be advised on other courses outside philosophy recommended by most American schools of theology.

Core curriculum .............................................................. 18
PHILO 635 or 640 .......................................................... 3
PHILO 615 ................................................................. 3
3 philosophy electives at the 500 level or above .................. 9

Additional requirement: Two courses in which religion is studied, from departments other than philosophy The Department of Philosophy must approve counting these courses towards completion of the major.

Interdisciplinary option
(B.A. or B.S.)
30 hours in philosophy plus second major

This option is for students who wish to combine a major in philosophy with a major in another discipline. Each student completing a degree under this option must have a faculty advisor in the Department of Philosophy who supervises the student’s program. Philosophy courses other than the core curriculum must be approved by this advisor.

Philosophy course requirements:
Core curriculum .............................................................. 18
PHILO 680 Problems in Philosophy .................................. 3
3 philosophy electives (2 of them must be at the
500 level or above) .................................................. 9

Additional requirements:
1. Completion of a second major, as appropriate; student’s program must be approved by a faculty-advisor in the Department of Philosophy.
2. PHILO 680 Problems in Philosophy must focus on the relationship of philosophy to the student’s other major; the student must write a substantial paper on that relationship for this course.

Philosophy courses

PHILO 100. Introduction to Philosophical Problems.
(3) L, II, S. 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.
PHILO 105. Introduction to Critical Thinking. (3) I or II. A basic introduction to both deductive and inductive reasoning. Emphasis is placed on constructing, analyzing, and evaluating arguments.

PHILO 110. Introduction to Formal Logic. (3) I, II, S. Systematic study of deductive reasoning (and possibly inductive reasoning) using the techniques of modern logic. Examines different types of valid inference, the logical structure of English sentences, and the validity of arguments generally. Involves the development and use of a symbolic system which models logical relations among sentences.

PHILO 115. Introduction to Philosophy of Religion. (3) I, II, S. Arguments pertaining to the existence of God as conceived in the Western tradition, the nature of religious experiences, the problem of evil, the proper relation between reason and faith, and religious diversity.

PHILO 120. Introduction to Philosophy of Art. (3) I. Philosophical problems concerning the concepts of art and aesthetic value, patterns of reasoning in art appreciation and criticism, and writing histories of art and artistic movements.

PHILO 125. Introduction to Philosophy of Science. (3) I, II. S. Examines the nature of science and how it differs from pseudo-sciences such as astrology, and raises questions about the nature of reality and social value of science.

PHILO 130. Introduction to Moral Philosophy. (3) I, II, S. Philosophical issues arising in and about morality, such as the nature of moral judgments, moral knowledge, moral justifications, and the relation of morality to religion. Topics may include Plato, Aristotle, Aquinas, Kant, the social contract and Hume. Pr.: One course in philosophy, major standing, or consent of instructor.

PHILO 135. Introduction to Social and Political Philosophy. (3) I, II, S. Examines rival theories of justice and applies them to current debates about economic inequality, gender, race, and sexual orientation. Combines some influential historical texts with contemporary philosophical literature on current political issues.

PHILO 140. Introduction to Philosophy of Mind. (3) I, II. Philosophical problems concerning the nature of human beings, including the relation between mind and body, the existence of the soul, the nature of consciousness, the possibility of artificial intelligence, human freedom and personal identity.

PHILO 145. Historical Introduction to Philosophy. (3) I, II. A survey of philosophy through the study of major thinkers in the history of philosophy, such as Plato, Descartes, Hume. Topics may include the immortal soul, the existence of God, skepticism, reasons for being moral.

PHILO 150. Introduction to Philosophy of Feminism. (3) I, II. Philosophical examination of issues such as femininity and masculinity, the social conditions of gender equality, multiculturalism and gender, affirmative action, sexual harassment, and welfare policy.

PHILO 160. Introduction to Philosophy of Law. (3) I, II. Examines fundamental issues concerning the nature and justification of legal institutions. Topics may include the nature of law and its relations to morality, criminal justice and punishment, responsibility and liberty, and legal interpretation.

PHILO 175. Philosophical Composition. (4) II. The purpose of this course is to provide students an introduction to philosophy while assisting them to further develop writing skills in preparation for Expository Writing II. Topics covered vary but typically are related to understanding oneself and our moral practices. Pr.: English 100 and open only to freshmen and sophomores.

PHILO 215. Honors Introduction to Philosophy. (3) I, II. Central problems of philosophy, such as skepticism and knowledge, the nature of human minds, freedom, the nature of morality, justice and the existence of God as conceived in the Western tradition. For students in the honors program.

PHILO 230. Honors Introduction to Moral Philosophy. (3) I, II. Philosophical issues arising in and about morality. Topics selected from: the nature of moral judgements, moral knowledge, moral justification, and the relation of morality to religion. For students in an honors program.

PHILO 297. Honors Introduction to the Humanities I (3) I. Study of selected major works of history, literature, and philosophy which have been of central importance in the formation of the Western tradition. Consideration is placed on classroom discussion and writing interpretive essays. Limited to entering freshmen. Pr.: Consent of instructor. Same as ENGL 297, HIST 297, MLANG 297.

PHILO 298. Honors Introduction to the Humanities II (3) I or II. A continuation of PHILO 297. Pr.: Consent of instructor. Same as ENGL 298, HIST 298, MLANG 298.

PHILO 300. History of Ancient Philosophy. (3) I. Ancient Greek Philosophy, particularly in the writings of Plato and Aristotle. Pre-Socratic and/or Hellenistic philosophers may be represented as well. Pr.: One course in philosophy, major standing, or consent of instructor.

PHILO 301. History of Modern Philosophy. (3) II. Development of philosophical ideas from Descartes to Kant. The course includes topics such as skepticism, mind-body dualism, the nature of causal reasoning, the existence of God. Pr.: One course in philosophy, major standing, or consent of instructor.

PHILO 305. Philosophical Methods and Perspectives. (3) II. Special knowledge, methods and skills needed to do philosophic research. Conceptual analysis, argument strategy, definition, selection of counter-examples, applied to the mechanics of paper writing in philosophy and philosophical discussion. Pr.: One course in philosophy, major standing, or consent of instructor.

PHILO 320. Symbolic Logic I. (3) I or II. First order logic, covering truth tables and truth functions, and derivations in both propositional and predicate logic.

PHILO 330. Ethical Theories. (3) I. Central issues in ethical theory, with emphasis on recent developments in moral philosophy or classical formulations of ethical theories. Pr.: One course in philosophy, major standing, or consent of instructor.

PHILO 340. Theories of Knowledge and Reality. (3) II. An introduction to some central problems about reality and our knowledge of it, and the answers offered major views such as realism, idealism, skepticism, nominalism, naturalism, foundationalism, and coherence. Pr.: One philosophy course, major standing, or consent of instructor.

PHILO 360. Topics in Continental Philosophy. (3) On sufficient demand. A study of selected figures (such as Nietzsche, Heidegger, Husserl, Wittgenstein, Gadamer, Ricoeur, Foucault, Lacan), or movements (such as Transcendental Idealism, Existentialism, Marxism, Phenomenology, Post-Modernism), or issues in continental philosophy, such as the relation to God, free will, the state, irrationalism, gender, philosophical methodology.

PHILO 365. Medical Ethics. (3) I. Selected moral issues which confront the medical professional, including consent, abortion, euthanasia, conflict of interest, and confidentiality.

PHILO 385. Engineering Ethics. (3) I or II. An examination of the principles of ethics as applied to cases arising in the practice of the various branches of engineering.

PHILO 390. Business Ethics. (3) I or II. An examination of the principles of ethics as applied to situations and practices in modern American business.

PHILO 399. Honors Seminar in Philosophy. (3) I. A study of ethical issues raised by the impact of computers and associated technologies on society, including such topics as ethics of computer use, computer fraud, protection of privacy, legal, moral, and public policy-making responsibilities of computer professionals. Pr.: Junior standing plus conc. enrollment in CIS 492, CIB 520.

PHILO 499. Senior Honors Thesis. (2) I, II, S. Open only to students in the arts and sciences honors program.


PHILO 525. Social-Political Philosophy. (3) II. Examines influential works in social and political philosophy with a focus on both historical, modern, and contemporary application. Students will read and evaluate primary texts in the main traditions of modern thought, e.g., liberalism, libertarianism, communitarianism, Marxism, and contemporary feminism. Pr.: One course in philosophy (PHILO 330 recommended) or consent of instructor.

PHILO 535. Philosophy of Law. (3) I. Philosophical issues arising in the legal context, issues such as the nature of legal reasoning, the nature and scope of constitutional protections, the justification of punishment, affirmative action, the proper role of the legal profession, the proper role of judge, the role of expert witness, and the role of legal professionals. Pr.: One course in philosophy (PHILO 330 recommended) or consent of instructor.

PHILO 550. Philosophy of Social Sciences. (3) I or II in alternate years. Epistemic methods and metaphysical presuppositions in the social sciences. Topics selected from: models, measurement, reduction, explanation, theories of function, theories of ideal types, and rational choice theory. Pr.: Two courses in philosophy, one of which must be PHILO 110 or 320.

PHILO 570. Aesthetics. (3) On sufficient demand. A study of selected topics in aesthetics and the philosophy of art. Pr.: One course in philosophy or consent of instructor.

PHILO 585. History of Ethics. (3) I or II in alternate years. Examines major traditions in the history of moral philosophy. Figures may include Plato, Aristotle, Aquinas, Hume, Kant, Mill, Nietzsche. Pr.: One course in philosophy (PHILO 330 recommended), or consent of instructor.

PHILO 590. Topics in Philosophy. (3) On sufficient demand. A study of selected topics in applied ethics, applied philosophy, or the continental tradition. Pr.: One course in philosophy.

PHILO 595. Environmental Ethics. (3) I or II in alternate years. Ethical issues that arise from the use and exploitation of the environment, such as the relationship to other species, obligations to future generations, obligations to non-humans, and the ethics of environmental risk management. Pr.: One course in philosophy (PHILO 330 recommended), or consent of instructor.

PHILO 601. Advanced Issues in the History of Philosophy. (3) I or II in alternate years. Particular sets of issues in the history of philosophy or in-depth examination of the thought of a particular philosopher. Emphasis on issues in metaphysics and epistemology. Pr.: One course in philosophy. Depending on topic, PHILO 300 or 301 required.

PHILO 615. Philosophy of Religion. (3) I or II in alternate years. A course designed to examine philosophically the basic concepts of religion, e.g., truth and faith, theism and atheism, reason and revelation, reason and religion, evil, man, sin, salvation, eschatology. Pr.: Two courses in philosophy. PHILO 305, 320, or 340 recommended.

PHILO 620. The Development of Analytic Philosophy. (3) I or II in alternate years. The history of analytic philosophy from 1870 to 1960, examining the works of most of the following philosophers: Frege, Russell, Wittgenstein, Moore, the logical positivists, and Quine. Pr.: Two courses in philosophy, one of which must be PHILO 110 or 320.

PHILO 625. Philosophy of Language. (3) I or II in alternate years. Philosophical problems concerning the nature of language and such concepts as meaning and truth. Pr.: Two courses in philosophy, one of which must be PHILO 110 or 320.

PHILO 635. Metaphysics. (3) I or II in alternate years. A critical examination of theories about things and their qualities, causality, space, and time. Both traditional and contemporary sources may be used, but emphasis will be placed on the latter. Pr.: Two courses in philosophy. PHILO 305, 320, or 340 recommended.

PHILO 640. Epistemology. (3) I or II in alternate years. Philosophical issues relating to human knowledge. Issues selected from: difference between knowledge and belief, whether knowledge is really attainable, whether we have epistemic duties and what they might be, what counts as justification for belief. Special topics might include self-
knowledge, a priori knowledge, inductive knowledge, and naturalism. Pr.: Two courses in philosophy. PHIL 305, 320, or 340 recommended.

PHILO 645. Philosophy of Science. (3) I or II in alternate years. Philosophical problems concerning science and its methods. Topics selected from: qualitative and quantitative confirmation theories and the nature of scientific theories, laws, and explanation in the physical and biological sciences. Pr.: Two courses in philosophy, one of which must be PHILO 110 or 320.

PHILO 650. Rationality and Action. (3) I or II in alternate years. Philosophical issues connected with human action and reasons for action, such as the existence of objective reasons to act one way rather than another, the existence of reasons to act that do not stem from our desires, the difference between reasoning about how to act and reasoning about what is true, the nature of intention and desire and their specific roles in action. Pr.: Two courses in philosophy.

PHILO 655. Philosophy of Mind. (3) I or II in alternate years. A philosophical examination of major theories about the nature of the mind, mental causation, consciousness, intentionality, cognition and psychological explanation. Pr.: Two courses in philosophy. PHILO 305, 320, or 340 recommended.

PHILO 660. Advanced Ethics. (3) I or II in alternate years. Selected topics in contemporary ethical theory. Pr.: PHILO 330 and one other philosophy course.

PHILO 665. Philosophy of Economics. (3) I or II, in alternate years. Moral and conceptual foundations of modern economic systems. Topics selected from: the relations between "economic rationality" and the quality of life, the just distribution of wealth, the nature of property rights, and the value of technology in society. Pr.: Two courses in philosophy.

PHILO 670. Advanced Social-Political Philosophy. (3) I or II in alternate years. A study of a single topic in contemporary philosophical literature, with application to current political issues. Topics will vary as determined by the instructor. Topics selected from: multiculturalism, minority rights, nationalism, justifications of democracy. Pr.: PHILO 525 and one other philosophy course.

PHILO 675. Advanced Philosophy of Law. (3) I or II in alternate years. A current issue in analytical jurisprudence (such as the nature of law, the relation between law and morality, the proper standards for constitutional interpretation) or normative jurisprudence (such as the basis for tort law). Pr.: PHILO 535 and one other philosophy course.


PHILO 685. Current Topics in Metaphysics and Epistemology. (3) I or II in alternate years. Selected philosophical issues of current interest in analytic metaphysics and epistemology. Pr.: PHILO 340 and two additional philosophy courses.

PHILO 690. Special Topics in Philosophy. (3) On sufficient demand. Selected topics in metaphysics, epistemology, philosophy of science, philosophy of language, or philosophy of mind. Pr.: PHILO 320 and additional background courses required for topic.

PHILO 701. Topics in Metageography. (3) On sufficient demand. Selected topics in the analysis of first-order theories and the foundations of mathematics. Pr.: PHILO 510 or MATH 511.

Physics

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Physics is a quantitative science based on observation and experiment. Students of physics learn, often by performing experiments themselves, how a body of experimental data suggests an experimental law. Then they see how this experimental law can be generalized and tested by further experiment. However, it is as the originator of the next step in the method of science that physics emerges as the foundation of our technological age. The collection of experimental laws is studied and when properly generalized and tested is unified into a fundamental physical principle.

A major in physics equips a liberal arts student with a broad education that is uniquely adapted to our time. The physics curriculum provides a broad science background suitable for the creative application of science and mathematics to interdisciplinary problems. Although physics does not exclude the intuitive mind, the emphasis on mathematics tends to favor more analytically talented individuals.

Students choosing to major in physics may earn either a bachelor or science (BS) or a bachelor of arts (BA) degree. The BS degree is recommended for students who are considering a career in a technical industry, in research, or in teaching at the post-secondary level. Students who are planning to attend graduate school should complete the BS degree in order to be properly prepared.

Physics majors seeking a BA complete the requirements for the College of Arts and Sciences in addition to the following courses:

Bachelor of arts

PHYS 122 Computation and Experimentation in Physics ............................................. 3
PHYS 223 Physics I ...................................................................................................... 5
PHYS 224 Physics II .................................................................................................... 5
PHYS 325 Physics III .................................................................................................. 4
PHYS 472 Mathematical Physics ............................................................................... 3
PHYS 506 Physics Laboratory .................................................................................... 3
PHYS 522 Mechanics ................................................................................................. 3
PHYS 532 Electricity and Magnetism ......................................................................... 3
MATH 220 Calculus I .................................................................................................. 4
MATH 221 Calculus II .................................................................................................. 4
MATH 222 Calculus III ............................................................................................... 4
MATH 240 Elementary Differential Equations .......................................................... 4

Bachelors of science in physics

PHYS 636 Physical Measurement and Instrumentation .............................................. 4
PHYS 709 Applied Quantum Mechanics .................................................................... 3

*The advanced physics course electives must be chosen from the following courses:

PHYS 616 Advanced Physics Lab ............................................................................. 3
PHYS 620 Teaching University Physics .................................................................... 3
PHYS 623 Oscillations, Waves, and Relativity ............................................................ 3
PHYS 639 Computation in Physics ............................................................................. 3
PHYS 642 Nuclear Physics .......................................................................................... 3
PHYS 651 Optics and Lasers ..................................................................................... 3
PHYS 655 Physics of Solids ....................................................................................... 3
PHYS 661 Astrophysics ............................................................................................... 3
PHYS 562 Particle Physics .......................................................................................... 3

Chemistry 1 and 2 (CHM 210 and 230) are strongly recommended for all physics majors.

Bachelor of science in general physics

PHYS 122 Computation and Experimentation in Physics .............................................. 3
PHYS 223 Physics I ...................................................................................................... 5
PHYS 224 Physics II .................................................................................................... 5
PHYS 325 Physics III .................................................................................................. 4
PHYS 472 Mathematical Physics ............................................................................... 3
PHYS 506 Physics Laboratory .................................................................................... 3
PHYS 522 Mechanics ................................................................................................. 3
PHYS 532 Electricity and Magnetism ......................................................................... 3
MATH 220 Calculus I .................................................................................................. 4
MATH 221 Calculus II .................................................................................................. 4
MATH 222 Calculus III ............................................................................................... 4
MATH 240 Elementary Differential Equations .......................................................... 4

Physics courses

PHYS 017. Colloquium in Physics. (0) I, II. Weekly lectures on topics of current interest in physics by faculty and visiting scientists.

Transfer students

The flexibility of the physics curriculum permits individual advisement, on the basis of studies completed, for students who transfer into the curriculum from other majors, community colleges, or other universities.

A five-year dual degree program in physics and mechanical engineering is available and similar dual degree programs can be arranged with physics and electrical engineering, nuclear engineering, or business administration. Interested students should inquire about these programs at the Department of Physics.

J. R. Macdonald Laboratory

K-State in cooperation with the U. S. Department of Energy, operates a major facility for the production and the acceleration of atomic ions. There are several accelerators, including a 6 MV tandem Van de Graaff, and a superconducting LINAC booster accelerator which gives energies of over 100 MeV for some ions. A liquid He production plant has been installed to provide up to 500 watts of cryogenic cooling for the LINAC.

A new type of ion source called CRYEBIS has been developed and is producing high-energy, low-energy ions. At the present time it is the only ion source in the U. S. capable of producing bare argon ions. A network of work stations is available for the accumulation and analysis of data.

Arts and Sciences n 135
PHYS 101. The Physical World I. (3) I, II, S. 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 physics theory. The observations and phenomena are simple and basic. Three hours lec. a week. Open only to freshmen, sophomores, and first-semester transfer students. Not available for credit to students who have completed PHYS 106.


PHYS 103. The Physical World I Laboratory. (1) I, II. Two hours lab a week. Pr. or conc.: PHYS 101.

PHYS 104. The Physical World II Laboratory. (1) II. Two hours lab a week. Pr. or conc.: PHYS 102.

PHYS 106. Concepts of Physics. (4) I. An introductory course in physics which emphasizes the topics of physics normally presented to elementary school children. A qualitative approach with integrated laboratory, this course is recommended for students preparing for careers as elementary school teachers. Not available for credit to students who have completed PHYS 101.

PHYS 107. Physical Science Colloquium. (1–2) Offered by TELNET. Topics in physical science chosen to illustrate current physics research and methods used to study the physical universe. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to physics majors.

PHYS 113. General Physics I. (4) I, II, S. 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 and one-half units of high school algebra and one unit high school trigonometry.

PHYS 114. General Physics II. (4) I, II, S. 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.

PHYS 115. Descriptive Physics. (5) I, II. A one-semester course in basic physics: mechanics, electricity, heat, light, sound, and atomic theory. It presents a survey of the major fields of physics with a concentration on how physicists work to understand and describe physical phenomena. Three hours lec., one hour rec., one hour lab, and two hours lab a week. Pr.: High school algebra.

PHYS 122. Computation and Experimentation in Physics. (3) I. An introduction to the study of physics. Experiments on topics of contemporary interest in physics. Computers are used to acquire and analyze data and to create models of various phenomena. One hour lecture, one hour computer lab, and two hours experimental lab per week.

PHYS 191. Descriptive Astronomy. (3) I, II. A qualitative study of the sun and planets, stars and galaxies; a survey of what is known about the universe and how it is known.

PHYS 213. Engineering Physics I. (5) I, II. Mechanics and heat; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr. or conc.: MATH 221.

PHYS 214. Engineering Physics II. (5) I, II. Sound, electricity, magnetism, modern physics; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr.: PHYS 213, MATH 221.

PHYS 223. Physics I, Mechanics and Thermodynamics. (5) II. For students of science and engineering. Lectures and recitation and quiz in common with PHYS 213. Special laboratory and recitation. Pr.: PHYS 122 or permission of lecturer. MATH 221 or conc.

PHYS 224. Physics II, Electromagnetism and Sound. (5) I. For students of science and engineering. Lecture and quiz in common with PHYS 214. Special laboratory and recitation. Pr.: PHYS 223 or permission of lecturer. MATH 223 or conc.

PHYS 300. Physics in Relation to Other Disciplines. (1–3) On sufficient demand. Variable content, offered only by prearrangement with the physics department and with the instructor. A brief syllabus will be available for each offering of PHYS 300 outlining the objectives and organization of the course for the semester in which offered. Pr.: Consent of instructor.

PHYS 325. Physics III, Relativity and Quantum Physics. (4) II. An introduction to modern physics as exemplified by atomic, nuclear, condensed matter, and particle phenomena. Three hours of lecture and one two-hour lab per week. Pr.: PHYS 122, 224 or MATH 240 or conc. enrollment, and a working knowledge of spreadsheets and use of computers as data analysis tool.

PHYS 399. Physics Honors Seminar. (1–3) On sufficient demand. Discussions of topics of current interest in physics. Students must be enrolled in the arts and sciences honors program or have permission of the instructor.

PHYS 400. Independent Study in Physics. (1–3) I, II, S. Independent theoretical or experimental investigation of a topic for physics majors or seniors who wish to pursue a topic not in the current course offerings. May be repeated for credit up to a maximum of 6 hours. Pr.: Senior standing and consent of instructor.


PHYS 452. Contemporary Physics: Problems and Principles. (4) II. An introduction to twentieth century physics: relativity, quantum mechanics, the physics of solids, and fundamental particles. Three hours of lecture and six hours lab per week. Pr.: PHYS 113 and 114 or equiv., college algebra, and trigonometry.

PHYS 460. Undergraduate Topics in Physics. (1–6) Special topics in physics not completely treated in other courses. On sufficient demand. Pr.: PHYS 114 or equiv.

PHYS 472. Mathematical Physics. (3) An introduction to the application of mathematical methods to the study of physical systems. Topics include the use of ordinary differential equations in physics, the application of Fourier’s methods to waves, vectors and matrices, applications of vector calculus, partial differential equations. Three hours of lecture per week. Pr.: PHYS 224, MATH 222 or conc. enrollment.

PHYS 495. Astronomy. (3) Topics in modern astronomy. Use of a telescope for observational astronomy will be emphasized. Two hours lec. and two hours independent observational astronomy a week. Pr.: PHYS 191.

PHYS 497. Senior Research in Physics. (1–3) I, II, S. Individually directed research in atomic physics, condensed matter, particle physics or physics education. Students in the Arts and Sciences should consult with the instructor. Pr.: PHYS 498 and PHYS 499 instead of PHYS 497. May be repeated once. Pr.: Senior in physics and permission of instructor.

PHYS 498. Honors Tutorial in Physics. (1–3) I, II, S. Individually directed research begun as a preparation for writing an honors thesis. Open only to students in the arts and sciences honors program. May be repeated once to a total of three credit.

PHYS 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences honors program.

PHYS 506. Physics Laboratory. (3) I. The completion of several experiments of current and/or historical interest in physics. Students develop skills in and knowledge of measurement techniques using digital and analog instruments. Various data analysis techniques are used. One hour recitation and six hours lab per week. Pr.: PHYS 325 and the ability to write computer programs in one of the following languages: BASIC, Pascal, FORTRAN, C or C++.

PHYS 515. Physics for Science Teachers. (1–4) Study of current topics in physics, with laboratory experience and demonstration of the principles of physics. Topics will be chosen on the basis of available student interest. Topics and activities will be directed toward providing teachers with material for demonstrations and student experiments or projects. Examples of topics are: solar power, laser applications, holography, and subnuclear particles, relativity, or the historical development of some physical concept. May be repeated for a maximum of 6 hours credit. Pr.: One year of college physics.


PHYS 532. Electricity and Magnetism. (3) I. An introduction to electromagnetism. Detailed examination of electromagnetic fields in static cases. Development of Maxwell’s equations for dynamic cases. Three hours of lecture per week. Pr.: PHYS 472, MATH 240.


PHYS 562. Introduction to Quantum Mechanics. (3) II. An introduction to quantum mechanics. Topics include probability interpretation of quantum mechanics, configurations of electron orbits and wave patterns, descriptions of one-electron and multi-electron atoms, electron spin and magnetic moments. Three hours of lecture per week. Pr.: PHYS 325, 522.

PHYS 564. Thermodynamics and Statistical Physics. (3) I. An introduction to thermodynamics developed from the concepts of statistical physics. Applications include the gas laws, concepts of heat and work, phase transitions, and kinetic theory with applications to statistical physics. Pr.: PHYS 522, MATH 240.

PHYS 616. Advanced Physics Laboratory. (1–3) I. The completion of experiments in addition to those completed in Physics 506. Six hours of lab per week. Pr.: PHYS 506 and senior standing.

PHYS 620. Teaching University Physics. (3, 1) in alternate years. A discussion of techniques which will aid in the development of understanding of the concepts in physics. Emphasis is placed on models of learning and teaching techniques which can be applied to the teaching of contemporary physics to university students. These models and techniques are used to analyze a teaching approach of a topic, such as quantum mechanics, which is important to today’s physicist. Three class hours per week. Pr.: PHYS 562.


PHYS 636. Physical Measurements and Instrumentation. (4) I. A laboratory-oriented course to acquaint students with electronic circuits, their interfacing with measuring instruments, and their use in making physical measurements. Two hours lec. and six hours lab a week. Pr.: PHYS 214.

PHYS 639. Computations in Physics. (3) II, in alternate years. An introduction to applying computational and numerical techniques to solve problems of interest to physicists. Topics include the application of computational and numerical techniques to experimental situations. Students will use both personal computers and advanced calculators. One hour lecture, two hours computing lab per week. Pr.: PHYS 472, one physics course at the 500 level and a working knowledge of FORTRAN, BASIC, C or Pascal computer language.

PHYS 642. Nuclear Physics. (3) I. An introduction to the structure of the nucleus, radioactivity and nuclear energy; the application of quantum mechanics to nuclear physics. Offered on sufficient demand. Pr.: PHYS 562.
PHYS 651. Introduction to Optics. (3) I, in alternate years. Introduction to modern concepts in optics: electromagnetic waves, propagation of light through media, geometrical optics of lenses and mirrors, interference, coherence, Fraunhofer and Fresnel diffractions. Three hours of lecture per week. Pr.: PHYS 214.


PHYS 691. Introduction to Astrophysics. (3) II, in alternate years. An introduction to the application of physical principles to understanding astronomical objects. Topics include properties of stars, stellar evolution, galaxies, and cosmology. Three hours of lecture per week. Pr.: PHYS 325, 522, 532.

PHYS 692. Introduction to Cosmology. (3) II, in alternate years. An introduction to the physics and astrophysics of the hot big bang model of the universe. Three hours of lecture per week. Pr.: PHYS 522.

PHYS 694. Particle Physics. (3) II, in alternate years. An experimental and phenomenological introduction to high energy physics. The course will emphasize understanding the experimental basis of what is known about the subnuclear domain. Students will be asked to design simple conceptual experiments in addition to solving problems. Three hours of lecture per week. Pr.: PHYS 562.


PHYS 707. Topics in Physics. (Var.) I, II, S. Special topics courses. Topics and credits announced for the semester in which offered. May be given in conjunction with lecture series by visiting scientists. Pr.: Graduate standing or senior advisor Aruna Michie, 222 Waters Hall, or Barry Michie, director, Study Abroad Office, 304 Fairchild Hall.

Political Science

Dale Herspring,* Head
University Distinguished Professor Suleiman; Professors Herspring,* L. Richter,* W. Richter,* and Tummala;* Associate Professors Bagby, Franke,* Michie,* and Unekis,* Assistant Professors Emzite, Filter, Leland, Pickering, and Tolleson; Emeritius: Professors Hajda* and Williams,* Associate Professors Ambrosius* and Gustafson,*

E-mail: polsci@ksu.edu
www.ksu.edu/polsci

The major in political science acquaints students with political aspects of society and encourages them to develop a critical and imaginative perspective on public issues. The program in political science provides the foundation for a liberal education, including the intellectual skills of critical analysis, writing, and discussion. It also emphasizes the importance of continuing involvement in political activity and public affairs. These educational experiences prepare our students for a variety of careers in fields including public service, business, teaching, research, journalism, public relations, and administration.

A political science major should complete a broad liberal arts program that includes study in related social sciences and provides familiarity with computer applications, statistics, and mathematics as basic tools describing and explaining political phenomena.

Advising and specialized curricula
Advising by faculty members
All members of the faculty advise students. Students may request a particular advisor; otherwise one will be assigned. In addition to their academic background in political science, several faculty have nonacademic career experiences in national and international government, business, and party politics. Students will find this useful as they plan their own careers.

Specialized curricula
The department participates in a number of interdisciplinary curricula and activities and encourages students to take advantage of these. In most instances, the requirements for these programs or secondary majors also fulfill college or political science department requirements, making it possible to finish both the major and a secondary major within the required 120 hours for graduation. More extensive information on these programs and secondary majors is available from the faculty listed here as contact people, from other members of the political science department, or elsewhere in this catalog.

International studies
Students interested in the multidisciplinary study of the relations among countries, or in the study of world regions, may wish to pursue a secondary major in international studies. Advisors: Aruna Michie, 222 Waters Hall, or Dale Herspring, 226 Waters Hall.

Women’s studies
The women’s studies program focuses on the roles of women in society, the major institutions that shape those roles, images of women in a variety of creative media, and the status of women both across time and around the world. For more information contact Bonnie Nelson, 3 Leasure Hall, or Linda Richter, 243 Waters.

American ethnic studies
This program focuses on the variety of ethnic groups in the United States. Students learn to live and work in a multiethnic society. Contact Juanita McGowan, director, 3C Leasure Hall.

Gerontology
The Galichia Center for Aging coordinates programs and courses on social, cultural, economic, political, and other aspects of aging and the elderly. Interested students may pursue a secondary major in gerontology. For information see Professor James Franke, 241 Waters Hall.

Internships and community service for credit
Students may gain practical experience and academic credit by participating in internships in city, county, state, national, or international governments and organizations or through K-State’s Community Service program. Contact advisor Linda Richter, 229 Waters Hall, or Carol Peak, director, Community Service Program, 8D Edwards Hall.

Study abroad for credit
Opportunities exist for summer, one semester, or a full year of study abroad in many countries. These are coordinated through the Study Abroad Office on campus. Credits earned may be transferred back to K-State in consultation with appropriate departmental faculty. Many programs are exchanges where tuition costs are the same as studying at K-State. Contact advisor Aruna Michie, 222 Waters Hall, or Barry Michie, director, Study Abroad Office, 304 Fairchild Hall.

Requirements for the major
A major consists of a minimum of 36 credit hours in political science, distributed as follows:

Introductory courses
POLSC 301 Introduction to Political Thought .......... 3
POLSC 325 United States Politics ......................... 3
POLSC 333 World Politics .................................... 3
POLSC 344 Introduction to Comparative Politics .... 3

Methods course
To be taken after completion of at least 2 of these 3 introductory courses: POLSC 325, 333, and 344:

POLSC 400 Political Inquiry and Analysis ............... 3

Advanced courses
To be taken after POLSC 400. Intersession courses cannot be used to fulfill these requirements. One course, at the 500 level or above, in each of the following areas:

Political philosophy ........................................ 3
American government and politics ...................... 3
International relations .................................. 3
Comparative government and politics .................. 3

Electives
Nine hours, including any political science course except for POLSC 350 Current Issues. Only 3 hours of the major are allowed to be readings, problems, internships, or similar courses that do not involve scheduled meetings of the class.

Information for dual majors and nonmajors
The political science program is often advantageously combined with another major. Those seeking dual majors should coordinate their program in consultation with advisors in each area.

Minor in political science
Basic courses
POLSC 301 Introduction to Political Thought .......... 3
POLSC 325 U.S. Politics .................................... 3
POLSC 333 World Politics .................................... 3
POLSC 344 Introduction to Comparative Politics .... 3
Political science courses

POLSC 107. Political Science Colloquium. (2) I, II, S. Offered by TELENET. Topics in political science chosen to illustrate current research of political scientists and approaches to the study of politics. Each time the course is offered, a syllabus will outline the topics to be studied and the way student contributions will be assessed. May be repeated once. Not open to political science majors.

POLSC 110. Introduction to Political Science. (3) I, II, S. Introduction to politics, public policy, and governmental processes. Distribution and use of political power, political thought, public opinion, groups, parties, institutions, public law, careers in politics, and related topics. Pr.: Membership in arts and sciences honors program.

POLSC 111. Introduction to Political Science, Honors. (4) Introduction to politics, public policy, and governmental processes. Distribution and use of political power, political thought, public opinion, groups, parties, institutions, public law, careers in politics, and related topics. Pr.: Membership in arts and sciences honors program.

◆POLSC 301. Introduction to Political Thought. 1, II. An introduction to the major themes and leading writers in Western political philosophy and a discussion of their application to contemporary politics. This course emphasizes learning how to read and appreciate classic texts. Pr.: Sophomore standing.

POLSC 321. Kansas Politics and Government. (3) An introduction to the political institutions of, the political behavior in and surrounding, and the public policies flowing from governmental units in the state of Kansas.

◆POLSC 325. United States Politics. (3) I, II, S. The national government with emphasis on constitutional principles, basic structure, functions, and the political process.

POLSC 326. United States Politics, Honors. (4) The national government with emphasis on constitutional principles, basic structure, functions, and the political process.

◆POLSC 333. World Politics. (3) I, II. Introduction to the study of politics among nations-states and other world actors, including a survey of major contemporary problems of world politics and focusing on the pursuit of power, order, wealth, and safe environment.

◆POLSC 344. Introduction to Comparative Politics. (3) I, II. Comparative analysis of politics in both “developed” and “developing” countries. Though some attention will be given to abstract and theoretical concepts, the emphasis will be on the actual political process in the countries selected for study.

POLSC 350. Current Political Issues. (2) I, II. Each week a different political science faculty member or guest authority explains and analyzes current developments in state, national, and world affairs, using the news media as text material. Not for major credit. May be repeated once.

POLSC 355. Contemporary Issues. (3) Study and analysis of selected political topics of immediate relevancy and concern. May be repeated once.

POLSC 366. Practical Politics. (3) I, II. Strategies and techniques of running for office, organizing a campaign, mobilizing community resources, direct action lobbying, and related practical aspects of local level citizen politics.

POLSC 377. Introduction to Public Policy. (3) I. The process of public policy formation and analysis with emphasis on the relationship between decisions taken, values maximized, and the social impact of these decisions in over 10 policy areas. Pr.: POLSC 110 or 325 or another social science course.

◆POLSC 399. Honors Seminar in Political Science. (1–3)

POLSC 400. Political Inquiry and Analysis. (3) Underlying principles and techniques used in the conduct of political science research. Pr.: Introductory social science course or consent of instructor.

American government and politics

POLSC 507. Introduction to Public Administration. (3) I. The basic concepts of public administration, with emphasis on orientation for citizen understanding; the place of administration and the role of the administrator in the American political process; the organization and activities of government in carrying out public policy; administrative functions, organization, accountability, finance, and personnel. Pr.: POLSC 110 or 325 or ECON 110.

POLSC 508. The Mass Media and Political Campaigns. (3) I. Examines the role of the mass media in the electoral process. Dynamics of voter decision making and the impact of the media on voter attitudes and choices. Pr.: POLSC 325.


POLSC 504. Interest Groups and Public Opinion. (3) I. Group theory and politics, structure, interests, politics, and techniques of interest groups and their impact on public policy. Formation and measurement of public opinion. Pr.: POLSC 110 or POLSC 325.

POLSC 605. The American Presidency. (3) The presidency as an institution, its evolution, congressional relationships, executive organization. Pr.: POLSC 110, 325, or junior standing.

POLSC 606. Gender and Politics. (3) I. Analysis of the role of gender in political behavior, including sexual differences in voting and political participation, legal and cultural restrictions on women’s rights and political activity, and women’s liberation and other sex-based political movements. Pr.: SOCIO 545, 105, POLSC 325.

POLSC 607. Administrative Law. (3) I. Legal analysis of the rule-making, adjudicatory, and enforcement functions of administrative agencies, with emphasis on constitutional framework, judicial review, requirements of procedural fairness, and rights of public employees. Pr.: One course in political science, U.S. history, or legal or political philosophy.

POLSC 611. The Legislative Process. (3) I. Legislative decision making in modern democracy with emphasis on the United States, the concept of representation, and political behavior of participants in the legislative process. Pr.: POLSC 110, 325, or junior standing.


POLSC 614. Constitutional Law I. (3) Principles of the American Political System as prescribed by the Constitution and interpreted by Supreme Court decisions, with emphasis on the powers and limitations of the national government, federalism, and property rights. Pr.: One course in political science, U.S. history, or legal or political philosophy.

POLSC 615. Constitutional Law II. (3) The Constitution as a limit on the role of governmental power, with emphasis on Supreme Court decisions defining fundamental civil rights and liberties. Pr.: One course in political science, U.S. history, or legal or political philosophy.

POLSC 618. Urban Politics. (3) Fundamental problems of political power and decision making in urban-suburban governmental settings. Pr.: POLSC 110 or 325.

POLSC 620. State and Local Government. (3) I. The U.S. system of federalism with emphasis on a comparative analysis of the government and politics of the fifty states and their subdivisions. Pr.: POLSC 110 or 325.

POLSC 708. Public Personnel Administration. (3) I. Personnel aspects of administration at all levels of government, including recruitment, selection, discrimination law, pay, and motivation. Special attention is paid to those issues unique to the public sector, e.g., civil service systems, public unions, and public sector ethics law. Pr.: POLSC 507 or 607.

POLSC 710. Policy Analysis and Evaluation. (3) I. Methods of policy analysis and evaluation. Includes a discussion of the relationship between public policy and the distribution of values in society. Students analyze policies in an area of choice; e.g., agriculture, business, health, income, trade. POLSC 325 or 507.

POLSC 735. Public Organization Theory. (3) I. Theories on structure and mission of public organizations. An exploratory use of the application of theories and models to solve organizational problems. Pr.: POLSC 325 or 507.

POLSC 737. Public Budgeting. (3) I. Budgeting as part of the political system and as a fiscal process that assists in allocating scarce resources. Overview of the budgetary decision-making process and the various budgetary approaches. Pr.: POLSC 507 or MANG 420.

Comparative government and politics courses

POLSC 504. Political Sociology. (3) I, II in even years. An introduction to the principles of political sociology. Processes of political socialization, participation within and outside established organizational channels, recruitment of elites, communication and influence, and, the impact of social movements. Same as ECON 506, HIST 506, SOCIO 506, ANTH 506.

POLSC 505. Introduction to the Civilization of South Asia I. (3) An interdisciplinary survey of the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including consideration of the geographical and demographic context, dominant philosophical and social concepts, social and political institutions, literature and historical movements. Same as HIST 505, ECON 505, SOCIO 505, ANTH 505.

POLSC 506. Introduction to the Civilization of South Asia II. (3) Interdisciplinary survey of recent and contemporary civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including consideration of the geographical and demographic context, dominant philosophical and social concepts, social and political institutions, literature and historical movements. Same as ECON 506, HIST 506, SOCIO 506, ANTH 506.

POLSC 511. Contemporary Chinese Politics. (3) Principal components of Communist Chinese ideology, conditions determining organizational and social compositional patterns. Issues of leadership, role of social forces, impact of external relations on other Asian nations and the major world powers. Pr.: POLSC 344 or junior standing.

POLSC 545. The Politics of Developing Nations. (3) Comparative analysis of politics in emergent states with emphasis on processes of modernization and nation building. Pr.: POLSC 110, 344, or junior standing.

POLSC 619. Comparative Agriculture Politics and Policy. (3) Comparative examination of agricultural policies and politics with emphasis on decision making processes and the socio-political impact of agricultural policy. Pr.: POLSC 110, 344, or junior standing.

POLSC 621. West European Politics. (3) Comparative analysis of politics in the United Kingdom, Germany, France, and Italy. Pr.: POLSC 110, 344, or junior standing.

POLSC 622. Latin American Politics. (3) Comparative analysis of selected political systems of Latin America emphasizing political inputs, political organization, and political outputs. Special consideration is given to problems of political change. Pr.: POLSC 110, 344, or junior standing.

POLSC 623. South Asian Politics. (3) Analysis of selected political systems of South Asia. Pr.: POLSC 344, POLSC 355, or junior standing.

POLSC 624. Middle Eastern Politics. (3) Comparative analysis of selected political systems in the Middle East including nationalism and the conflict of differing ideologies. Pr.: POLSC 110, 344, or junior standing.
POLSC 626. African Politics. (3) Comparative analysis of selected political systems of sub-Sahara Africa, including consideration of problems of nationalism and political development. Pr.: POLSC 110, 344, or junior standing.

POLSC 627. Eastern and Central European Politics. (3) I. Examination of contemporary politics and policy in the countries of Eastern and Central Europe. Pr.: POLSC 110, 344, or junior standing.

POLSC 629. Development Policy and Administration. (3) I. Comparative examination of development policy, politics, and administration. Pr.: POLSC 110, 344, 377, or 507.

POLSC 630. Politics of Russia and the Former Soviet Union. (3) II. Primary focus will be on problems involved in the transition from communism to a more democratic policy. Pr.: POLSC 110, 344, or junior standing.

POLSC 631. Comparative Civil-Military Relations. (3) I. A look at civil-military relations in the U.S., Russia, Germany, Spain, and a number of other countries. Primary focus will be on understanding the political role of the military in totalitarian, authoritarian, and democratic states. Pr.: POLSC 110, 344, or junior standing.

POLSC 707. Comparative Administrative Systems. (3) I. A comparative analysis of public administration concepts and the methodology of administrative systems. Included are U.S., British, and French models and attempts by Third World countries to adapt administration to their local cultures. Pr.: POLSC 344, or 507.

International relations courses

POLSC 541. International Relations. (3) II. Analysis of the nature of international relations with emphasis on contemporary theories explaining the international behavior of states. Pr.: POLSC 333 or junior standing.

POLSC 543. American Foreign Policy. (3) II. Examination of American external relations since 1945 and evaluation of processes involved in the formulation and conduct of contemporary foreign policy of the United States. Pr.: POLSC 325, 333, or junior standing.

POLSC 642. International Conflict. (3) II. The nature of political conflicts in the world and the "types" of such conflicts. Emphasis is on determining the "causes" of the various conflict types as well as providing the student with a better understanding of the conflict process from political dispute through the escalation stages to war. Pr.: POLSC 333, 344, or junior standing.

POLSC 645. International Politics of Europe. (3) II. Relationships among the countries of Europe since World War II. Emphasis will be on efforts to create a more unified European Community. Among the organizations that will be studied are the former Warsaw Pact, NATO, the European Parliament, and the European Union. Pr.: POLSC 325, 344, or junior standing.

POLSC 647. International Law. (3) Theories of international law, and general problems, such as: recognition, responsibility, war crimes, sources, evidence, codification, and settlement of disputes. Pr.: POLSC 333 or junior standing.

POLSC 649. International Defense Strategies. (3) I. Contemporary international strategies and defense policies with emphasis on nuclear, conventional, and guerrilla war, arms control and disarmament, diplomatic and political roles of the military. Pr.: POLSC 333 or junior standing.


POLSC 652. International Politics of South Asia. (3) Consideration of regional problems of South Asia and international roles and foreign policies of South Asian states. Pr.: POLSC 344 or POLSC 623.

POLSC 653. International Politics of the Middle East. (3) I. Consideration of the Arab-Israeli conflict, inter-Arab relations, foreign policies of Middle Eastern states, and the impact of the major foreign powers on the area. Pr.: POLSC 333, 344, or three hours of other social sciences.

POLSC 654. International Politics of Africa. (3) The course analyzes contemporary relations among African countries including economic and political security, border claims, formal and informal economic relations, and regional groupings. The course also examines the relationships between African countries, the United States and the former Soviet Union, and between African countries and the former colonial rulers. Pr.: POLSC 333, 344, or junior standing.

POLSC 754. The Professional Diplomat and Foreign Policy Formulation. (3) I. Present-day foreign policy formulation in the United States government, including especially the role therein of professional diplomats and foreign affairs specialists in the State Department and embassies abroad, as well as within other U.S. governmental agencies. Pr.: POLSC 333, 541, or junior standing.

POLSC 756. International Political Economy. (3) The course introduces students to the political and historical dimensions of the international economy, dimensions that include trade, monetary systems, foreign investment, aid, dependency, and global interdependence. This course also examines various theories and practices of the international system, the state, bureaucracies, interest groups, international organizations, bargaining processes, and distributive norms. Pr.: ECON 110, ECON 120, POLSC 333, POLSC 344, 541, or junior standing.

POLSC 661. Political Thought: Classical to Sixteenth Century. (3) I. Systematic study of ideas about law, politics, and government of great philosophers of Western civilization from Greek antiquity to the sixteenth century. Pr.: POLSC 110, 301, or junior standing.

POLSC 663. Political Thought: Since the Sixteenth Century. (3) I. Study of the development of Western political thought from the sixteenth century to the twentieth century. Pr.: POLSC 110, 301, or 325.

POLSC 667. American Political Thought. (3) I. Political ideas underlying the American union, including the doctrine of rights, the nature of union, liberty, property, and democracy. Pr.: POLSC 110, 301, 325, or three hours in other social sciences.

POLSC 671. Modern Political Thought. (3) Study of contemporary political ideas and social thought. Pr.: POLSC 110, 301, or junior standing.

POLSC 672. Ideologies: Their Origins and Impact. (3) I. Explores ideologies, including liberalism, conservatism, socialism, communism, and fascism. Their philosophical origins, transformation into systems of thought with mass appeal, and practical consequences are discussed. The conflict between ideology and philosophy is examined. Pr.: POLSC 110, 301, or 3 hours of philosophy.

POLSC 675. Religion and Politics. (3) I. Focuses on religious life in America and its changing relationship to politics and government. Examination of the American founding as it relates to church/state issues, the controversy over meaning of the First Amendment’s establishment and free exercise clauses, and contemporary political agendas of mainline and evangelical churches. Pr.: POLSC 110, 301, 325, or 3 hours in other social sciences.

POLSC 711. Administrative Ethics. (3) I. Ethical issues, approaches, and strategies in public service. Pr.: POLSC 325 or 507 or graduate standing, or consent of instructor.

Methods, seminars, readings, and problems courses

POLSC 555. Senior Honors Seminar. (3) Open only to seniors in the College of Arts and Sciences honor program.

POLSC 700. Research Methods in Political Science. (3) I. Principles of research design, measurement of political phenomena, methods for collecting and analyzing political data. Pr.: POLSC 325, 333, or 344.

POLSC 701. Computer and Quantitative Analysis in Political Science. (3) Advanced data management, data analysis, and computing skills involved in conducting political science and public policy research. Pr.: POLSC 600 or 700. STAT 330 or equiv.

POLSC 784. Internship in Government, Public Administration, and Politics. (1-3. Credit/No Credit only.) I, II. Supervised field work at the international, national, state, and local levels of government or with political parties or other politically oriented volunteer organizations. May be repeated once. Pr.: Consent of instructor and a minimum of two courses in political science, at least one of which must be relevant to the internship area.

POLSC 785. Readings in Political Science. (3) I. II. Students will undertake directed reading and discussion of a selected topic in political science. Pr.: Consent of instructor.

POLSC 790. Problems in Political Science. (3) I. II. Students will complete a research project and prepare an original paper under the supervision of a faculty member. Pr.: At least 6 hours in social sciences and consent of instructor.

POLSC 791. Topics in Political Science. (3) I. II. Extensive exploration of a specific problem in political thought. American government, comparative politics, international relations, and public administration. May be repeated for a total of 6 hours in two subfields. Since topics will cover different areas in political science, prerequisites will be determined by the department as appropriate when the course is offered.

POLSC 799. Pro-Seminar in Political Science. (3) I. II. Study and analysis in various areas of the discipline with emphasis on critical evaluation of political conflicts and issues. Pr.: Consent of instructor.

Psychology

Stephen W. Kiefer, Head

Professors Barnett, Downey, Frieman, Harris, Kiefer, Rappoport, Shanteau, and Uhlir; Associate Professors Cozzarelli, Fullagar, and Knight; Assistant Professors Brannon, Brockel, Jones, and Smith; Emeriti: Professors Cowan, Mitchell, Perkins, Phares, Rohles, Samelson, and Thompson.

www.ksu.edu/psych

Psychology major

The psychology major provides students with a broad liberal arts education and an understanding of how psychologists study behavior and what psychologists have learned about behavior. The knowledge and skills students obtain are useful in a wide variety of employment settings and careers. Additional course work and experiences are available for students preparing for advanced study at the graduate level and for students interested in careers in social services and in human resources. The minimum requirements for completing a major in psychology are small enough that some students are able to complete the requirements of a second major in the College of Arts and Sciences or a second degree in another college in four years.

Psychology is both an academic discipline and a profession. To be a professional psychologist, one must receive advanced training. Our undergraduate program in psychology does not train people to become professional psychologists; however, we do offer students the opportunity to earn academic credit for participating in research and for supervised field experiences in social service agencies, indus-

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try, and government settings. Thus, students can gain experience working with professional psychologists.

**Entrance requirements**

To become a psychology major, a student must:

A. Present evidence of having earned a cumulative GPA of at least 2.50 (on a 4 point scale) based on a minimum of 15 credit hours earned at Kansas State University and sophomore standing (a minimum of at least 30 total credit hours, including transfer hours);

or

B. Present evidence of 60 or more transfer credit hours from another accredited institution with a GPA of at least 2.50.

To graduate from Kansas State University with either a bachelor of arts or a bachelor of science degree in psychology, a student must fulfill the university, college, and departmental requirements, and have a cumulative GPA of 2.5 or greater on all work undertaken at Kansas State University.

Psychology majors may enroll in any classes offered by the Department of Psychology for which they have the prerequisites.

Students interested in majoring in psychology who have not yet satisfied one of the two standards described above will be designated as pre-psychology majors. Pre-psychology majors may enroll in any course offered by the Department of Psychology except the following:

**Psychological technician option**

Opportunities are growing for psychological technicians who have B.A. or B.S. degrees in psychology. Such a person usually works in an applied setting and carries out duties that are supportive of the Ph.D. psychologist. The clinical psychological technician often assists in such activities as testing, behavior change, community organization, agency management (budgets, referrals, scheduling), research, data collection and statistical analysis, etc. Technicians and paraprofessionals are playing an increasingly prominent role in clinics, hospitals, industrial and governmental agencies, and research settings.

The psychological technician option is designed to provide students with background knowledge and limited training in the skills most likely to be needed by a psychological technician and with supervised experience in an applied setting. Furthermore, the student is expected to take additional courses in relevant areas from other departments in the university.

The requirements for the psychological technician option reflect the goals stated above. All students in the option must satisfy the requirements for the psychology major. In addition, the following courses must also be completed:

- **PSYCH 505** Abnormal Psychology
- **PSYCH 559** Psychological Testing
- **PSYCH 585** Basic Concepts in Clinical Psychology
- **PSYCH 586** Laboratory in Clinical Concepts
- **PSYCH 587** Field Placement

Four other courses relevant to the mental health field from psychology, sociology, anthropology, social work, education, and human ecology. All of these courses can be applied either as general electives or as psychology electives.

The laboratory in clinical psychology should be taken either after completion of or concurrently with Psychological Testing and Basic Concepts in Clinical Psychology. Following successful completion of the laboratory course and with the approval of the psychological technician supervisory committee, students can gain supervised experience in an applied setting. Arrangements for the field experience will be worked out individually with each student regarding the location of the agency and the total number of academic credit hours to be earned (PSYCH 587 Field Placement).

**Psychology courses**

- **PSYCH 110** General Psychology
- **PSYCH 100** Freshman Seminar
- **PSYCH 202** Drugs and Behavior
- **PSYCH 290** Innovative Studies in Psychology
- **PSYCH 330** Introductory Seminar in Industrial and Labor Relations
- **PSYCH 399** Honors Seminar in Psychology
- **PSYCH 425** Problem Solving and Decision Making
- **PSYCH 400** Practicum in Teaching Psychology
- **PSYCH 405** Applications of Memory
- **PSYCH 460** Cognitive Psychology
- **PSYCH 470** Psychobiology
- **PSYCH 475** Principles of Learning
- **PSYCH 480** Foundations of Social Behavior
- **PSYCH 485** Basic Concepts in Clinical Psychology
- **PSYCH 486** Laboratory in Clinical Concepts
- **PSYCH 487** Field Placement

The Department of Psychology offers a 1-hour Freshman Seminar (PSYCH 100). This course is not required; however, it is highly recommended for freshman students coming directly from high school.
PSYCH 510. Introduction to Behavior Modification. (3) II. Study of the principles of behavior modification and applications to human behavior. Emphasis on the learning principles and research in behavior modification. Pr.: PSYCH 505.

PSYCH 518. Introduction to Health Psychology. (3) II. Psychosocial factors relevant to general health maintenance, recovery from disease or injury, and the achievement of health. Topics include stress-management techniques, personality characteristics associated with disease, cognitive-emotional effects of diet and exercise, and theories of pain and pain management. Concepts of prevention and behavioral medicine are also included. Pr.: PSYCH 110; sophomore standing.

PSYCH 520. Life Span Personality Development. (3) I, II. Theories and research in the development of personality from infancy through old age. Origins of personality in heredity and early experience, socialization practices, life crises and choices at various stages throughout life, and problems of aging. Pr.: PSYCH 110; sophomore standing.

PSYCH 529. Psychology of Mass Communications. (3) II. The psychological effects of mass communication on behavior and thought, including advertising, stereotyping of women and minorities, effects on children, violence and sex in the media, effects of news on behavior, and the promotion of prosocial behavior through the media. Pr.: PSYCH 110.

PSYCH 535. Social Psychology. (3) I, II. Psychology of the individual in society. Survey of empirical studies and theoretical models of social perception, attitudes, and social behavior (e.g., attribution, ethnic and gender prejudice, conformity). Relationship of these topics to personal and media influence, social mores, and social systems is also included. Pr.: PSYCH 110.

PSYCH 539. Psychology of Women. (3) II. Investigation of psychological processes of women. A developmental sequence with emphasis on major life events for women. Female physiology, early socialization into sex roles, friendship, achievement motivation, sexuality, marriage, childbirth, work, and mental health. Pr.: PSYCH 110.

PSYCH 543. Women’s Mental Health Issues. (3) II. Investigates prevalent women’s mental health issues such as incidence of depression/anxiety, eating disorders, sexuality, relationship concerns. Also covers the efficacy of traditional treatment modalities and newer therapies that target women’s unique mental health needs such as feminist or nonsexist therapies. Pr.: PSYCH 505.

PSYCH 545. Consumer Psychology. (3) I. Survey of psychological principles and facts in perception, learning, attitude formation, personality, etc., as they apply to behavior of consumers. Pr.: PSYCH 110 and junior standing.

PSYCH 550. Group Dynamics. (3) II. Interaction in small groups: interpersonal sensitivity, communication, decision making, development of group structure and norms. May be organized as laboratory “process” group and require some flexibility in scheduling. Pr.: Six hours in psychology.

PSYCH 557. The Psychology of Ethnic Humor. (3) S, and on sufficient demand. Reviews the structure, dynamics, and social functions of ethnic humor. Pr.: PSYCH 110 or SOCO 211.

PSYCH 558. Varieties of Consciousness. (3) I, S. Traditional and contemporary approaches of both Western science and Eastern metaphysics to study of ordinary mind consciousness, unusual states of awareness, and efforts to expand the powers of mind. Topics include sleep, dream, biofeedback, meditation, psychoactive drugs, brain area domination, and other factors influencing relationships. Pr.: PSYCH 110.

PSYCH 559. Psychological Testing. (3) II. Principles of psychological testing in industrial, clinical/counseling, and research environments. Topics include technical issues such as reliability, validity, norming, selection, placement, discrimination, etc. Also covers procedures for selecting, administering, and interpreting psychological tests. Pr.: PSYCH 110.

PSYCH 560. Industrial Psychology. (3) I. Survey of human behavior and psychological principles in an industrial/personnel context. Topics include: recruiting, selecting, and training personnel; evaluating their job performance; conducting job analyses; and implementing compensation strategies. Pr.: PSYCH 110.

PSYCH 561. Laboratory in Industrial Psychology I. (2) I. Supervised experience in personnel psychology including classifications, analysis, and evaluation of jobs. Pr.: PSYCH 560 or consent of instructor.

PSYCH 562. Laboratory in Industrial Psychology II. (2) II. Additional supervised experience in personnel psychology including interviewing, EEOC regulations, training, and performance appraisal. Pr.: PSYCH 561.

PSYCH 563. Gender Issues in the Workplace. (3) I. Psychological experiences of women and men in the world of work, with emphasis on traditional and nontraditional sex-role behavior, sexual discrimination and harassment, and relevant socialization experiences. Pr.: PSYCH 110.

PSYCH 564. Psychology of Organizations. (3) II. Relationships between individuals, groups, and organizations. How organizational factors contribute to individual behavior, and how and individuals affect groups and organizational functioning. Emphasis is on such traditional topics as work motivation, job satisfaction and other attitudes, leadership, communication, socialization, and organization and job design. Pr.: PSYCH 110.

PSYCH 580. Psychology of Sexual Behavior. (3) I, II. Study of psychological determinants and consequences of human sexual behavior; roles of personality, attitudinal and emotional factors will be emphasized. Pr.: PSYCH 110, sophomore standing.

PSYCH 585. Basic Concepts in Clinical Psychology. (3) I. Critical analysis of the profession. Review of theoretical and empirical bases of such areas as intelligence and its measurement, personality and diagnosis, psychotherapy, and other modes of behavioral change. Pr.: PSYCH 110, 505, and 3 additional hours of psychology.

PSYCH 586. Laboratory in Clinical Concepts. (2) I. May be taken only in conjunction with PSYCH 585. Supervised practice in, demonstration of, and orientation to selected psychological techniques and practices. Pr.: Consent of instructor in PSYCH 585.

PSYCH 587. Field Placement. (1–6) I, II. Supervised field experience in an agency or institutional setting in the application of psychological techniques to individuals, groups, or organizations. Regular supervision emphasizes relationship between theory and application and the evaluation of outcomes. Pr.: PSYCH 585 and 586, or 560; 561 and 562 and consent of psychological technician training committee.

PSYCH 599. Problems in Psychology. (Var.) I, II. S. Investigation of selected problems. Pr.: PSYCH 110 and consent of instructor.

PSYCH 605. Foundations of Social Behavior. (3) II. Analysis of fundamental psychosocial processes underlying selected problems in contemporary society (e.g., effects on personality and interpersonal relations of changing sex roles, technological innovations, and historical events). Pr.: PSYCH 350. (Psychology majors only.)

PSYCH 620. Psychology of Personality. (3) I. Discussion of different approaches to the study of personality. Pr.: PSYCH 350. (Psychology majors only.)

PSYCH 625. Engineering Psychology. (3) I. The role of behavioral factors in the design and operation of machines and equipment. Pr.: PSYCH 110, STAT 330, or 707.

PSYCH 630. Human Neuropsychology. (3) II. Study of brain-behavior relationships in humans. Brief review of human neuroanatomy followed by a major emphasis on brain function in learning, memory, language, and other cognitive behaviors. Also includes an examination of behavioral alterations following brain damage. Pr.: BIOL 198 and PSYCH 110, or consent of instructor.

PSYCH 650. Psychology of Language. (3) I. Experimental study of language, including sentence comprehension and memory, language acquisition and development, speech perception, and effects of context, perception, prosody, and linguistic structure on processing of language. Pr.: PSYCH 110 and junior standing.

PSYCH 715. Psychology of Aging. (3) II. The psychological aspects of human aging. An analysis of the contributions of experimental, developmental, and personality-social psychology to the study of aging. The psychopathology of aging and psychological intervention strategies are also covered. Pr.: PSYCH 110 or DAS 315 and junior standing.

PSYCH 775. History of Current Trends. (3) II. A review of the contributions of individuals and intellectual movements to the development of modern psychology. A survey of theoretical systems currently of influence. Pr.: PSYCH 110 and 9 additional hours of psychology; senior standing.

PSYCH 790. Topics in Psychology. (Var.) I, II. S. Pr.: PSYCH 110 and consent of instructor.

PSYCH 799. Problems in Psychology. (Var.) I, II. S. Pr.: PSYCH 110 and consent of instructor.

Sociology, Anthropology, and Social Work

Michael Timberlake,* Head


www.ksu.edu/saw

The Department of Sociology, Anthropology and Social Work offers three separate undergraduate majors: sociology, anthropology, and social work. The sociology major has two options: general sociology and criminology. The student may enroll in a B.S. or B.A. program in any of these majors.

Sociology

Sociology is the systematic study of social relationships at many different levels. For example, sociologists analyze small groups, complex organizations such as bureaucracies or factories, race/ethnic relations, gender relations, communities, nations, and even global social formations. The processes and behaviors sociologists examine include social interaction among individuals, institutional change, social policy formation, criminal and deviant behavior (and responses to such behavior), population growth and distribution, and social change and development.

The sociology program offers concentrations in general sociology and in criminology. General sociology provides a desirable background, as either a sole or combined major, for further professional training in law, city planning, public administration, hospital administration, and medicine, as well as for advanced graduate work in sociology or other
social sciences. It also prepares students for a wide variety of careers that involve problem-solving and gathering, organizing and analyzing information (i.e., data). Such careers may involve jobs ranging from sales and management to community services and government work.

The criminology concentration prepares students for careers in the criminal justice system (including law enforcement, correctional institutions, court services) as well as advanced study in law or graduate work in sociology, criminology, or criminal justice.

Students who major in sociology should refer to the general requirements for the B.A. or B.S. degree earlier in the College of Arts and Sciences section of this catalog. Sociology students who desire to teach in secondary schools should prepare for teacher certification with a major in sociology (see the College of Education section of this catalog).

All sociology majors are required to complete 6 hours of required outside courses. Students majoring in general sociology must also take 16 hours of required core courses and 15 hours of electives, with 9 of these 15 hours at the 500 level or above. Criminology students must complete 25 hours of required core courses and 9 hours of electives from two categories of ancillary courses.

Professional internship
Criminology students who anticipate working in the field of criminal justice are strongly encouraged to take the 10–13 hour sequences of courses involving the professional internship. Under special circumstances and with an advisor’s direction, students in general sociology may also enroll in the internship sequence. Internship hours may not count toward the elective requirements.

General sociology major
Required outside courses (6 hours)
Three credit hours from among CIS 101, CIS 102, CIS 103, and CIS 104 (or demonstration of equivalent competencies) .................................................. 3
STAT 330 Elementary Statistics for the Social Sciences ................................................. 3

Core courses (16 hours)
SOCIO 211 Introduction to Sociology ......................... 3
SOCIO 440 Social Organization ................................. 3
SOCIO 450 Introduction to Social Interaction ................. 3
SOCIO 511 Comparative Social Theories ........................ 3
SOCIO 520 Methods of Social Research I ....................... 4
SOCIO 561 Criminology ........................................... 3

With advisor’s permission, students may substitute Bureaucracy in Modern Societies (SOCIO 546) for Social Organization (SOCIO 440).

Electives
Fifteen hours of sociology electives are required, with at least 9 hours at the 500 level or above. SOCIO 567, 568, 569 may not be used to count toward these required elective hours.

Sociology: Criminology option
Required outside courses (6 hours)
Three credit hours from among CIS 101, CIS 102, CIS 103, and CIS 104 (or demonstration of equivalent competencies) .................................................. 3
STAT 330 Elementary Statistics for the Social Sciences ................................................. 3

Core courses (25 hours)
SOCIO 211 Introduction to Sociology ......................... 3
SOCIO 361 Sociology of Criminal Justice System ............ 3
SOCIO 432 Community Organization and Leadership ........ 3
SOCIO 440 Social Organization ................................. 3
SOCIO 450 Introduction to Social Interaction ................. 3
SOCIO 511 Comparative Social Theories ........................ 3
SOCIO 520 Methods of Social Research I ....................... 4
SOCIO 561 Criminology ........................................... 3

With advisor’s permission, students may substitute SOCIO 531 or SOCIO 533 for SOCIO 432.

With advisor’s permission, students may substitute SOCIO 546 for SOCIO 440.

Electives
Nine hours of electives are required with at least one course from each of the two categories (A and B).

A. Criminology electives
SOCIO 362 Police and Society ..................................... 3
SOCIO 460 Juvenile Delinquency ................................... 3
SOCIO 522 Sociological Field Methods .......................... 3
SOCIO 661 Corrections ............................................. 3
SOCIO 665 Women and Crime .................................... 3
SOCIO 767 Societal Reactions to Deviance ...................... 3

B. Sociology electives
SOCIO 541 Wealth, Power, and Privilege .......................... 3
SOCIO 545 Sociology of Women ................................... 3
SOCIO 570 Race and Ethnic Relations ............................ 3

Anthropology
There are four major subfields of anthropology. Physical anthropology explores the origins of human life and the biological bases of culture. Archaeology examines the development of human cultures from prehistory and ancient civilizations to historic and modern times. Linguistic anthropology focuses on the languages and dialects of the world and the relationships of language to thought and culture. Cultural anthropology studies human behavior by surveying the range and variety of cultural traditions throughout the world. Some anthropology majors personalize, while others specialize in one or more of the subfields.

Entrance requirements for anthropology majors
Students interested in becoming anthropology majors should consult with faculty advisors. To be admitted as an anthropology major, a student must present evidence of having earned cumulative GPA of at least 2.50 based on a minimum of 15 credit hours earned at K-State. Pre-anthropology majors will be advised in the program.

Students transferring from other institutions with a GPA of 2.5 or higher will be accepted as majors when they have fulfilled the above requirements.

To graduate with a bachelor’s degree in anthropology, a student must fulfill program requirements and have a cumulative GPA of 2.5 or higher on all anthropology course work undertaken at Kansas State University.

Requirements
In addition to the general B.A. or B.S. requirements, anthropology majors take a minimum of 27 hours in anthropology as follows:

Introductions to the four subfields:
ANTH 200, Introduction to Cultural Anthropology .......................... 3
ANTH 220, Introduction to Linguistic Anthropology .......................... 3
ANTH 260, Introduction to Archaeology .............................. 3
ANTH 280, Introduction to Physical Anthropology .......................... 3

Capstone course:
ANTH 602 Anthropological Theory ..................................... 3

Four advanced electives distributed among three or more subfields: 12 hours at or above the 500 level.

Many anthropology students prepare for the variety of occupations concerned with human relations by combining anthropological study with other training, frequently by majoring in two fields. Each program of study is worked out individually by a student and his or her advisor. Interested students may obtain additional information from the Guide for Prospective Anthropology Majors, which is available in the department office.

Applied anthropology option
The applied anthropology option provides preparation and experience in the application of anthropology to professional settings outside the academic environment. The option is interdisciplinary, combining anthropology with other areas of training and expertise. While the option is flexible and accommodates a wide range of individual student interests, emphasis is on three major areas: developmental/action anthropology (domestic, international, community, and rural development); cultural resource management (historic preservation, parks and museums, and public archaeology); and complex organizations (agencies, foundations, business, administration, planning, and policy analysis).

The option builds on existing requirements for a bachelor’s degree in anthropology. It adds 6 hours in anthropology and 18 hours in an area specialization outside the anthropology major. Double major, dual degree, pre-professional, and secondary major programs are particularly well suited for the option. Application to participate is normally made to the anthropology faculty during or before the junior year.

In addition to the existing 27 hours of major requirements for the bachelor’s degree in anthropology, the following course required:

ANTH 641 Internship in Applied Anthropology ......................... 3
or ANTH 626 Internship in Museology ..................................... 3

An area specialization consisting of 18 hours of course work outside anthropology with the following distribution: Quantitative or technical skill development .................. 6
Subject matter courses .......................................................... 12

The area specialization is a set of related courses focused on a particular interest, problem domain, or area of expertise taken from any other discipline or combination of disciplines. The quantitative and technical skill courses must be consistent with and supportive of the subject matter work. Students must demonstrate the coherence of their chosen area specialization and its fit with anthropology. The area specialization must be approved by the anthropology faculty.
Anthropology minor
A minor in anthropology is also available. Students are required to take a total of 18 hours, three of the four introductory courses to the field, i.e.:
ANTH 200, 204, or 210
ANTH 220
ANTH 260
ANTH 280
Plus three upper-level anthropology courses (for which the relevant introductory courses have been taken).

Social work
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.

The undergraduate social work program is accredited by the Commission on Accreditation of the Council on Social Work Education to educate entry-level, generalist social work practitioners. The social work major is of particular value to students who intend to pursue a career in social work upon graduation.

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 degree social workers in Kansas and numerous other states. No other bachelor’s degree is recognized, or necessary, for such eligibility. Students who wish to pursue graduate studies in social work will be eligible for advanced standing in many master of social work programs throughout the United States.

The intervention tasks performed by social workers are derived from a common base of knowledge, values, and skills. Thus, social workers are uniquely qualified to provide resources, services, and opportunities to individuals, groups, families, organizations, and communities. Students are required to complete a field practice placement during their senior year to integrate classroom material with practice experience in a professional setting.

Students wishing to declare a major in social work may enroll directly in curriculum SOCWK. This is a provisional admission to the social work program. Students must complete SOCWK 010, SOCWK 260, SOCWK 510, and SOCWK 515 before formal evaluation and admission to the program can occur.

Formal evaluation occurs prior to admission to SOCWK 560 Social Work Practice I, taken during the junior year. At that time each student completes a personal statement and undergoes a formal review of academic and classroom performance by the program admissions committee. Students must have a 2.3 overall GPA and a 2.75 GPA in the core courses. Students successfully passing this review may enter the first course in the practice sequence, SOCWK 560.

Failure to meet and maintain the standards of the program will result in dismissal from the social work major. A student may be allowed to remain in the major on conditional or probationary status, but he or she must meet the standards of the program to complete the major.

For complete details on the admissions requirements and procedure, see the program admissions policy in the student handbook. Appeals of program faculty decisions may be made through established departmental procedures.

A student earning a B.A. or B.S. in social work must complete 120 hours including SOCWK 010 Orientation to the Social Work Major, SOCWK 260 Introduction to Social Work; 40 additional hours of major courses; and 28 hours of tool and related courses.

Human behavior and the social environment content
SOCIO 211 Introduction to Sociology .................................. 3
ANTH 200 Introduction to Cultural Anthropology .................. 3
PSYCH 110 General Psychology .................................. 3
FHS 110 Introduction to Human Development .................. 3
SOCWK 515 Human Behavior and the Social Environment ....... 3
SOCIO 525 Human Behavior and the Social Environment II ....... 3

Research content
STAT 330 Elementary Statistics for the Social Sciences ..... 3
SOCWK 519 Methods of Social Work Research .......... 4
SOCWK 550 Field Practicum Research Preparation ............ 2

Social policy content
SOCWK 510 Social Welfare as a Social Institution .......... 3
SOCWK 565 Program and Policy Formulation and Analysis ........ 3

Field practicum
SOCWK 562 Field Experience .................................. 10

Sociology courses
SOCIO 211. Introduction to Sociology, (3) I, II, S. Development, structure, and functioning of human groups; social and cultural patterns; and the principal social processes.

SOCIO 214. Introduction to Sociology, Honors, (4) I, II. Development, structure, and functioning of human groups; societal and cultural patterns; the nature of sociological inquiry. Lecture, discussion, and independent study.

SOCIO 301. Topics in Sociology, (Var.) I, II. S. Supervised independent and/or interdisciplinary study projects. Pr.: SOCIO 211 and consent of instructor.

SOCIO 360. Social Problems, (3) I, II. Analysis of social problems such as drug use, crime, juvenile delinquency, mental illness, unemployment, and family instability. Pr.: SOCIO 211.

SOCIO 361. Sociology of the Criminal Justice System, (3) II. General introduction to the field, examining all agencies and organizations that collectively make up the criminal justice system. Pr.: SOCIO 211.

SOCIO 362. Police and Society, (3) I. Examines in detail the policing function in society and the role police play in the criminal justice process. Pr.: SOCIO 211.


SOCIO 432. Community Organization and Leadership, (3) I. The analysis of community organization and change in American communities, with special emphasis on nonmetropolitan places. Issues include the analysis of intercommunity organizational ties, the interaction between the local community and its external environment, and the exploration of various methods affecting community development and social change within communities. Pr.: SOCIO 211.

SOCIO 435. Sport and Contemporary Society, (3) II. An analysis of sport and its role in contemporary society. Course creates a greater awareness of the social significance of sport in society and fosters the capacity to use critical thinking in the analysis of significant sport issues. Same as KIN 435. Pr.: SOCIO 211.

SOCIO 440. Social Organization, (3) II. Principles and processes of the organization and structure of human societies. Analysis of social groups and institutions and theories of social structure. Pr.: SOCIO 211.

SOCIO 450. Introduction to Social Interaction, (3) I. A survey of theories of social interaction and social psychology with special attention to research on principles of interpersonal relations in social situations, group formation, maintenance, and change. Pr.: SOCIO 211.


SOCIO 499. Senior Honors Thesis, (2) On sufficient demand. Open only to seniors in the arts and sciences honors program.

SOCIO 500. Sociological Perspectives on Contemporary Issues, (3) I. S. Analysis of a selected topic of contemporary interest. Topics vary from semester to semester and might include: impact of public policy on rural life; white collar crime; student-athlete education; social change in the Third World. Pr.: SOCIO 211.

SOCIO 501. Proficiency Development, (1–3) Integrative review of sociological concepts and skills under faculty supervision. For single students or groups of students. Not applicable to major field requirements. Not repeatable. For undergraduate credit only. Pr.: Consent of instructor and superior performance in relevant course.

SOCIO 504. Political Sociology, (3) II. in even years. An introduction to the principles of political sociology. Processes of political socialization, participation within and outside established organizational channels, recruitment of elites, communication and influence, power, decision making, and policy outputs. Data are presented from a cross-national perspective. Same as POLS 504. Pr.: SOCIO 211, POLS 110.

SOCIO 505. Introduction to the Civilizations of South Asia I, (3) I. Interdisciplinary survey of the development of civilizations in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan; geographical and demographic context; philosophical and social concepts; social and political institutions; literature; and historical movements. Same as HIST 505, ECON 505, POLS 505, ANTH 505, GEOG 505. Pr.: SOCIO 211.

SOCIO 506. Introduction to the Civilizations of South Asia II, (3) II. Interdisciplinary survey of recent and contemporary civilizations in India, Pakistan, Sri Lanka, Bangladesh, Afghanistan, including literature, geography, social and political structure, ideas. Same as HIST 506, ECON 506, POLS 506, ANTH 506, GEOG 506. Pr.: SOCIO 211.

SOCIO 507. Political Sociology of Latin America, (3) I. A survey of the sociopolitical and political dimensions of Latin America’s development in the twentieth century.
Given the diversity that characterizes the region, the course adopts a comparative perspective, focusing on the experiences of particular countries in order to examine the most significant trends on the continent. Special attention is given to emerging social, economic, and political issues such as the process of transition to democracy; the impact of the foreign debt crisis, privatization, and free market policies. Pr.: SOCIO 211.

SOCIO 510. Social Welfare as a Social Institution. (3) I, II. The development and present status of social welfare in meeting changing human needs and the requirements in various other parts of our social system; the analysis of present-day philosophy and functions of social welfare. Same as SOCWK 510. Pr.: SOCIO 211.

SOCIO 511. Comparative Social Theories. (3) I, II. Investigates sociological theories concerning the socialization process, group behavior, and social organization. Pr.: SOCIO 211.

SOCIO 520. Methods of Social Research I. (4) I, II. Treatment of the logic and procedures involved in the formulation of research problems and the difficulties encountered in preparing and testing hypotheses. Taking field notes, report writing, and ethical issues are also covered. Pr.: SOCIO 520.

SOCIO 531. Urban Sociology. (3) I, II. Growth, development, and structure of the city as explained by social, economic, and political factors; social groups (e.g. race/ethnic groups, social classes) in cities; urban problems and various approaches to their solution. Pr.: SOCIO 211.

SOCIO 533. Rural Sociology. (3) I. Social change and social structure of rural regions and rural communities. Change in agriculture structure, rural demographic shifts, changes in economic base of rural communities in the United States and elsewhere in relation to changing political economy of the world-system. Specific topics include rural community revitalization, women in agriculture, peasant economy, food policy. Pr.: SOCIO 211 or consent of instructor.

SOCIO 535. Population Dynamics. (3) II, in odd years. World population trends and their implications for economic development, public policy, and social and cultural change. The interaction of fertility, mortality, and migration with the size, distribution, and structure of populations in nations and world regions. Pr.: SOCIO 211.

SOCIO 536. Environmental Sociology. (3) II, in even years. The interrelations among human societies, social institutions, and the biophysical environment. Emphasis on the reciprocal links among technological change, economic structure, and the ecological basis of human societies. Pr.: SOCIO 211.


SOCIO 542. The Social Organization of the Future. (3) I, II. On sufficient demand. Examination of alternative social arrangements presented in speculative and science fiction. Consideration of fictional extrapolations of social, scientific, and technological trends in terms of specific institutions. Analysis of possible social and interpersonal structures imaginatively conceived. Pr.: SOCIO 211.

SOCIO 545. The Sociology of Women. (3) I, II. The position of women in the United States and cross-culturally is studied in order to understand what women and girls do and how that is perceived and responded to by different groups. Pr.: SOCIO 211.

SOCIO 546. Bureaucracy in Modern Societies. (3) I. The nature and types of bureaucratic organizations in modern societies. Selected aspects of their internal structure such as peer group and hierarchical relations in organizations, processes of communication, management, and impersonal mechanisms of control. Pr.: SOCIO 211.

SOCIO 561. Criminology. (3) I, II. Theoretical foundations of research on the nature, extent, and causes of crime; programs for prevention and treatment. Pr.: SOCIO 361 or 510.

SOCIO 565. Program and Policy Formulation and Analysis. (3) I, II. Examination of policies and programs developed to cope with various social problems. Emphasis will be on analysis of existing programs and policies and the formulation of alternative policies. Attention will be given to policy change through legislative action. Same as SOCWK 565. Pr.: SOCIO 510.

SOCIO 567. Pre-Internship Orientation. (1) I, II. This course prepares students for internship placements. Resumes are written, interview procedures discussed, agency interviews conducted, internships selected, and agency orientation completed. Pr.: SOCIO 520

SOCIO 568. Criminology and Sociology Internship. (6–9) I, II. Supervised field experience in various agencies within the criminal justice system or other public or private organizations in areas involving applied sociological analysis or practice. Criminology majors wishing to pursue careers in the field of criminal justice are strongly encouraged to complete an internship. General sociology students may take this course under the direction of a faculty member who agrees to serve as their internship advisor. Does not fulfill sociology or criminology elective requirements. Must be taken concurrently with SOCIO 569. Pr.: SOCIO 561 or 565.

SOCIO 569. Criminology and Sociology Professional Seminar. (3) I, II. Integrates field experience and everyday practice with relevant bodies of sociological and criminological theory and research. Must be taken concurrently with SOCIO 568. Pr.: SOCIO 567.

SOCIO 570. Race and Ethnic Relations in the U.S.A. (3) I, II. This survey of racial and ethnic relations focuses on discrimination and conflict now as well as on background factors of the past to enlarge understanding of dominant and minority groups. Pr.: SOCIO 211.

SOCIO 580. Corrections. (3) I, II. The historical development and current status of the correctional system. Major institutional components: jails, prisons, probation, parole and other forms of community corrections. Modern issues such as offender and victim rights and electronic monitoring. Pr.: SOCIO 561.

SOCIO 618. Religion in Culture. (3) II, in odd years. The nature of religion and its role in culture, and the interplay of religion and cultural systems. Same as ANTH 618. Pr.: ANTH 200 or SOCIO 211.

SOCIO 633. Gender, Power, and International Development. (3) On sufficient demand. Examination of various models of development and their impact on various roles of women and men in poorer countries. Emphasis will be on Africa, Asia, and Latin America. Comparisons of public, service, and economic sectors, including agriculture, marketing, and industry. Examination of policy issues. Pr.: SOCIO 211 or ANTH 200 or ANTH 204 or ANTH 210 and 3 additional hours in sociology or cultural anthropology. Same as ANTH 633.

SOCIO 635. The Socioeconomic and Environmental Impacts of NAFTA. (3) Interseession only. The course examines the economic impact of NAFTA on the border state of Texas and Mexico using field research in Mexico. Pr.: ANTH 200 or consent of instructor.

SOCIO 636. Sociology of the Family. (3) I. Origin and development of marriage customs and systems of family organizations; the preparation for family life under present conditions. Pr.: SOCIO 211.

SOCIO 640. Sociology of the Family. (3) I. On sufficient demand. The role of religion as an institution in American society. An examination of religious sociology and the exploration of contemporary trends and movements, including information on traditional denominations and emerging sects and cults. Pr.: SOCIO 211.

SOCIO 647. Sociology of Work. (3) II. The social nature of work and related phenomena; occupational structures, career lines; adjustment and interpersonal relations at work; significance of work in the life cycle. Pr.: SOCIO 211.


SOCIO 670. Diversity and Social Interaction in the Workplace. (3) Interseession. Examinations in the development of work; examines various contexts of work, such as business, the professions, education, and home; analyzes the social organization of work, both in terms of formal arrangements—such as authority and hierarchy—and in terms of informal structure, such as gender, race, class, and other categories of social difference; provides hands-on experience in dealing with interpersonal relations, management styles, communication, diversity issues, and conflict and stress management. Pr.: 6 hours of social science.

SOCIO 709. Development of Social Thought. (3) On sufficient demand. Development of social thought from ancient civilization to the middle of the nineteenth century; approaches to the study of society; ideas on human origins and human nature, character and results of associative life, social trends, and social change.

SOCIO 710. Systematic Analysis of Social Theory. (3) I. Examination of sociological theory with reference to the nature of scientific explanation and the function of scientific theory. Critical study and analysis of selected social theories and major social theories of clarifying the conceptual and logical structure of underlying theoretical models and their assumptions about man and society. Pr.: SOCIO 511 or equivalent.

SOCIO 738. Inter-American Migration. (3) I, in odd years. Analyzes the migratory experiences of Latin American and Caribbean peoples to the United States within their socioeconomic, cultural, political and historical contexts. Introduces students to the current theoretical debate on migration and the construction of U.S. immigration policy. Examines the ways in which the shape of transnational flows to the U.S., the incorporation and community formation of immigrants, and the impacts of such communities on the development of U.S. society. Pr.: SOCIO 535 or consent of instructor.

SOCIO 742. Society and Change in South Asia. (3) I, in even years. Examines recent studies of family and community, population, mobility, urbanization, and modernization in the India-Pakistan region, with focus on social change. Pr.: SOCIO 211 or ANTH 200 or consent of instructor. Pr.: A 500-level course in South Asian studies or one in social change and development.

SOCIO 744. Social Gerontology: An Introduction to the Sociology of Aging. (3) II. Analysis of the phenomenon of human aging in its individual, social, and cultural aspects with special attention to the problems of aging populations in Western societies. Pr.: SOCIO 211.

SOCIO 861. Sociology of Deviance. (3) I, in odd years. A critical examination of the nature, types, and societal reactions to deviant behavior. Special emphasis will be given to the process of stigmatization, the social construction of social problems, and the effects of inequalities such as race, gender, class, and sexuality on the process of creating and applying deviant labels to individuals and groups. Pr.: Graduate standing.

Anthropology courses

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

ANTH 204. A General Education Introduction to Cultural Anthropology. (3) I, II. Introduction to ethnology and ethnography: analysis and comparison of technological, social, and religious characteristics of cultural systems. Not available for credit to students who have credit in ANTH 200.

ANTH 210. Introduction to Cultural Anthropology-Honors. (4) On sufficient demand. Introduction to basic
ANTH 220. Introduction to Linguistic Anthropology. (3) I. Language as a part of human behavior; its origins, uses and abuses, and ways of defining reality. Basic descriptive and ethnosemantic skills used by anthropologists to learn languages in the field.

ANTH 260. Introduction to Archaeology. (3) II. Brief introduction to the field of archaeological anthropology. General survey of world prehistory revealing major cultural changes from the development of early foraging societies through the rise of agricultural and complex communities.

ANTH 281. Introduction to Physical Anthropology Laboratory. (1) I, II (odd years only). Laboratory investigation of human skeletal anatomy, human genetics, primate comparative anatomy, fossil hominid morphology, and comparative evolution of hominid types. Two hours lab a week. Pr.: ANTH 280 or conc. enrollment.

◆ANTH 399. Honors Seminar in Anthropology. (1–3) On sufficient demand. Readings and discussions of selected topics. Open to nonmajors in the honors program.

ANTH 420. Ethnography of Language. (3) I or II. Study of languages and language as aspects of social and ethnic group identities. Participant observation is emphasized. Research project includes kinship terminology, life histories, folklore, and lexicography. Pr.: ANTH 200 or 204 or 210 or consent of instructor.

ANTH 499. Senior Honors Thesis. (2) On sufficient demand. Open only to seniors in the arts and sciences honors program.

ANTH 501. Proficiency Development. (0–3). I. Intensive review of anthropological concepts and skills under faculty supervision. For single students or groups of students. Not applicable to major field requirement of 24 credits. Not repeatable. For undergraduate credit only. Pr.: Consent of instructor and superior performance in relevant course.

ANTH 503. Archaeological Fact or Fiction. (3). I. In even years. Evaluation of popular beliefs about the human past through the application of critical thinking skills. Topics include ancient pyramids and inscriptions, Vikings in the Americas, the moundbuilder myth, lost civilizations, and advanced prehistoric technology. Pr.: ANTH 260 or equiv.

ANTH 505. Introduction to the Civilizations of South Asia I. (3) I. Interdisciplinary survey of the development of civilization in South Asia. Includes Sri Lanka, Bangladesh, and Afghanistan; geographical and demographic context; philological and social concepts; social and political institutions; literature and historical movements. Pr.: ANTH 200 or 204 or 210. Same as HIST 505, ECON 505, POLSC 505, SOCIO 505.

ANTH 506. Introduction to the Civilizations of South Asia II. (3) II. Interdisciplinary survey of recent and contemporary civilizations in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including recent history, current economy, religion, culture, languages, literature, geography, social and political structure, ideas. Pr.: ANTH 200, 204, or 210. Same as HIST 506, ECON 506, POLSC 506, SOCIO 506.

ANTH 508. Male and Female: Cross-Cultural Perspectives. (3) I or II. Gender roles and male-female relationships in the world’s cultures. Stresses gender-role complementarity within the anthropological framework of cultural relativism. Pr.: ANTH 200, 204, or 210.

ANTH 510. Kinship and Marriage in Cross-Cultural Perspective. (3) I or II. Systems of family, marriage, descent, and sex tabus in cross-cultural perspective. Pr.: ANTH 200 or 204 or 210, or SOCIO 211.

ANTH 511. Cultural Ecology and Economy, (3) I or II. Cultural ecology and organization in the world’s cultures. Discussion of environment and culture, exchange and display, modes of classification, and economic development and social change in selected societies. Pr.: Sophomore standing.

ANTH 512. Political Anthropology. (3) I or II. Ethnological approaches to politics in societies around the world. Structural-functional, evolutionary, and conflict theories. A comparison of the political systems of small-scale and complex societies: political modernization. Pr.: Sophomore standing.

ANTH 515. Creativity and Culture. (3) I, in even years. How ethnologists view the expressive and creative aspects of culture. A cross-cultural survey of the verbal, visual, and performing arts. Pr.: ANTH 200, 204, or 210.

ANTH 516. Ethnosemantics. (3) I, in odd years. Ethnic, popular, and traditional music from around the world. The course samples a wide range of stylistic traditions from Africa, Asia, Oceania, Europe, and the Americas. Emphasis is on understanding musical style in cultural context. Pr.: ANTH 200, 204, or 210.


ANTH 519. Applied Anthropology. (3) I or II. Application of anthropological principles and insights to programs of planned change, cultural innovation, and contemporary problems. Pr.: ANTH 200, 204, or 210.

ANTH 520. Research Seminar. (Var.) On sufficient demand. Intensive exploration of anthropological problems for both majors and nonmajors of sufficient background. High levels of individual participation. Pr.: 9 hours of anthropology.

ANTH 522. Special Topics in Anthropology. (1–4) On sufficient demand. Variable topics within cultural anthropology, linguistic anthropology, archaeology, or physical anthropology. Pr.: Consent of instructor.


ANTH 533. Kansas Archaeology. (3) I. Study of native cultures of Kansas and the central Plains region based on archaeological and ethnographic research. Pr.: ANTH 260.

ANTH 536. African American Cultures. (3) On sufficient demand. Study of African-derived cultural patterns in the Americas, stressing culture contact and acculturation, contact and segregation, social and economic organization, religion, language, the arts. Pr.: ANTH 200, 204, or 210.

ANTH 545. Cultures of India and Pakistan. (3) On sufficient demand. Cultural survey of the contemporary tribes and Hindu caste communities in their historical and geographical context, followed by a more intense analysis of selected Indian and Pakistani village case studies stressing indigenous economic, social, political, and religious structures. Pr.: ANTH 200, 204, or 210.

ANTH 550. Cultures of Africa. (3) On sufficient demand. Study of the prehistoric and historic cultures of African and surrounding areas. Stresses the nature and variability of the original cultures of Latin America. Analysis of sample cultures, stressing economic, social, political, and religious structures. Pr.: ANTH 200, 204, or 210.

ANTH 641. Internship in Applied Anthropology. (3) I, II. Supervised field experience of at least three weeks full time or 150 hours part time with an organization or institution in the application of anthropological approaches to a professional setting. Emphasis is on anthropological skills in relation to the objectives and operations of an institution. Open to anthropology majors only. May be repeated once for credit. Pr.: ANTH 519 and junior standing and consent of program coordinator.

ANTH 673. Mesoamerican Archaeology. (3) I or II. In odd years. Early foraging societies, the beginnings of agriculture; the rise of civilization; the classic empires of the Maya, Aztec, and Inca; their neighbors; the Inca; the Incas. Pr.: ANTH 200 or 210.


ANTH 679. Archaeological Field Methods. (3) I. Archaeological site survey, site excavation, and laboratory analysis of sites and artifacts from the Manhattan, Kansas region. Field work on Saturday, 8 a.m.–5 p.m., while weather permits, laboratory work thereafter. Pr.: Consent of instructor.

ANTH 680. Survey of Forensic Sciences. (3) I. Anthropological survey of the predominantly biological areas of forensic science, their methods and techniques, as they pertain to the application of that science to the purpose of the law. Particular emphasis will be given to perspectives about the science itself, its application to anthropology, and the unique ways in which they fit within the law. Pr.: A life science with laboratory requirement in the College of Arts and Sciences or consent of the instructor.

ANTH 685. Race and Culture. (3) On demand. The biological meaning of race; the interrelationships of biological and cultural traits in human evolution; processes of racial formation of man; methods of classifying human races; cultural inheritance; the distinction of race, culture, personality, and intelligence; a review of modern racism; race as an evolutionary process. Pr.: ANTH 200, 204, 210, or 260.
ANTH 688. Paleanthropology. (3) II, in odd years. Human origins and evolution as indicated by fossil evidence; interpretation of man-apes, Pithecanthropus, Neanderthal, Cro-Magnon, and other major fossil groups within the context of evolutionary theory, primate comparisons, and cultural evolution. Pr.: ANTH 200 or 280 or consent of instructor.

ANTH 691. Primatology. (3) I, on demand. Survey of the primate order including considerations of evolution, morphology, and behavior. Particular emphasis will be given to developing perspectives about the origin and evolution of hominids in the context of the primate order. Pr.: ANTH 280 or consent of instructor.

ANTH 694. Osteology. (3) II, in even years. Detailed study of human skeleton, with special attention to health and demonstrating the bones in prehistoric cultures and the evaluation of physical characteristics and genetic relationships of prehistoric populations. Pr.: ANTH 280 or consent of instructor.

ANTH 695. Laboratory in Osteology. (1) II, in even years. Laboratory demonstration and exercise in working with skeletal material for analysis of sex, age, stature, and race. Complete metric and nonmetric analysis with consideration given to paleodemography, paleopathology, in situ analysis and excavation. Written reports on bone material remains will be necessary. Pr.: ANTH 694 or conc. enrollment.

ANTH 697. Seminar in Osteology. (2) II, in odd years and on demand. Analysis of human and nonhuman skeletal remains and their potential for the study of primate evolutionary relationships in prehistoric cultures and the evaluation of physical characteristics and genetic relationships of prehistoric populations. Pr.: ANTH 280 or consent of instructor.

ANTH 730. Field and Laboratory Techniques in Archaeology. (1–9) S. Participation in archaeological excavations; techniques, methods, and procedures in a field research situation. Includes field work of cleaning, cataloging, and preliminary report preparation of materials recovered. May be repeated once if the areas or problems involved are different. Pr.: ANTH 694 or 695, and allows for more concentration on individual methods and techniques and case studies. Pr.: ANTH 694 and 695.

SOCWK 510. Social Welfare as a Social Institution. (3) II. 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 importance of recognizing the functions of social welfare. Pr.: SOCIOL 510. Pr.: One course in each of the following areas: sociology, economics, and political science.

SOCWK 515 Human Behavior in the Social Environment I. (3) I, II. 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 research methods. Emphasis on social systems understanding of human development. Pr.: FSHS 110, SOCWK 260, 280, 298, PSYCH 110, SOCIOL 211, and ANTH 200.

SOCWK 519. Methods of Social Work Research. (4) I, II. Focus is on research application in area of baccalaureate social work practice. Particular attention is given to research strategies for the evaluation of social work practice, for gathering information about communities and clientele, and for examining the impact of social policies at the local level. The content examines the ethics and processes of research, including the issues of research problem identification and selection, the use of the library to support the research effort, design considerations, problems of analysis with small samples, and presentation of research findings. Includes: I. research lab and field experience. Pr.: STAT 330 and SOCWK 260. Social work majors only. Must be taken conc. with SOCWK 560.

SOCWK 525. Human Behavior and the Social Environment II I. (3) I. Continuation of SOCWK 515, with a focus on larger systems (organizations and communities). Social systems and their interrelationships as a framework for understanding macrosystems. Structure and function of larger 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 515. Must be taken conc. with SOCWK 560.

SOCWK 543. Women's Mental Health Issues. (3) II. Investigates prevalent women's mental health issues such as the incidence of depression/anxiety, eating disorders, sexuality, relationship concerns. Also covers the efficacy of traditional treatment modalities and newer therapies that target women's unique mental health needs, such as feminist or nonfeminist therapies. Pr.: One course in women's studies, social work, psychology, or family therapy.

SOCWK 550. Field Practicum Research Preparation. (2) I, II. Social work majors take this course in the semester before enrollment in SOCWK 562 Field Experience. The student is expected to prepare a research proposal which describes research that will be completed in the field practicum setting. In addition, the student is expected to complete 50 hours of volunteer time in the assigned field practicum setting. Pr.: SOCWK 519 and senior standing. Social work majors only.

SOCWK 560. Social Work Practice I. (3) I, II. Introduction to the basic helping skills and techniques common to social work practice. 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 260, 510, and 515; junior standing and permission of the instructor. Must be taken conc. with SOCWK 519.

SOCWK 561. Social Work Practice II. (3) I, II. Continuation of SOCWK 560 with emphasis on skill development in the laboratory and practicum setting using insights 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 and senior standing. Social work majors only.

SOCWK 566. Social Work in Aging Services. (3) I, II. Examination of policies and programs developed to cope with various social problems. Emphasis will be placed on analysis of aging, the elderly, and the effects of various social policies on the elderly. Role of the social worker is explored in the context of physical, psychological, social, and economic aspects of aging. Skills in working with elderly are emphasized through classroom and direct practice in social work agencies. Pr.: Three courses in social science.

SOCWK 568. Social Work Practice III. (2) I, II. 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. Taken conc. with SOCWK 561. Pr.: SOCWK 560; senior standing; open to social work majors only.

SOCWK 570. Social Work with Groups I. (1) I, II. Taken concurrently with SOCWK 560. Students work in small groups to learn how to develop and facilitate task and treatment groups using social work methods. Instructor permit required.

SOCWK 571. Social Work with Groups II. (1) I, II. This course is a continuation of Social Work with Groups I (SOCWK 570) and must be taken concurrently with Social Work Practice II (SOCWK 561). Instructor permission required.

SOCWK 580. Women's Perspectives on Peace and War. (2–3) Intersession only. This course will consider the issue of the participation of women in opposition to war and weapons of war and advocacy for peaceful resolution of conflict. Readings and discussions will focus on four areas: (1) historical and contemporary women’s peace movements; (2) the influence of a male-dominated societal structure on the use of violence and militarism as a means of resolving conflict; (3) the question of whether or not women are naturally more inclined to be peaceful; and (4) the activities, thoughts, and works of individual women in their quest for peace, within themselves, and in the world.

SOCWK 610. Topics in Social Work. (1–3) Supervised independent study projects. Pr.: SOCWK 260 plus 6 hours of behavioral science foundation courses and consent of instructor.

Speech Communication, Theatre, and Dance

David Procter,* Head
Associate Professors K. Anderson,* J. Armagost,* B. Burris,* L. Goulden,* B. Griffin,*
MacFarland,* Maullar,* Procter,* Schenck–Hamlín,* Shelton,* and Uthoff,* Assistant Professors Bailey,* Davy,* Ebright,* Hoffman,* Moran,* Orlock,* Pinkston,* Ross,* and Yagerline; Instructors P. Anderson,* Brown,* and Stanfield; Emeriti: Professors Fedder and Zivanovic; Associate Professor Hinrichs.

www.ksu.edu/sctd

The Department of Speech Communication, Theatre, and Dance offers study in rhetoric/communication, linguistics, theatre, and dance.

All undergraduate majors require SCTD 100 plus 6 hours in other areas within the department. See speech secondary education requirements, College of Education, for teacher certification.

Rhetoric and communication

Rhetoric, one of the original liberal arts, is concerned with the theory, criticism, and practice of communication. The rhetoric/communication program has two instructional goals. First, the program attempts to improve a student’s communication skills in developing messages that are clear, coherent, reasoned, and fluent. Course work in public speaking, group and interpersonal communication, and co-curricular activities in debate and forensics provide opportunities to acquire practical communication skills. Second, the program attempts to develop a student’s ability to analyze communication in different social, political, and organizational settings. Course work in theory, history, and criticism focuses on the study of speech and language used to achieve practical ends. A major in rhetoric/communication would be appropriate for anyone who plans to enter a career that is communication-intensive, such as law, education, public relations, or government.

An undergraduate major in rhetoric/communication is required to take 38 hours of course work in the Department of Speech Communication, Theatre, and Dance, distributed as follows:

Rhetorical and communication theory ................................................. 7

SPCH 080 Speech Seminar ...................................................... 0
SPCH 320 Theory of Human Communication ................. 3
SPCH 330 Rhetoric of Western Thought ......................... 3

Guided electives ........................................................................... 12

Choose two of the following courses in rhetoric:

SPCH 331 Criticism of Public Discourse ......................... 3
SPCH 432 Rhetoric of the American Presidency ........... 3
SPCH 434 Rhetoric of Social Movements ..................... 3
SPCH 435 Political Communication ............................ 3
SPCH 460 Rhetoric of the 60’s .............................................. 3

Choose two of the following courses in communication:

SPCH 322 Interpersonal Communication .................. 3
SPCH 323 Nonverbal Communication ......................... 3
SPCH 326 Small Group Discussion Methods ............... 3
SPCH 526 Persuasion ......................................................... 3

Rhetoric/communication electives ............................................... 12

Must be 300-level or above with at least 3 credit hours numbered 400 or above.

Other department courses .......................................................... 7

SCTD 100 .................................................................................. 1

2 courses in theatre, linguistics, or dance .................................. 6

Rhetoric/communication minor

The Department of Speech Communication, Theatre, and Dance offers a minor in rhetoric and communication.

SPCH 080 Speech Seminar ...................................................... 0
SPCH 320 Theory of Human Communication ................. 3
SPCH 330 Rhetoric of Western Thought ......................... 3

Four guided electives (at least one SPCH 400 or above) chosen from:

SPCH 311, 319, 321, 322, 323, 325, 326
328, 331, 425, 426, 430, 432, 434, 435, 450, 460,
520, 525, 526, 630, 720, 721, 725, 726,
730, 732, 733, 735) ........................................................................ 12

Linguistics

There is general agreement that nothing is more characteristically human than the ability to use language. Linguists, however, usually do not study languages in order to become proficient in speaking, reading, or writing them. In linguistics we are interested in discovering all the principles that, in a sense, define each language, how it works, how it has changed through time and geographical distribution, as well as how children learn to speak, and how people use language.

There are relationships between linguistics and many other disciplines (see Linguistics, in the general information for the College of Arts and Sciences). Students are encouraged to explore as many of these relationships as they can as undergraduates, especially if they anticipate going on to graduate study.

Theatre and dance

The mission of the theatre program is to develop human potential, expand knowledge, and enrich cultural understanding and expression through high quality undergraduate and graduate education. Through scholarship/research, service, and production, the theatre program seeks to train future artists, scholars and teachers of theatre, and to inform the non-major, the university at large, and the surrounding community of the value of theatre to individuals and society.

The major in theatre emphasizes the education of students for professional career goals or for cultural enrichment as an avocation. The objective of the program is to offer broad training, but also the possibility of specialization. Training is available in all areas of theatre, including scenic, costume, lighting and sound design, theatre history and literature, acting, directing, playwriting, management, drama therapy, and dance. The goals of the program are to offer a liberal arts program in theatre; to prepare students for advanced professional training or graduate school; and to provide the basic theatre skills for the bachelor’s candidate. K-State is an accredited institutional member of the National Association of Schools of Theater.

A major consists of 41 hours in theatre, SCTD 100 (1) and 6 hours in tool courses in other areas of the department. (The course used to satisfy the College of Arts and Sciences requirement of one course in public speaking may not be counted as part of these 6 hours.) The 41 hours in theatre must be distributed as follows:

Four semesters of Theatre Forum are also required.

A theatre core of 25 hours:

THTRE 080 Theatre Forum .................................................. 0
THTRE 162 Concepts of Theatre Production ................. 1
THTRE 261 Fundamentals of Acting .......................... 3
THTRE 267 Fundamentals of Stage Costuming and Makeup .................................................. 3
THTRE 368 Fundamentals of Technical Production .. 3
THTRE 369 Introduction to Theatrical Design ............ 3
THTRE 370 Dramatic Structure ....................................... 3
THTRE 365 Principles of Directing ............................ 3
THTRE 572 History of Theatre I .................................. 3
THTRE 573 History of Theatre II .................................. 3

Twelve additional hours in theatre courses numbered 500 or above (excluding THTRE 566 and 710).

Four hours of production work distributed as follows:

Two hours in THTRE 211 Drama Participation: One hour in conjunction with THTRE 368 Fundamentals of Technical Production; one hour with THTRE 267 Fundamentals of Stage Costuming and Makeup.

Two hours in THTRE 710 Practicum in Theatre, or in THTRE 566 Rehearsal Techniques, for work in a production.

There will be a written evaluation of all production work required for the major at the end of each semester.

Theatre minor

The Department of Speech Communication, Theatre, and Dance offers a minor in theatre.

THTRE 162 Concepts of Theatre Production ................. 1
THTRE 261 Fundamentals of Acting .......................... 3
THTRE 369 Introduction to Theatrical Design ............ 3
THTRE 370 Dramatic Structure ....................................... 3
THTRE 572 History of Theatre I .................................. 3
THTRE 573 History of Theatre II .................................. 3

6 credit hours of electives: * (See note below) ............... 6

*Excluded from counting toward electives are: THTRE 165, 211, 566, 710

Concentration in dance

A concentration in dance requires the following:

Core

DANCE 195 Improvisational Structures ......................... 2
DANCE 200 Anatomy for Dancers .............................. 1
DANCE 205 Dance as an Art Form .............................. 3
DANCE 225 Principles of Rhythmic Notation ............... 2
DANCE 295 Dance Composition I .............................. 3
DANCE 321 Variations and Partnering ......................... 1
DANCE 380 Musical Stage Dance .................................. 2
DANCE 405 Applied Movement Fundamentals ............. 3
DANCE 420 Dance/Theatre Lab (required each semester) .... 0
DANCE 495 Dance Composition II .................................. 3
DANCE 502 Performance Production ......................... 3
DANCE 504 (minimum of 3 semesters) ......................... 1-2
DANCE 505 Methods and Materials of Teaching ......... 3
DANCE 506 Dance Education Fieldwork ................... 2
DANCE 510 Senior Project ............................................. 2
DANCE 520 Principles of Dance Technology ............... 3
THTRE 261 Fundamentals of Acting .......................... 3
THTRE 211 Drama Participation (with THTRE 267 and 368) .. 2
THTRE 267 Fundamentals of Stage Costume Design .............. 3
The Department of Speech Communication, Theatre, and Dance offers a minor in dance.

DANCE 200 Anatomy for Dancers ............................ 1
DANCE 205 Dance as an Art Form ............................ 3
DANCE 225 Principles of Rhythmic Notation ........... 2
DANCE 231 Vocal Technique and Performance ......... 2
DANCE 380 Musical Stage Dance ............................. 2
DANCE 420 Dance/Theatre Lab (4 semesters) .......... 0
DANCE 502 Performance Production (minimum of three semesters) 1–2
Plus one of the following: ................................................. 3
DANCE 405, 495, 504, (505 and 506) or 520

Dance techniques
Proficiency must be demonstrated by successful completion with a minimum grade of B of Level III in one technique and Level II in another. Enrollment in a minimum of one technique course and DANCE 420 is required each semester.

Dance courses are listed after theatre courses.

Dance minor
The Department of Speech Communication, Theatre, and Dance offers a minor in dance.

SPCH 080. Speech Seminar. (0) Special topics and lectures for speech majors. Required of all majors.
SPCH 090. Teaching Public Speaking I and II. (0) Seminar for graduate teaching assistants in strategies, techniques, and materials for the introductory public speaking course; includes current practices and research in communication education. Enrollment limited to graduate teaching assistants in the Department of Speech.
SPCH 105. Public Speaking I. (2) I, II, S. Alternate to SPCH 106. Principals and practice of message preparation, audience analysis, presentation skills, and speech criticism. Primarily granted for students whose curricula require a 2-credit hour course. Credit not granted for both SPCH 105 and 106.
SPCH 106. Public Speaking I. (3) I, II. S. Principles and practice of message preparation, audience analysis, presentation skills, and speech criticism permitting greater practice in oral presentation. Credit not granted for both SPCH 105 and 106.
SPCH 109. Public Speaking I, Honors. (3) Honors speech preparation and delivery; a survey of topics basic to rhetoric, communication, and linguistics. For arts and sciences honors students.

SPCH 210. Forensics Participation. (1–2) I, II. Intercollaborate debate or individual events. Four hours maximum credit. Pr.: Consent of director of the activity.

SPCH 311. Business and Professional Speaking. (3) I. II. Principles and practice of speaking in an organizational setting. Areas of emphasis will be oral reports, interview, interpersonal communication, and working in groups. Pr.: SPCH 105 or 106.


SPCH 320. Theories of Human Communication. (3) I. Survey of basic theories of human communication focusing on sending, receiving, and responding to messages face-to-face. Pr.: SPCH 105 or 106.


SPCH 322. Interpersonal Communication. (3) I, II, S. Examination of the dynamics of face-to-face interpersonal interactions. Focus is on applying principles of relational communication.

SPCH 323. Nonverbal Communication. (3) II. Analysis of nonverbal communication in human interaction; theory and research. Credit not granted for both SPCH 323 and SPCH 210.

SPCH 326. Small Group Discussion Methods. (3) I, II, S. Basic concepts of small group decision making. Projects emphasize participation in and analysis of communication in small group. Pr.: SPCH 105 or 106.

SPCH 328. Professional Interviewing, (3) Investigation of interviewing as it occurs in a variety of situations, including journalistic, diagnostic, persuasive, and managerial. Emphasis on developing practical skills in planning, managing interviews, and interpreting data in the professional context. Pr.: SPCH 105 or 106.

SPCH 330. Rhetoric in Western Thought. (3) I, II. An introduction to the figures, concepts, and trends in the development of rhetorical theory from classical to modern times. Pr.: SPCH 105 or 106.

SPCH 331. Criticism of Public Discourse. (3) I. An examination of public influence based on study of historical and contemporary models of rhetorical criticism. The student’s critical experiences will focus on a broad array of public discourse including political, social, and cultural messages.

SPCH 389. Sophomore Honors Seminar. (3) Open only to qualified students in the arts and sciences honors program.

SPCH 425. Theories of Organizational Communication. (3) I. Review of the literature and development of projects regarding basic variables of communication in organizational contexts. Pr.: SPCH 105 or 106.

SPCH 426. Coaching and Directing Speech Activities. (3) I. Current practices in coaching curriculum and extra-curricular speech activities with practical experience in the problems and procedures of directing a forensic program. Pr.: Six hours of general speech or theatre courses that are 200 level or above, SPCH 525, and THTRE 263.

SPCH 430. Freedom of Speech. (3) II. A study of communication and legal principles pertaining to freedom of expression, and an examination of their implications for competing interests such as public order, national security, morality, civil rights, and fairness.

SPCH 432. The Rhetoric of the American Presidency. (3) An examination of the American presidency from a rhetorical perspective, emphasizing the symbolic resources and duties of the office and those who hold it. Special attention paid to the public discourse of recent presidents during moments of national crisis. Pr.: SPCH 105 or 106.

SPCH 434. Rhetoric and Social Movements. (3) II. A study of the scope and functions of persuasive communication in contemporary social movements. Pr.: SPCH 105 or 106.

SPCH 435. Political Communication. (3) II. A study of political discourse. Audience is directed to theorist that encompasses political discourse as it affects political behavior. Pr.: SPCH 105 or 106.


SPCH 460. Rhetoric of the Sixties. (3) I. Rhetorical interpretation of the social and political forces dominating the decade and an examination of the forms of persuasion which these forces brought to life. Emphasizes political leadership, pressures for social change, foreign policy, and transformation of the rhetorical environment. Pr.: SPCH 105 or 106.

SPCH 480. Intercultural Communication. (3) I. A study of the relationship between language and culture and its impact on human communication. Examines how language and culture differ among people and how differences are handled through the process of communication. Pr.: SPCH 105 or 106.

SPCH 498. Honors Tutorial in Speech. (1–3) I, II. Individual directed research and study of a topic in speech, normally as a prelude to writing a senior honors thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of the instructor.

SPCH 525. Argumentation Theory. (3) II. An advanced study of prominent argumentation theorists with an in-depth examination of special topics concerning the philosophy, theory, and practice of argumentation. Pr.: SPCH 105 or 106.

SPCH 526. Persuasion. (3) II. The study of communication as persuasion; examination of contemporary approaches to persuasion.

SPCH 550. Senior Colloquium. (1) I, II. A demonstration of the mastery of vocabulary, theory, and the ability to make practical applications of the study of rhetoric and communication will be required of all senior rhetoric communication majors. Mastery will be demonstrated by writing a senior thesis and presenting the results of that thesis to the assembled rhetoric communication faculty and majors in a required colloquium.

SPCH 630. Special Topics in Rhetoric and Communication. (5) II. Intensive study of selected topics in communication and rhetoric. Repeatable with change in topic. Pr.: Junior standing and consent of instructor.

SPCH 710. Introduction to Communication Research Methods. (3) I. Introduction to descriptive and experimental methodologies in communication, including conceptualization and operationalization of communication concepts, strategies of research design, and logic of inquiry. Pr.: SPCH 320.
SPCH 721. Language and Social Interaction. (3) II. Study of the epistemological, social, and behavioral functions of language in communication. Examination of the processes by which language functions to construct one’s worldview and guide individual action. Pr.: SPCH 320 or LING 280 or ANTH 220; junior standing.

SPCH 722. Instructional Communication. (3) II. Study of theory and practice of communication in the classroom including both teacher and student communication. Topics include instructional settings, communication, language choices, power, humor, communication strategies for instruction, and impact of communication on learning. Same as EDCIP 722.

SPCH 725. History of American Public Address. (3) Study of American speakers, from the time of Jonathan Edwards to the present, including their training, speech, and effectiveness. Pr.: Junior standing and consent of instructor.

SPCH 726. Seminar in Persuasion. (3) II. In odd years. Survey and analysis of advanced theory and experimental studies in persuasion. Pr.: Junior standing.

SPCH 730. Classical Rhetorical Theory. (3) Study of rhetorical theory and criticism from early Greek to Roman times. Pr.: SPCH 330 or graduate standing.


SPCH 733. Rhetorical Criticism. (3) II. Study of tradi- tional and contemporary approaches to the analysis of public discourse. Pr.: SPCH 330.

SPCH 735. Leadership Communication. (3) II in altern- ating years. Basic introduction to Comanche grammatical and dis- cursive and oral wordings of the literature and develop research projects regarding the communication processes by which people move from operating as individuals into groups with a sense of groupself and, further, into groups or organizations that require leadership. Pr.: SPCH 311 or 326, or 425.

SPCH 799. Problems in Speech. (Var.) Open to students in any speech area. Pr.: Junior standing and consent of instructor.

Linguistics courses

LING 280. Introduction to the Study of Language. (3) I, II. Survey of the scientific study of language. Contributions of linguistics to an understanding of the nature of language. Presupposes no previous knowledge of linguistics.

LING 594. Comanche Texts. (3) I or II, in alternate years. General introduction to Comanche grammatical and dis- cursive and oral wordings of the literature and develop research projects regarding the communication processes by which people move from operating as individuals into groups with a sense of groupself and, further, into groups or organizations that require leadership. Pr.: SPCH 311 or 326, or 425.

LING 595. Archeological Decipherment. (3) I or II, in alternate years. The art and science of four famous cases of decipherment: Mesopotamian cuneiform, Egyptian hiero-glyphics, Creto-Mycenaean Linear B, and on-going work on the Maya script. Characteristics of successful deciphermen- ts and resultant increases in knowledge about the his- tory of writing and the richness of various cultures of the past. Same as LG 595.

LING 600. Principles of Linguistics. (3) The scientific study of language, with examples from English, Spanish, French, German, and others. Overview of language origins, phonetics, phonology, syntax, semantics, language acquisi- tion, dialects, language and writing systems, same as ENGL 600 and LG 600.

LING 601. General Phonetics. (3) I or II, in alternate years. Description and classification of speech sounds according to point and manner of articulation. Transcription in the International Phonetic Association Alphabet. Includes sounds of English, French, Spanish, German, and others. Same as ENGL 601 and LG 601.

LING 602. Historical Linguistics. (3) I or II, in alternate years. Internal and comparative reconstruction of earlier forms of languages. Genetic relationships in language fami- lies, and various typological considerations. Includes French, Spanish, and others. Same as ENGL 602 and LG 602.

LING 603. Topics in Linguistics. (1–3) I or II, in alter- nate years. Seminar on a special topic in linguistics: deci- pherment of ancient writing systems, linguistics applied to the teaching of English or other languages, discourse analy- sis (especially of spoken texts), etc. Topic to be announced for semester in which offered. Repeatable for credit on a different topic. Same as ENGL 603 and LG 603.

LING 783. Phonology I. (3) Basic concepts of the theory of language sound systems with particular reference to English but with reference to other languages as well. Pr.: SPCH or ENGL 681 and SPCH, ENGL, or MLANG 780. Same as ENGL 783 and LG 783.

LING 785. Syntax I. (3) Basic concepts of syntactic the- ory, with particular reference to English but including refer- ence to the grammatical systems of other languages as well. Pr.: ENGL 530 or SPCH, ENGL, or LG 780. Same as ENGL 785 and LG 785.

LING 792. Field Methods in Linguistics. (3) On suffi- cient demand. Techniques of collecting and analyzing lin- guistic data in the field and with language consultants in class, on languages such as Swahili. Pr.: Consent of the instructor. Same as LG 792 and ANTH 792.

LING 796. Theories of Grammar. (3) I. Comparative examination of the assumptions, aims, and procedures of four types of English grammar—the nomethe grammar of Robert Lowth, the historical grammar of Otto Jespersen, the structural grammar of Leonard Bloomfield, and the generative-transformational grammar of Noam Chomsky— and their application. Same as ENGL 796. Pr.: Junior stand- ing, and ENGL 530 or LING 600.

Theatre courses

THTRE 808. Theatre Forum. (0) I, II. Special topics pre- sentations for theatre majors. Four semesters required for all majors.

THTRE 162. Concepts of Theatre Production. (1) I. An orientation to the various areas of theatrical production in the rehearsal and performance process. Required of all majors in their second spring semester.

THTRE 211. Drama Participation. (0–2) I, II. Work in theatrical productions. Four hours maximum credit. Pr.: Consent of director of activity.

THTRE 235. Introduction to the Art of Film. (3) Examination of the means of creating film art. Attention to techniques employed by successful directors, writers, and producers. (Var.) Open to students in any speech area. Pr.: Consent of director of activity.

THTRE 368. Fundamentals of Technical Production. (3) I. Basic techniques, equipment and materials used in scenery construction and theatrical drafting. Conc. enrollment in at least 1 hour of THTRE 211 is required.

THTRE 369. Introduction to Theatrical Design. (3) An exploration of the four areas of stage design: sets, lights, costumes, and sound. Includes examination of relevant his- tory and technology in these areas. Emphasis is on the design process and design development.

THTRE 370. Dramatic Structure. (3) Fundamentals of play analysis for directors with emphasis upon concepts of form, style, characterization, discovery, and reversal. Includes practice in analyzing plays of various forms and styles.

THTRE 475. Opera Workshop. (1–6) Principles and techniques of operatic and musical theatre production, with emphasis on class rehearsal and performance of selected scenes from opera and musical drama; brief survey of the history of opera. Offered jointly by the Departments of Speech and Music. Same as MUSIC 475.


Undergraduate and graduate credit in minor field

THTRE 560. Advanced Stage Movement. (3) Study in the physical development of character and advanced tech- niques of stage movement. May be repeated for a total of 9 hours credit by qualified students.

THTRE 561. Vocal Expression for Actors. (3) Studies and application of vocal techniques for stage productions; emphasis on development of the actor’s vocal mechanism. May be repeated for a total of 9 hours credit by qualified students. Pr.: Consent of instructor.

THTRE 562. Playwriting. (3) Theoretical study and prac- tical application of techniques of playwriting with regard to plot, characters, and production; emphasis on the one-act form.

THTRE 563. Storytelling. (2) A consideration of literary materials appropriate for children in nursery schools, kindergarten, and elementary schools. Major emphasis is on training in the art of storytelling. Pr.: SPCH 105 or 106.


THTRE 566. Rehearsal Techniques. (0–3) I. A labora- tory course for students enrolled in performance and pro- duction classes. May be repeated for a total of 6 hours credit. Pr.: Conc. enrollment in THTRE 765 or 783 or 779.
THTRE 568. Fundamentals of Scene Design. (3) Examination of the role of scene design in theatre, principles and techniques of design. Development, presentation, and synthesis of design images with the scripted play. Pr.: THTRE 368 and THTRE 369.


THTRE 570. The Musical Comedy. (3) On sufficient demand. The history of operetta and musical comedy from Offenbach to the present. Same as MUSIC 570. Pr.: MUSIC 150 or THTRE 165 or equiv.

THTRE 572. History of Theatre I. (3) I, II. A survey of the development of the theatre from ancient times to 1700. Pr.: Junior standing and consent of instructor.

THTRE 573. History of Theatre II. (3) I. A survey of the development of the theatre from 1700 to the present. Pr.: Junior standing or consent of instructor.

THTRE 580. Music Theatre Workshop. (2) Principles and techniques of musical theatre production with emphasis on rehearsal and performance of selected scenes from musical theatre. Dance, music, and theatre are studied as integrated elements within the musical theatre genre. Culinates in a public performance. Course may be repeated twice for credit. Pr.: MUSIC 202, two semesters of voice; THTRE 261; and DANCE 380, or consent of instructor.

THTRE 630. Topics in Theatre. (1–4) Selected topics in theatre. May be repeated with topic change to a maximum of 12 hours credit.


THTRE 660. Professional Theatre Tour. (2–3) Inter- session, S. Supervised viewing and analysis of professional theatre productions. Travel to one or more theatre centers such as New York, London, or Los Angeles. Students are charged an additional fee to cover travel expenses. Written critical reviews of the productions are required. May be repeated once by undergraduates. Pr.: Six hours of credit in theatre.

THTRE 661. Professional Development. (1) I. Study of audition techniques including supervised preparation of appropriate material. Business aspects of professional theatre, including unions, contracts, and professional ethics. Pr.: 12 hours in theatre, music, and/or dance.


THTRE 665. Drama Therapy with Special Populations. (3) The therapeutic uses of drama in the development of creative imagination, self expression, and social relatedness with special populations such as the mentally disabled, the emotionally disturbed, and the senior adult. Pr.: Junior standing.

THTRE 666. Stage Management. (3) I, II. Theory and practice of stage management in the professional and non-professional theatre. Emphasis is on the organization of all areas of theatre knowledge needed for the running of theatrical productions. Pr.: THTRE 368.


THTRE 668. Period Styles for the Theatre II. (3) I. Survey of historical styles of architecture, furnishings, and clothing in relation to theatrical design and the history of the theatre from 1800 to present. Pr.: THTRE 573 or conc. enrollment.

THTRE 671. History of Opera. (3) A study of selected masterpieces of musical drama, with emphasis on the relationship of music and drama, and on the unique qualities of opera as a collective artwork. Pr.: MUSIC 201 or MUSIC 250 or THTRE 370. Same as MUSIC 650.

THTRE 672. American Ethnic Theatre. (3) Drama and stagecraft of ethnic groups in the United States, including the theatre of African, Asian, Hispanic, Jewish, and Native Americans. Pr.: Junior standing.

THTRE 710. Practicum in Theatre. (0–6) Supervised participation in a position of major responsibility. May be repeated for a maximum of 12 hours credit. Pr.: THTRE 160 or 261 or 368; junior standing; consent of supervising faculty member and approval of faculty members are required.

THTRE 711. Topics in Technical Theatre. (3) Selected topics in creative techniques and investigation for technical theatre. May be repeated for credit with change in topic. Pr.: THTRE 368 and consent of instructor.

THTRE 712. Theatre Management. (3) Theatre management, promotion, finance, organization, emphasis on contract negotiations and use of facilities.

THTRE 760. Principles of Drama Therapy. (3) Study of theory and practice in the use of drama as therapy, including assessment and treatment, individual and group practice, and psychodrama. Pr.: THTRE 646 or 665.

THTRE 761. Advanced Acting. (3) Studies in style, technique, and characterization. May be repeated once. Pr.: THTRE 361 and consent of instructor.

THTRE 762. Advanced Playwriting. (3) Further study in the writing of drama; emphasis on problems of writing full-length plays. May be repeated for a total of 9 hours credit by qualified students. Pr.: Consent of instructor. Same as ENGL 762.

THTRE 763. Reader's Theatre. (3) The nature, purpose, and production of oral interpretation of literature in the theatre; emphasis on monologue, lecture-recital, and play reading. May be repeated for a total of 6 hours credit by qualified students. Pr.: Consent of instructor.


THTRE 765. Practice in Directing. (3) A lecture-lab course with emphasis on directing dramatic productions under performance conditions. May be repeated for a total of 9 hours credit by qualified students. Pr.: Consent of instructor.

THTRE 777. Aesthetics of the Theatre. (3) Principal emphasis on theoretical problems of dramatic art.

THTRE 779. Repertory Theatre. (3) Concentrated studies in theory and practice of repertory theatre productions. Reading, demonstrations, study of play scripts; play selection and production methods; operation of and association in production of plays in repertory. May be repeated for a total of 12 hours credit by qualified students. Pr.: Consent of instructor.

THTRE 780. Theatre Design Studio. (0–3) I, II. Advanced problems in conceptualization and realization of design, including sets, costumes, lights, and technical production. Emphasis on advanced techniques in research, analysis, and problem production. May be repeated to a maximum of 6 credits. Pr.: THTRE 567, 568, 569, or 579.

THTRE 782. Women in Theatre. (3) A history of the contributions of women in theatre as playwrights, managers, directors, and performers; contemporary women in theatre and their experiments in expressing women's consciousness.

THTRE 783. Practice in Acting. (3) Advanced studies in characterization with emphasis on communicating with the director. Taught in conjunction with the Practice in Directing workshop. May be repeated once. Pr.: THTRE 361 and consent of instructor.

THTRE 784. Psychodrama. (3) S. Theory and practice of psychodrama as a treatment modality for use in drama therapy. Pr.: Consent of instructor.

THTRE 785. Sociodrama. (3) S. Theory and practice of sociodrama as a therapeutic and educational modality for use in drama therapy and developmental drama. Pr.: Consent of instructor.

THTRE 786. Israeli Theatre. (3) Drama and stagecraft of Israeli Theatre from its origins through the present. Pr.: Junior standing.

THTRE 799. Projects in Theatre. (1–4) Individual guided work in selected area. Only 3 hours may be applied to MA.

**Dance courses**

DANCE 120. Modern Dance I. (2) I, II. Introduction to principles of modern dance. Emphasis on correct body alignment, movement efficiency, and creative potential of the individual. Three hours lab a week.

DANCE 165. Ballet I. (2) I, II. Introduction to basics of classical ballet training. Includes terminology, body positions, movement vocabulary, and principles of body alignment.

DANCE 171. Jazz Dance I. (2) I, II. A basic course in jazz technique and style, focusing on isolations, rhythmic articulation, and the control and release of energy. Three hours lab a week.


DANCE 205. Dance as an Art Form. (3) I. Dance in its religious, social, and artistic forms. Film, slides, demonstrations, and lectures will trace the function of dance in society, the influence of society on dance, how dance relates to other art forms, and current trends in the dance world.


DANCE 250. Performance Styles. (1) Study and practice of technique and performance of specific period/historical, character, or ethnic/specialty dance styles. May be repeated three times.


DANCE 323. Modern Dance II. (2) I, II. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 120 and consent of instructor.

DANCE 324. Modern Dance III. (2) I, II. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 323 and consent of instructor.

DANCE 325. Ballet II. (2) I, II. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 165 and consent of instructor.

DANCE 326. Ballet III. (2) I, II. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 120 and consent of instructor.

DANCE 371. Jazz Dance II. (2) I, II. Intermediate course in jazz technique and style focusing on development of isolation, rhythmic articulation, and the control and release of energy. Performance of advanced movement sequences. May be repeated for a total of 8 hours. Only 2 of these hours may be applied toward humanities requirements. Pr.: DANCE 171.
DANCE 372. Jazz Dance III. (2) On sufficient demand. May be repeated for a total of 8 hours. Only 2 of the hours may be applied toward humanities requirements. Pr.: DANCE 371 or consent of instructor.


DANCE 399. Honors Seminar. (3) Open only to qualified students in the arts and sciences honors program.


DANCE 420. Dance Theatre Lab. (0, 1, II). Practice in technique, improvisation, and choreographic process. Study of technical training to enhance cognitive, perceptual, and application skills in dance. Pr.: Consent of instructor.

DANCE 455. Movement Exploration and Creative Dance for Children. (3) I. Application of scientific principles to the teaching of basic movement concepts and creative dance for grades K–6. Emphasis upon a guided discovery and problem-solving approach. One hour lecture and four hours lab a week. Pr.: KIN 320, 330, and 335 (or any two and one enrollment in the third).

DANCE 459. History of Dance in Its Cultural Setting. (3) II. The study of developments and changes in the style, technique, and tradition of ceremonial and theatrical dancing from the Greeks to the present. Emphasis on the interaction between this art and the total culture—social, religious, artistic, and political—in which it is performed. Pr.: Sophomore standing. Same as HIST 459.


DANCE 498. Honors Tutorial in Dance. (1–3) I, II. Individually directed research/creative endeavor in dance, normally as a preliminary to writing a senior honors thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the honors program of the College of Arts and Sciences, and permission of instructor.

DANCE 499. Senior Honors Thesis. Open only to seniors in the arts and sciences honors program.

DANCE 502. Performance Production. (1–2) I, II. Studies in the techniques of dance production and performance. Emphasis is on practical application. May be repeated four times. Pr.: Junior standing or consent of instructor.

DANCE 504. Performance Aesthetics. (3) On sufficient demand. Examination of performance as art. Analysis of general aesthetic theory to performance through such issues as style, content, form, gender, and role. Oral and written experience in planning, executing, and assessing performance events. Pr.: Junior standing or consent of instructor.


DANCE 510. Senior Project. (1) Student creates and presents major performance, choreographic or written project demonstrating advanced level of achievement. Pr.: Senior standing and consent of instructor.


Statistics

Dallas E. Johnson, * Head
Professors Boyer, Higgins, Johnson, Kemp, Miliken, Nelson, and Yang; Associate Professors El Barmi, Loughlin, Neill, Pontius and Rumsey; Assistant Professor Zhou; Emeritus: Professors Perng, Feyerherm, and Fryer.

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Statistics is a combination of classical mathematics, the theory of probability, and new concepts related to inductive reasoning that have developed during the past 75 years. Almost all activities of plants and animals (including people) depend to some degree on chance events, and most decisions made by people depend on sampling information—which also depends on chance events, and hence on probability. Consequently, fields of interest and activities for a statistician potentially are very broad.

Likewise, the professional activities open to a trained statistician are quite varied. The existence of modern-day computers relieves the statistician of tedious computations and elevates his or her professional activity to dealing with people and/or engaging in basic research.

Students who major in statistics may seek a bachelor of arts degree or a bachelor of science degree by satisfying the general requirements of that degree, and completing the following:

- **MATH 220** Analytic Geometry and Calculus I ………. 4
- **MATH 221** Analytic Geometry and Calculus II ………. 4
- **MATH 222** Analytic Geometry and Calculus III ………. 4
- **MATH 551** Applied Matrix Theory ………………….. 3
- **CIS 200** Fundamentals of Computer Programming ………………….. 2
- **CIS 203** Fundamentals of Computer Programming Lab ………………….. 1
- **STAT 410** Probabilistic Systems Modeling ………………….. 3
- **STAT 510** Introductory Probability and Statistics I ………………….. 3
- **STAT 511** Introductory Probability and Statistics II ………………….. 3
- **STAT 704** Analysis of Variance and Covariance ………. 2
- **STAT 705** Regression and Correlation Analyses ………. 2
- **STAT 720** Design of Experiments ………………….. 3
- **IE 541** Statistical Quality Control ………………….. 3
- **Statistics elective (STAT 710, 716, 717, or 722) ………………….. 3
- **ENGL 516** Written Communication for the Sciences ………………….. 3
- **Upper division quantitative electives ……….. 9
- **(May include mathematics, computer science, or other approved courses)**

A minimum of 2.0 GPA in STAT courses taken as part of the major is required for graduation.

Statistics minor

Students interested in quantitative methods to complement their major area of study may select a minor in statistics. The requirements are:

One of: STAT 320, 330, 340, 350, 510
One of: STAT 341, 351, 511
Both: STAT 704, 705
Five additional hours that require statistics as a prerequisite. Courses may be statistics courses or quantitative courses from another department.

Dual majors and dual degrees

Students may major in statistics and another discipline within the College of Arts and Sciences. The degree requirements of both departments must be met. For instance, it is possible to complete a dual statistics-mathematics degree in four years.

Students may obtain a dual degree in statistics and a field in another college such as business administration or engineering. The degree requirements of both colleges must be met and a minimum of 150 hours must be completed. Students who choose this option should complete the calculus sequence by the end of the sophomore year.

Statistics courses

- **STAT 100. Statistical Literacy in the Age of Information.** (3) I, II. This course is intended for majors in non-quantitative fields. Focus will be on the development of an awareness of statistics at the conceptual and interpretative level, in the context of everyday life. Data awareness and quality, sampling, scientific investigation, decision making, and the study of relationships are included. Emphasis will be on the development of critical thinking through in-class experiments and activities, discussions, analyses of real data sets, written reports, and collaborative learning. Computing activities will be included where appropriate; no previous computing experience required. Pr.: MATH 100. Cannot be taken for credit if credit has been received for any other statistics course.

- **STAT 320. Elements of Statistics.** (3) I, II, S. A basic first course in probability and statistics; frequency distributions; averages and measures of variation; probability; simple confidence intervals and tests of significance appropriate to binomial and normal probability distributions; correlation and regression, including confidence intervals and tests of significance for bivariate populations. Pr.: MATH 100.

- **STAT 330. Elementary Statistics for the Social Sciences.** (3) I, II, S. A basic first course in probability and statistics with textbook, examples, and problems aimed toward the social sciences and humanities. Frequency distributions, averages, measures of variation, probability, confidence intervals; tests of significance appropriate to binomial, multinomial, and normal sampling; simple regression and correlation. Pr.: MATH 100. Cannot be taken for credit if credit has been received for STAT 320, 340, or 350.

- **STAT 340. Biometrics I.** (3) I, II. A basic first course in probability and statistics with textbook, examples, and problems aimed toward the social sciences and humanities. Frequency distributions, averages, measures of variation, probability, confidence intervals; tests of significance appropriate to binomial, multinomial, Poisson, and normal sampling; simple regression and correlation. Pr.: MATH 100. Cannot be taken for credit if credit has been received for STAT 320, 340, or 350.

STAT 350. Business and Economic Statistics I. (3) I, II. A basic first course in probability and statistics with textbook, examples, and problems pointed toward business administration and economics. Frequency distributions, averages, index numbers, time series, measures of variation, probability, confidence intervals, tests of significance. Pr.: STAT 510. Cannot be taken for credit if credit has been received for STAT 320, 330, or 340.

STAT 351. Business and Economic Statistics II. (3) I, II. Continuation of STAT 350 including study of index numbers, time series, business cycles, seasonal variation, multiple regression and correlation, forecasting; some non-parametric methods applicable in business and economic studies. Pr.: STAT 320, 330, 340, or 350.

STAT 399. Honors Seminar in Statistics. (3) Selected topics. May be used to satisfy quantitative requirements for B.S. degree. Open only to students in the honors program.

STAT 410. Probabilistic Systems Modeling. (3) II. Basic probability: discrete and continuous random variables; Markov chains; Poisson process; birth and death process; applications for queuing theory and reliability theory; computer simulation of random phenomena. Pr.: MATH 221, CIS 300, 570, or consent of instructor.

STAT 490. Statistics for Engineers. (1) I, II. First course in statistics with examples and problems toward engineering. Distributions, means, measures of variation, confidence intervals, graphical display of data, simple regression and correlation, philosophy of experimentation. Must be taken concurrently with a laboratory course in engineering which uses statistics.

STAT 491. Statistics for Engineers II. (1) I, II. A continuation of STAT 490. Offered second half of the semester following STAT 490. Statistical tests, multiple regression, model fitting, simple comparative and factorial experiments. Emphasis on computer analysis of data. Pr.: STAT 490.

STAT 510. Introductory Probability and Statistics I. (3) I, II. Descriptive statistics, probability concepts and laws, sample spaces; random variables; binomial, uniform, normal, and Poisson; two-dimensional varieties; expected values; confidence intervals; binomial parameter, median, normal mean, and variance; testing simple hypotheses using CIs and $\chi^2$ goodness of fit. Numerous applications. Pr.: MATH 222.

STAT 511. Introductory Probability and Statistics II. (3) II. Law of Large Numbers, Chebycheff's Inequality; continuation of study of continuous varieties; uniform, exponential, gamma, and beta distribution; Central Limit Theorem; distributions from normal sampling; introduction to statistical inference. Pr.: STAT 510.

Undergraduate and graduate credit

STAT 702. Statistical Methods for Social Sciences. (3) I, II. Statistical methods applied to experimental and survey data from social sciences; test of hypotheses concerning treatment means; linear regression; product-moment, rank, and bi-squared correlations; contingency tables and chi-square tests. Pr.: MATH 100.

STAT 703. Statistical Methods for Natural Scientists. (3) I, II, S. Statistical concepts and methods basic to experimental research in the natural sciences; hypothetical populations; estimation of parameters; confidence intervals; parametric and nonparametric tests of hypotheses; linear regression; correlation; one-way analysis of variance; t-test; chi-square test. Pr.: Junior standing and equiv. of college algebra.

STAT 704. Analysis of Variance. (3) I, II. S. Computation and interpretation for two- and three-way analyses of variance; multiple comparisons; applications including use of computers. Meets four times a week during first half of semester. Pr.: One previous statistics course.

STAT 705. Regression and Correlation Analyses. (3) I, II. Multiple regression and correlation concepts and methods; curvilinear regression; applications including use of computers. Meets four times a week during second half of semester. Pr.: One previous statistics course.

STAT 706. Basic Elements of Statistical Theory. (3) I. The mathematical representation of frequency distributions, their properties, and the theory of estimation and hypothesis testing. Elementary mathematical functions illustrate theory. Pr.: STAT 605, 710, or 720 and STAT 320 or equiv.

STAT 710. Sample Survey Methods. (2) II, in even years. Design, conduct, and interpretation of sample surveys. Pr.: STAT 702 or 703. Meets four times a week during first half of semester.

STAT 713. Applied Linear Statistical Models. (3) I. Matrix-based regression and analysis of variance procedures at a mathematical level appropriate for a first-year graduate statistics major. Topics include simple linear regression, linear models in matrix form, multiple linear regression, model building and diagnostics. Pr.: STAT 702 or 703. Meets four times a week during first half of semester. Pr.: One previous course in statistics.

STAT 716. Nonparametric Statistics. (2) II, in odd years. Hypothesis testing when form of population sampled is unknown: rank, sign, chi-square, and slippage tests; Kolmogorov and Smirnov type tests; confidence intervals and bands. Meets four times a week during second half of semester. Pr.: One previous course in statistics.

STAT 717. Categorical Data Analysis. (3) II. Analysis of categorical data arranged in two- and higher-dimensional contingency tables using classical methods and log linear models. Various measures of association are discussed. Pr.: STAT 704, 705.

STAT 720. Design of Experiments. (3) I, S. Planning experiments so as to minimize error variance and avoid bias; Latin squares; split-plot designs; switch-back or reversals; incomplete block designs; efficiency. Pr.: STAT 704 and 705.

STAT 722. Experimental Designs for Product Development and Quality Improvement. (3) II. A study of statistically designed experiments which have proven to be useful in product development and quality improvement. Topics include randomization, blocking, factorial treatment structures, fractional factorial designs, screening designs, and response surface methods. Pr.: STAT 511 or STAT 704 and STAT 705.

STAT 725. Digital Statistical Analysis. (3) II. Techniques of programming in algorithmic languages for statistical applications. Topics include efficiency and numerical accuracy of algorithms, random number generation, Monte Carlo methods, techniques of simulation, and some basic principles of numerical analysis. Pr.: CIS 200 or equiv. STAT 704 and 705.

STAT 730. Multivariate Statistical Methods. (3) I. Multivariate analysis of variance and covariance; classification and discrimination; principal components and introductory factor analysis; canonical correlation; digital computing procedures applied to data from natural and social sciences. Pr.: STAT 704, 705.

STAT 736. Bioassay. (2) I. In odd years. Direct assays; quantitative dose-response models; parallel line assays; slope ratio assays; experimental designs for bioassay; covariance adjustment; weighted estimates; assays based on quantal responses. Meets four times a week during second half of semester. Pr.: STAT 704, 705.

STAT 740. Nonlinear Models. (3) S, in even years. Methods of estimating parameters of nonlinear models; procedures for testing hypotheses; construction of confidence intervals and regions; nonlinear analysis of covariance; quantal dose response and probabilistic choice models. Pr.: MATH 222, STAT 720.


STAT 771. Theory of Statistics II. (3) II. Introduction to multivariate distributions; sampling distributions, derivation, and use; estimation of parameters, testing hypotheses; multiple regression and correlation; simple experimental designs; introduction to nonparametric statistics; discrimination. Pr.: STAT 770.

STAT 799. Topics in Statistics. (Var.) I, II, S. Pr.: STAT 703 or 770 and consent of instructor.
Business Administration

Yar M. Ebadi, Dean
Stanley W. Elsea, Associate Dean
Cynthia S. McCahon, Assistant Dean

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The main objective of the College of Business Administration is to provide a balanced program for general education and professional study in business administration and accounting.

The degree programs in business offered by the College of Business Administration are accredited by the International Association for Management Education (AACSB).

Throughout a student’s academic career, the business firm is examined as a vital social, economic, and political institution. To equip the prospective executive and specialist for future professional responsibilities, the college organizes instructional activities around two themes: one, the businessperson as the manager of operations and decision maker in a particular firm; two, the businessperson as one who must analyze and adapt to the larger economic, social, and political environment of which he or she and the firm are integral parts. Both subject matter and instructional techniques focus on decision making and implementation of decisions through critical and creative analysis.

The College of Business Administration also sponsors numerous short courses and conferences for business and management groups.

At the undergraduate level, the College of Business Administration seeks to produce graduates with a broad education in the arts, sciences, and humanities; a solid knowledge and understanding of the functioning of the business world; sufficient knowledge and skill in a field of specialization to obtain positions in business; and the proven ability to think creatively and analytically in order to progress into positions of greater responsibility.

General Requirements

Bachelor of science in business administration

Business administration pre-professions

Students entering college for the first time and eligible for admission to K-State must enroll in the business administration pre-professions program (BAPP). Students with previous academic work (either at K-State or elsewhere) requesting transfer to the College of Business Administration must have a 2.0 or higher grade point average and enroll in the BAPP curriculum. For purposes of admission, grade point averages will be based on all courses attempted at colleges or universities.

The BAPP program provides course work in communications, mathematics, social sciences, humanities, and natural sciences. The purpose of the BAPP curriculum is to help students develop the descriptive and analytical foundation necessary for the study of business administration. Remaining “core courses” in business administration and courses in the degree-track (major) are taken after successful completion of the BAPP program.

The BAPP is expressly designed as a non-degree program; students with 75 or more credit hours will not be allowed to enroll in BAPP. Students with more than 75 hours who have consistently met the grade point requirements may be admitted into degree-track majors.

Admission to a degree-track (major) in accounting, finance, management, or marketing is necessary for graduation. Applicants for admission to one of the degree tracks, other than accounting and management information systems (MIS), will be accepted upon completion of a minimum of 45 BAPP credit hours (including one lab) with an overall grade point average of 2.50 or above. For accounting and MIS the grade point average for admission to the degree track is 3.0.

Requirements for BAPP

Communications

<table>
<thead>
<tr>
<th>Cr. hrs.</th>
<th>Semester to take</th>
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<tbody>
<tr>
<td>ENGL 100 Expository Writing I ........... 3</td>
<td>1</td>
</tr>
<tr>
<td>ENGL 200 Expository Writing II ............ 3</td>
<td>3–4</td>
</tr>
<tr>
<td>SPCH 105 Public Speaking IA 1 .......... 2</td>
<td>1–3</td>
</tr>
<tr>
<td>Communications elective .......................... 3</td>
<td>5–6</td>
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<tr>
<td>Communications elective ............................ 3</td>
<td>5–6</td>
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</tbody>
</table>

Choose six communications elective hours from the following list of courses:

- ENGL 300 Expository Writing III
- MRTG 442 Personal Selling
- SPCH 311 Business and Professional Speaking
- SPCH 320 Theories of Human Communication
- SPCH 321 Public Speaking II
- SPCH 322 Interpersonal Communication
- SPCH 323 Nonverbal Communication
- SPCH 325 Argumentation and Debate
- SPCH 326 Small Group Discussion Methods
- SPCH 331 Criticism of Public Discourse
- SPCH 425 Theories of Organizational Communication
- SPCH 450 Special Studies in Human Discourse
- SPCH 526 Persuasion

Quantitative

<table>
<thead>
<tr>
<th>Cr. hrs.</th>
<th>Semester to take</th>
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</thead>
<tbody>
<tr>
<td>MATH 100 College Algebra** .................. 3</td>
<td>1–2</td>
</tr>
<tr>
<td>MATH 205 General Calculus and Linear Algebra** .... 3</td>
<td>2–3</td>
</tr>
<tr>
<td>CIS 101 Introduction to Personal Computing 1 .......... 1</td>
<td>2–3</td>
</tr>
<tr>
<td>CIS 102 Spreadsheet Applications 1 .......... 1</td>
<td>2–3</td>
</tr>
<tr>
<td>CIS 103 Database Applications 1 .......... 1</td>
<td>2–3</td>
</tr>
</tbody>
</table>
| Optional: CIS 104 Word Processing (1 hr.)—Course will count as unrestricted elective.

MANGT 366 Management Information Systems 3–8
STAT 350 Business and Economic Statistics 1 3–4

Economics

<table>
<thead>
<tr>
<th>Cr. hrs.</th>
<th>Semester to take</th>
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</thead>
<tbody>
<tr>
<td>ECON 110 Principles of Macroeconomics .......... 3</td>
<td>3–4</td>
</tr>
<tr>
<td>ECON 120 Principles of Microeconomics .......... 3</td>
<td>3–4</td>
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</tbody>
</table>

Social science electives .......................... 9 1–4

Choose nine social science elective hours from the following list of courses:

- ANTH All courses except those which count as humanities or natural science electives
- DEN 450 Impact of Technology on Society
- ECON All courses except ECON 110 and 120. Courses may not overlap with those used to satisfy economics, restricted, or unrestricted electives.
- FSIS 110 Introduction to Human Development
- FSIS 301 The Helping Relationship
- FSIS 350 Family Relationships and Gender Roles
- GEOG All courses except GEOG 220 and GEOG 221 are acceptable.
- GNHE 110 Human Needs
- IBH 600 British Cultural Survey
- POLSC All courses
- PSYC All courses
- SOCIO All courses

Humanities electives ............................... 6 1–4

Choose six humanities elective hours from the following list of courses:

- AMTH 160 Introduction to American Ethnic Studies
- ANTH 515 Creativity and Culture*
- ANTH 516 Ethnomusicology*
- ANTH 517 American Music and Culture*
- ARCH 301 Appreciation of Architecture
- ART All courses*
- DANCE All courses*
- ENGL All literature courses
- HIST All courses
- MLANG All modern language courses
- MUSIC All courses +
- PHILO All courses
- THTRE All courses*
- WOAMST All courses

*Students may take a maximum of 3 credit hours in participation or artistic skill development courses.

Natural science electives ........................... 7 1–4

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

- AGRN 220 Crop Science
- ANTH 280 Introduction to Physical Anthropology
- ANTH 281 Introduction to Physical Anthropology Lab
- BIOCH All courses
- BIOL All courses
- CHM All courses
- FN 132 Basic Nutrition
- GEOL All courses
- GEOG 220 Environmental Geography I (4 hrs., includes 1 hr. lab)
- GEOG 221 Environmental Geography II (4 hrs., includes 1 hr. lab)
- PHYS All courses

Students may complete the remainder of their life and natural science requirement with any courses from the following list of courses or any other life or physical science courses for which they have prerequisites. It will be useful to take courses that also fill the general education requirements when they are available.

- AGRN 305 Soils
- AGRN 315 Properties of Soils
- AGRN 335 Environmental Quality
- ANTH 680 Survey of Forensic Sciences
- ANTH 688 Paleoanthropology
University
General Education

The College of Business Administration requires 18 credit hours to fulfill the university general education requirements. These 18 credit hours may overlap with the business general studies requirements in humanities, social sciences, and natural sciences.

At least 1/3 (6 credit hours) of the 18 credit hours must be taken in courses numbered 300 or above. The business general education requirements include:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 110 Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 120 Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>3</td>
</tr>
<tr>
<td>Social sciences</td>
<td>3</td>
</tr>
<tr>
<td>Natural sciences</td>
<td>3</td>
</tr>
<tr>
<td>Any course (except business courses) approved for university general education credit</td>
<td>3</td>
</tr>
</tbody>
</table>

You may obtain a list of acceptable humanities, social sciences, and natural sciences courses from Student Services in 107 Calvin Hall.

International overlay course

One course dealing with history, geography, language, economics, or culture related to parts of the world other than the United States is also required. This course can overlap with other course requirements.

A list of acceptable international overlay courses is available in 107 Calvin Hall.

Program Options

Dual degree in business administration

The dual degree programs allow students to earn the bachelor of science in business administration degree in addition to a non-business degree. Because of course sequence requirements, students should begin the dual degree program in their sophomore year. Students must be enrolled in both the college offering the nonbusiness degree and the College of Business Administration.

Any student who wishes to complete a dual degree must satisfy the requirements, other than university general education requirements, for both degrees. The business administration requirements include course work in the following areas: communications, quantitative, social sciences, economics, and business. For further information about the exact academic requirements, contact Student Services, College of Business Administration, 107 Calvin Hall, 785-532-6180.

Honors program

The business honors program offers qualified students opportunities beyond those found in the regular business curriculum. Honors students can enroll in smaller, more interactive sections of core business courses; they can enroll in honors sections of courses offered by other colleges, such as Honors Composition; and, if they choose, students are paired with professionals in their chosen field in a mentoring relationship.

To qualify for the business honors program, students, other than transfer students, must have been enrolled at K-State for at least one semester, have a 3.6 cumulative GPA, and file an application for membership in the program. Transfer students must have a 3.6 cumulative GPA and complete the application.

To graduate in the business honors program, students must enroll in two semesters of the honors colloquium (GENBA 299) and two of the honors seminar (GENBA 499). Additionally, they must successfully complete five honors classes (grade of C or better), four of which must be in the College of Business Administration.

Experiential learning

The College of Business Administration, through the internship program, offers opportunities for students to obtain experience in business and industry as part of their college education. Students work through Career and Employment Services and are selected through formal interviews with participating companies.

Pre-business education

Pre-business education majors are enrolled in and advised by the College of Education. Students interested in the field are instructed to refer to the College of Education section for details.

Pre-law

Law schools emphasize various objectives in pre-law study for the development of basic skills and insights. These objectives are: the acquisition of skills in comprehension and expression; understanding human institutions; and the ability to think clearly, carefully, and independently. A pre-law student enrolled in the College of Business Administration not only achieves these important goals, but also obtains a broad business background that is desirable preparation for the study of law.
Business minor
Upon graduation, most students will be involved in organizations, profit or nonprofit, that will use business concepts and principles to improve their services or products. To complete the business minor students must graduate from another Kansas State University college and complete the business courses listed below:

ACCTG 231 Accounting for Business Operations .......... 3
ACCTG 241 Accounting for Investing and Financing .............. 3
MANGT 420 Management Concepts ................................ 3
MKTG 400 Marketing ...................................................... 3
FINAN 450 Introduction to Finance .................................. 3

Students will be responsible for meeting the prerequisites for the business courses in the minor program. Three of the five courses must be completed at Kansas State University.

Small Business Development Center
Frederick H. Rice, Director
2323 Anderson Avenue, Suite 100
Manhattan, Kansas 66502–2912
785-532-5529

The Small Business Development Center belongs to a statewide network that is part of a national consortium of more than 575 centers that share the knowledge of universities with small business owners.

The center serves a seven-county area in north central Kansas and provides: free individual confidential counseling on a range of business topics; workshops and evening classes on business start-up, marketing, recordkeeping, and computers; and information through a library of books, magazines, audio and video tapes, and computer data search services.

Specialized services include: (1) the Robert G. Chapman Small Business Computing Center, which uses state-of-the-art computer systems to teach business owners how to use computers in their businesses and supports a wide range of research projects; (2) Entrepreneurship-Planning for Success, a noncredit 12-week in-depth course for serious entrepreneurs interested in starting or growing small businesses; (3) the Small Business Institute, which links teams of senior business students to evaluate small businesses and recommend corrective strategies; and (4) the Kansas Rural Enterprise Institute, which conducts research and educational programs focused on business development strategies for rural Kansas.

Accounting
O. Finley Graves,* Head
Professors Donnelly* and Graves;* Associate Professors Deines,* Fisher,* Ott,* Thomas,* and Vruwink,* Assistant Professors Kovar* and Quirin,* Instructors Brockway, Charland, Lyle, and Smith.

www.cba.ksu.edu/depart/account

Accounting is often called the “language of business” because its terms and concepts are used to describe the daily events of business. The accountant measures and reports to various users the relevant financial information necessary for decision making.

The objective of the undergraduate accounting program is to provide basic conceptual accounting and business knowledge as a foundation for the fifth-year (master of accountancy) program. The program requirements that accomplish this objective are specified below.

Requirements for major
BAPP Program .......................................................... 63

(See general section of the College of Business Administration.)

Business core courses ................................................. 21
FINAN 450 Introduction to Finance .......................... 3
MANGT 420 Management Concepts ......................... 3
MANGT 421 Introduction to Operations ..................... 3
MKTG 400 Marketing ...................................................... 3
STAT 351 Business and Economic Statistics II ........... 3

Major field ................................................................. 24
ACCTG 331 Accounting Processes and Controls ........... 4
ACCTG 342 Taxation I ...................................................... 3
ACCTG 432 Managerial Reporting ............................. 3
ACCTG 433 Financial Reporting ................................... 3
ACCTG 434 Accounting for Not-For-Profit Entities ....... 2
ACCTG 442 Auditing ...................................................... 3
ACCTG 641 Accounting Theory and History ............... 3
ACCTG 642 Accounting Research ............................... 3
Economics electives (All courses numbered above 120 except 505 and 506) ........................................... 6

Restricted electives ......................................................... 9

Humanities, natural sciences, quantitative, or social science courses below qualify for restricted electives.

Humanities—See BAPP requirements in this college section.

Natural science—See BAPP requirements in this college section.

Quantitative—All courses in the computing and information sciences department numbered 300 or above; MGMT 221 or 222; all statistics courses numbered 500 and above.

Social science—All courses in anthropology, history, political science, psychology, sociology, and economics, except those used as BAPP requirements or economics electives; all courses in geography, except those listed as natural sciences.

Unrestricted electives ..................................................... 3

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Business Administration

Accounting courses
ACCTG 231. Accounting for Business Operations. (3)
I, II. An introduction to the operating activities of business and the roles that accounting information plays in planning, evaluating, and recording those activities. An introduction to financial statements is included. Pr.: Sophomore standing and MATH 100.

ACCTG 241. Accounting for Investing and Financing. (3) I, II. Extends the concepts of planning and evaluation to the business activities of acquiring, disposing, and financing productive assets. Financial statement analysis will be covered. Pr.: ACCTG 231.

ACCTG 331. Accounting Processes and Controls. (4) I, II. The accounting information system will be shown as a means of insuring the accuracy of information and safeguarding assets. Students will interpret documents and record many transactions that typically occur in business, governmental units, and not-for-profit entities. Four hours lec. and one hour lab a week. Pr.: ACCTG 241.

ACCTG 342. Taxation I. (3) I, II. Fundamental concepts of income determination in federal and state income tax regulations; examination of the impact of tax regulation on business and personal financial planning and decision making. Pr.: ACCTG 331.

ACCTG 431. Problems in Accounting. (Var.) I, II. Pr.: Background of courses needed for the problems undertaken and consent of instructor.

ACCTG 432. Managerial Reporting. (3) I, II. Identifying relevant accounting data and organizing, summarizing, and analyzing that data into information useful for planning and budgeting, decision making, controlling, and evaluating functions of management. Pr.: ACCTG 331, MANGT 421 and senior standing.

ACCTG 433. Financial Reporting. (3) I, II. An introduction to the U.S. and international rules and regulations that govern current reporting to external entities by profit entities. Pr.: ACCTG 331 and senior standing.

ACCTG 434. Accounting for Not-For-Profit Entities. (2) I, II. An introduction to the source of authoritative guidance, rules and regulations that govern current reporting to external entities by not-for-profit entities. Pr.: ACCTG 641.

ACCTG 442. Auditing I. (3) I, II. An introduction to the environment of auditing and the objectives and techniques of both financial and operational auditing. Pr.: ACCTG 433.

ACCTG 494. Law for Accountants. (3) I, II. An intensive study of an accountants’ professional responsibilities to the public and the profession and the knowledge of the legal implications of business transactions, particularly as they relate to accounting and auditing. Pr.: ACCTG 433 and ACCTG 442 or conc. enrollment.

ACCTG 631. Accounting Internship. (3) I, II. Provides a full semester of practical accounting experience prior to entering graduate accounting program.

ACCTG 641. Accounting Theory and History. (3) I, II. The theories which underlie the practice of accounting and financial reporting including a historical perspective on the evolution of the theories. Pr.: ACCTG 331.

ACCTG 642. Accounting Research. (3) I, II. Use of the sources of authoritative guidance in resolving complex, professionally oriented problems in financial, governmental, and tax reporting. Analysis and presentation of case material is covered. Pr.: ACCTG 342, 433, and 442. (Note: Students may be enrolled conc. in ACCTG 442.)

Finance
Anand S. Desai,* Head
Professor Graham;* Associate Professors Desai* and Tavakkol;* Assistant Professors Warr, B. Van Ness,* and R. Van Ness;* Instructors Kruse and Sheppard. Emeriti Professors Chalmers, Hollahing and Richards.
The finance curriculum allows the student to specialize in financial management, financial controllership, or financial services.

The financial management track provides the student with the analytical skills for the analysis, evaluation, and reporting of financial information. These activities are ultimately used in managerial decision making by businesses and regulatory agencies. This track is designed for graduates who wish to pursue a career as a financial manager or analyst.

The financial controllership track supplements the analytical focus of the management track with additional accounting skills. This track is designed for those who intend to pursue careers related to the controllership function of a firm.

The financial services track provides a broad knowledge of financial markets, institutions, and services and prepares the student for providing financial products and services to the consumer. Graduates in this track typically seek careers in banking, consumer lending, brokerage services, financial planning, portfolio management, and real estate.

Finance majors are expected to develop a broad understanding of business management, accounting, economic theory, management information systems, and quantitative techniques. In addition, effective written and oral communication skills and the ability to work in groups are essential for a successful career in finance. The curriculum of the Department of Finance is designed to help the student develop these necessary skills through active learning methods.

Finance courses

Finance majors are expected to develop a broad understanding of business management, accounting, economic theory, management information systems, and quantitative techniques. In addition, effective written and oral communication skills and the ability to work in groups are essential for a successful career in finance. The curriculum of the Department of Finance is designed to help the student develop these necessary skills through active learning methods.

Requirements for major

BAPP Program

(See the general section of the College of Business Administration.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCTG 331</td>
<td>Accounting Processes and Controls</td>
<td>4</td>
</tr>
<tr>
<td>FINAN 450</td>
<td>Introduction to Finance</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 420</td>
<td>Management Concepts</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 421</td>
<td>Introduction to Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 595</td>
<td>Business Strategy</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 400</td>
<td>Marketing</td>
<td>3</td>
</tr>
<tr>
<td>STAT 351</td>
<td>Business and Economics Statistics II</td>
<td>3</td>
</tr>
</tbody>
</table>

Major field requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINAN 551</td>
<td>Investments</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 535</td>
<td>Careers in Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 470</td>
<td>Financial Analysis and Valuation</td>
<td>3</td>
</tr>
</tbody>
</table>

Financial controllership track

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINAN 660</td>
<td>Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 670</td>
<td>Cases in Financial Management</td>
<td>4</td>
</tr>
<tr>
<td>FINAN 432</td>
<td>Managerial Reporting</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 433</td>
<td>Financial Reporting</td>
<td>3</td>
</tr>
<tr>
<td>ACCTG 342</td>
<td>Taxation I</td>
<td>3</td>
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</tbody>
</table>

Financial management track

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINAN 660</td>
<td>Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 670</td>
<td>Cases in Financial Management</td>
<td>4</td>
</tr>
</tbody>
</table>

Select 6 credit hours from

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINAN 561</td>
<td>Financing Emerging Businesses</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 562</td>
<td>Short-Term Financial Management</td>
<td>3</td>
</tr>
</tbody>
</table>

Accounting elective (select one from the following)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCTG 432</td>
<td>Managerial Reporting</td>
<td>3</td>
</tr>
<tr>
<td>ACCTG 433</td>
<td>Financial Reporting</td>
<td>3</td>
</tr>
</tbody>
</table>

Financial services track

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINAN 661</td>
<td>Professional Financial Planning</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 671</td>
<td>Cases in Financial Services</td>
<td>4</td>
</tr>
<tr>
<td>ACCTG 433</td>
<td>Financial Reporting</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 6 credit hours from

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINAN 460</td>
<td>Insurance</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 531</td>
<td>Commercial Banking</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 552</td>
<td>Real Estate</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 561</td>
<td>Cases in Financial Services</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 653</td>
<td>Security and Portfolio Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Economics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 510</td>
<td>Intermediate Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 520</td>
<td>Intermediate Microeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>

Economics elective

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINAN 453</td>
<td>Cases in Financial Management</td>
<td>4</td>
</tr>
</tbody>
</table>

Accounting elective must be selected from economics course offerings numbered 510 or above in consultation with the student’s academic advisor. Economics electives may not overlap with economics courses used as social science requirements or restricted electives.

Nonbusiness electives

* A nonbusiness elective can be any course numbered 100 or above offered for credit by any university department other than ACCTG, FINAN, GENBA, MANGT, or MKTG.

Finance courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINAN 250</td>
<td>Personal Investing and Risk Management</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 450</td>
<td>Introduction to Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 453</td>
<td>Careers in Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 460</td>
<td>Insurance</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 470</td>
<td>Financial Analysis and Valuation</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 498</td>
<td>Problems in Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 551</td>
<td>Investments</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 643</td>
<td>International Financial Management</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 654</td>
<td>Derivative Securities and Markets</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 655</td>
<td>Security and Portfolio Analysis</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 660</td>
<td>Corporate Finance</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 661</td>
<td>Professional Financial Planning</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 670</td>
<td>Cases in Financial Management</td>
<td>3</td>
</tr>
</tbody>
</table>


FINAN 562. Short-Term Financial Management. (3) Application of financial concepts to the firm’s short-term investment and financing decisions. Topics include cash collection, cash concentration, cash disbursement, banking relationships, receivables and payables management, hedging, risk management, and international short-term finance. Pr.: FINAN 470 and FINAN 551.

FINAN 643. International Financial Management. (3) The international (cross-currency) aspects of financial management. Topics include currency markets and exchange rate determination, parity conditions, foreign exchange exposure and management, and valuation of international projects. Pr.: FINAN 450.


FINAN 660. Corporate Finance. (3, II) In-depth study of a firm’s long-term financing, capital investment, and working capital decisions. Topics include cash-flow analysis, capital asset valuation, risk, dividend policy, capital structure theory, and short-term financial management. Pr.: FINAN 453, FINAN 470, and FINAN 551. (Not available for credit to students taking FINAN 850).

FINAN 661. Professional Financial Planning. (3, II) A study of the principles and practices of professional financial planning using an integrated planning model. Topics include the planning environment, concepts, tax management, asset acquisition and management, credit management, risk management, investments, retirement planning, and estate planning. Contemporary applications, professional opportunities, and legal/ethical standards are emphasized. Pr.: FINAN 453 and FINAN 551.

FINAN 670. Cases in Financial Management. (4, II) A capstone course in financial management. Utilizes the case method of instruction to provide students the opportunity to use their knowledge of the theories of finance to solve financial management problems in a realistic setting. Emphasizes the development of students’ analytical skills. This course requires extensive report-writing, teamwork, oral presentations, and class discussion. Pr.: FINAN 660.

FINAN 671. Cases in Financial Services. (4, I, II) A capstone course in financial services. Uses the case discussion method to provide students the opportunity to apply their knowledge of finance theory to solve problems related to the financial services industry, including insurance, real estate, individual investments, retirement planning, and tax management. This course emphasizes the development of analytical skills and requires extensive report-writing, teamwork, and oral presentations. Pr.: FINAN 661.
General Business

GENBA 101. Business Orientation. (0) I, II. A general orientation to the university and the College of Business Administration, study skills, the enrollment process, and to the various career options in business. Required for all students with fewer than 45 credit hours. Pr.: ENGL 120 and SPCH 106.

GENBA 299. Honors Colloquium in Business. (1) I, II. Open to freshmen and sophomores in the honors program for the College of Business Administration. Discussions and lectures on topics of interest to business students.

GENBA 391. Administrative Communications. (3) On sufficient demand. Preparation of business communications, reports, and correspondence, and analysis of communication systems within an enterprise structure. Pr.: ENGL 120 and SPCH 106.

GENBA 498. Problems in Business Administration. (Var.) I, II, S. In-depth analysis of special problems in general business including study of current literature. Pr.: Senior standing and consent of instructor and the department head.

GENBA 499. Honors Seminar. (1) I, II. Open to juniors and seniors in the honors program for the College of Business Administration. Selected seminars, lectures, and conversations on topics of interest to business students. Discussion sessions will follow.

GENBA 506. Theories of Gender. (3) I. Surveys major contemporary U.S. theories of gender and their development, including impact of feminist movement on the development of theory; interactions of race and gender, women’s culture and men’s roles. Compares approaches of social sciences and humanities. Pr.: Six hours of women’s studies.

Management

J. Bruce Prince,* Head
Professors Ebadi* and Paul;* Associate Professors Elsea,* Hagmann,* Mc Cahon,* Prince,* Niehoff,* and Sheu;* Assistant Professors Bloodgood, Katz,* McHaney,* Prince,* Niehoff,* and Sheu;* Associate Professor Thiessen; Assistant Professors Buzenberg and Riley.

www.cba.ksu.edu/cba/ depart/manage

The curriculum in management presents two majors: management information systems (MIS) and management. Management majors select an area of emphasis in human resource management, operations management, and general management/entrepreneurship. In addition, the Department of Management offers courses to improve potential managers’ integrative skills as well as top management skills in corporate strategy and institutional leadership. This background provides individuals with excellent opportunities in professional management and information technology careers in organizations.

The KSU Center for Leadership is housed in the Department of Management. The center sponsors on-campus speakers, facilitates management development workshops, and provides funds for research on leadership and related topics.

Secondary major in industrial and labor relations
See the Secondary Majors section of this catalog.

Requirements for a major in management

BAPP program .................................................. 63

Business core  .................................................................. 24
ECON 520 Intermediate Microeconomics .......... 3
or
ECON 540 Managerial Economics ................... 3
FINAN 450 Introduction to Finance .................. 3
MANGT 420 Management Concepts .................. 3
MANGT 421 Introduction to Operations Management ..... 3
MANGT 595 Business Strategy ........................... 3
MANGT 596 Business, Government, and Society ...... 3
MKTG 400 Marketing ................................................. 3
STAT 351 Business and Economics Statistics II ............ 3

Major field requirement ............................................ 24
MANGT 520 Organizational Behavior ...................... 3
MANGT 521 Quantitative Management .................. 3
One of three areas of emphasis .............................. 18
Choose from one of the following three areas of emphasis:

1. Human resources management emphasis

Required:
MANGT 535 Personnel Law .................................. 3
MANGT 531 Personnel and Human Resources Management .......... 3
Economics electives (see note below) .................. 3

Select 9 credit hours from:
MANGT 530 Industrial and Labor Relations ............ 3
MANGT 537 Industrial Conflict Resolution .............. 3
MANGT 540 Small Business Consulting ................. 3
MANGT 550 Organizational Training and Development .... 3
Compensation Management .................................. 3
MANGT 663 Labor Relations Law ......................... 3
MANGT 661 Collective Bargaining ....................... 3
MANGT 660 Advanced Personnel Management .......... 3
MANGT 690 International Management .................. 3
or
MANGT 390 Business Law .................................. 3

2. Operations management emphasis

Required:
MANGT 531 Personnel and Human Resources Management .......... 3
Economics elective (see note below) .................. 3

Select 12 credit hours from:
MANGT 522 Operations Planning and Control ........... 3
MANGT 641 Management of Quality ..................... 3
MANGT 652 Application of Theory of Constraints ....... 3
MANGT 653 Project Management ......................... 3
MANGT 661 Logistics and Service Operations Management .......... 3

3. General management/entrepreneurship emphasis

Required:
MANGT 531 Personnel and Human Resources Management .......... 3
Economics elective (see note below) .................. 3

Select 3 credit hours from the courses listed in the human resources management emphasis.
Select 3 credit hours from the courses listed in the operations management emphasis.
Select 6 credit hours from the courses listed in the HRM and OM, management major emphasis areas or the MIS major field requirements, or from the courses listed below.

A total of 9 of the above credits must be management courses.
ACCTG 331 Accounting Processing and Control ........... 4
FINAN 470 Financial Analysis and Valuation ............ 3
MANGT 440 Entrepreneurship ................................ 3
MKTG 442 Personal Selling .................................. 3
MKTG 450 Consumer Behavior .......................... 3
MKTG 543 Integrated Marketing Communications .......... 3
MKTG 642 Marketing Research ............................. 3

Entrepreneurship students: General management emphasis students interested in owning or managing a small business are encouraged to consider taking the following courses from the above requirements: (1)MANGT 440, (2)MANGT 540, (3)MAMGT 652 or MANGT 653 or MANGT 535, and (4)MKTG 442 or MKTG 543.

Note on economics electives: The economics elective required by an emphasis area can be satisfied by all economic courses numbered above 120 except 305 and 506. We recommend that human resource management majors take ECON 523 Human Resources Economics as their elective.

Restricted electives ............................................. 6

Unrestricted electives ........................................... 9
An unrestricted elective may be any course numbered 100 or above offered for credit by a university department.

Total required credits .......................................... 126

Requirements for a major in management information systems

BAPP program .................................................. 63

Business core  .................................................................. 24
ECON 520 Intermediate Microeconomics .......... 3
or
ECON 540 Managerial Economics ................... 3
FINAN 450 Introduction to Finance .................. 3
MANGT 420 Management Concepts .................. 3
MANGT 421 Introduction to Operations Management ..... 3
MANGT 595 Business Strategy ........................... 3
MANGT 596 Business, Government, and Society ...... 3
MKTG 400 Marketing ................................................. 3
STAT 351 Business and Economics Statistics II ............ 3

Major field requirement ............................................ 24
MANGT 367 Information Systems Fundamentals ........ 3
MANGT 520 Organizational Behavior ..................... 3
MANGT 521 Quantitative Management .................. 3
MANGT 656 Systems Analysis ............................. 3
MKTG 666 Application of Data Models ................. 3
in Business
MANGT 670 Systems Design .................................. 3
MKTG 676 Management of Local Area Networks .......... 3
MKTG 686 Data Administration ............................ 3

Unrestricted electives ............................................. 9
An unrestricted elective may be any course numbered 100 or above offered for credit by a university department. (MIS majors are encouraged to take CIS 200, CIS 300 and MANGT 653 as unrestricted electives.)

Restricted electives ............................................. 6

Total required credits .......................................... 126

Requirements for a major in general business via distance education

The major in general business is a 63-hour degree completion program offered through the Division of Continuing Education and is available only to off-campus students. The degree is suitable for individuals who have an associate of science degree, who are
employed full time and want to continue their education, or who have family responsibilities that make it impossible to take courses in a traditional on-campus manner.

Admission to the program requires the student to have completed at least 45 hours of the Business Pre-Professional Program (BAPP) with a cumulative GPA of 2.5 or higher. Application for admission to the general business degree program should be made through the Division of Continuing Education, non-traditional studies program, at 1-800-622-2KSU or www.dce.ksu.edu/degrees.

BAPP program ......................................................... 63

Quantitative

STAT 351 Business and Economic Statistics II .......... 3

Restricted electives .................................................. 9

Business core courses ........................................... 21

FINAN 450 Introduction to Finance .............................. 3

MANGT 420 Management Concepts ............................. 3

MKTG 450 Business, Government, and Society .......... 3

MKTG 400 Marketing ................................................ 3

Economic electives .................................................. 6

Major field requirement ........................................... 18

Select 18 hours. Each of the functional areas (finance, management, and marketing) must be represented.

FINAN 470 Financial Analysis and Valuation .............. 3

FINAN 551 Investments ............................................ 3

MANGT 367 Information Systems Fundamentals .......... 3

MANGT 390 Business Law ......................................... 3

MANGT 440 Entrepreneurship .................................... 3

MKTG 536 Industrial and Resource Management ........ 3

MKTG 531 Personnel and Human Resource Management 3

MKTG 535 Personnel Law ......................................... 3

MKTG 537 Industrial Conflict Resolution .................... 3

MKTG 641 Management of Quality ............................ 3

MKTG 442 Personal Selling ...................................... 3

MKTG 450 Consumer Behavior ............................... 3

MKTG 542 Sales Management ................................. 3

MKTG 546 Services Marketing ................................ 3

Unrestricted electives ............................................. 6

Total required credits ............................................. 126

Management courses

MANGT 300. Introduction to Total Quality Management. (1) I, II. Overview of major topics related to Total Quality Management (TQM), including managerial and engineering aspects. One hour lec. a week. Pr.: MATH 100, 205, or 220, sophomore standing. Crosslisted with DEN 300.

MANGT 330. Introductory Seminar. (1) I, II. A multidisciplinary introduction to the field of industrial and labor relations. Examines the economic, legal, psychological, and sociological aspects of the field.

MANGT 366. Management Information Systems. (3) I, II, S. A comprehensive view of the role of information technology in satisfying organizations’ information requirements. Problems and techniques concerning the management of comprehensive 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.: Demonstrated competence in use of computer spreadsheets. Pr.: ACCTG 231 and ACCTG 241; may be taken concurrently.

MANGT 367. Information Systems Fundamentals. (3) I, II. Business-oriented problem solving using information technology for decision making. The course focuses on the utilization of state-of-the-art hardware, software, and programming tools for small systems development, networking, Internet, and WWW. Pr.: MANGT 366.

MANGT 390. Business Law I. (3) I, II. A study of law as it relates to business, including corporate, partnerships, property, commercial paper, and secured transactions. Pr.: Junior standing.

MANGT 392. Business Law II. (3) On sufficient demand. A study of civil law as it affects commercial transactions, including corporations, partnerships, and the integrative nature of management systems. Includes PERT, CPM, linear programming, and enforcement. Pr.: MANGT 530; or ECON 120 and STAT 350.

MANGT 420. Management Concepts. (3) I, II. S. Managing organizations through fundamental processes of developing plans, structuring work relationships, coordinating effort and activities, and integrating and directing the subordinates. Pr.: MANGT 366. Also includes managerial roles and responsibilities, effective decision making, productivity improvement, and models and theories of human behavior. Pr.: Junior standing.

MANGT 421. Introduction to Operations Management. (3) I, II. S. Description and analysis of problems related to the output of goods and services, operations planning and control, and systems management. Pr.: MATH 205 and STAT 350.

MANGT 440. Entrepreneurship. (3) On sufficient demand. The role of the entrepreneur is examined in terms of identification, start-up, development, and growth of new independent businesses. New venture problems to be studied include identification of possible new products and services, evaluation of practical commercial potential, and development of a business plan, with attention to finance, operating, and marketing. Pr.: FINAN 450, MANGT 420, MKTG 400. Instructor may waive prerequisites based on appropriate business experience.

MANGT 495. Business Internship. (3) S. Eight weeks of on-the-job business experience between junior and senior years, designed to coordinate the interests of students and firms. Pr.: FINAN 450, MANGT 420, MKTG 400, completion of junior year, and consent of instructor.

MANGT 498. Independent Studies in Management. (Var.) I, II, S. In-depth analysis of special problems in management including study of current literature. Pr.: Senior standing, consent of instructor, and 12 hours of management.

MANGT 520. Organizational Behavior. (3) I, II. Examination of psychological and sociological variables important in understanding individual motivation, group functioning, change, creativity, and leadership in organizations. Pr.: MANGT 420.

MANGT 521. Quantitative Management. (3) I. Quantitative techniques, models, and the integrative nature of management systems. Includes PERT, CPM, linear programming, and inventory control. Pr.: CIS 101, 102, 103 or 200 and lab, MANGT 420, MATH 205, and STAT 350.

MANGT 522. Operations Planning and Control. (3) I, II. Development of concepts and understanding of planning and control systems for allocating resources and scheduling activities in business firms. To guide and coordinate the flow of materials, labor inputs, and goods and services through physical productive systems. Topics include aggregate planning, master production scheduling, production activity planning and information systems, inventory control, material requirements planning, and total quality control. Pr.: MANGT 421.

MANGT 530. Industrial and Labor Relations. (3) I, II. 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.

MANGT 531. Personnel and Human Resources Management. (3) I, II. The personnel program and its operation. The personnel program in the context of organization, workforce planning and structuring, testing, developing, and evaluating. Analysis of the personnel department’s role in the organization with emphasis on problem solving. Pr.: MANGT 420.

MANGT 535. Personal Law. (3) I, II. A survey course designed to acquaint students with the broad and controlling aspects of prominent public laws which affect human resource management. Includes readings, cases, and dicta pertaining to ADA, ADEA, OSHA, Title VII, etc. Pr.: MANGT 531.

MANGT 537. Industrial Conflict Resolution. (3) I, II. In odd years, examination of conflict in business and between organizations. The resolution of dysfunctional conflict and management of functional conflict. Special emphasis on resolution techniques, including mediation, arbitration, negotiation, and litigation avoidance.

MANGT 540. Small Business Consulting. (3) II. In the framework of supervised field projects, student teams analyze the management programs of an actual business. Emphasis is placed on understanding operational and strategic planning problems in the context of small business. Students develop a strategic plan for the success of the business. Pr.: Junior standing or permission of the instructor.

MANGT 550. Organizational Training and Development. (3) II. The process of training and developing the human resources in organizations, which includes organizational diagnosis, needs assessment, program design, appropriate methodologies, program implementation, transfer of training, and evaluation of the program effectiveness. Current trends in the content and process of training and development activities are also examined. Pr.: MANGT 520 and MANGT 531.

MANGT 595. Business Strategy. (3) I, II, S. A. An integration of previous courses through the study of problems in the design, formulation and implementation of business strategy. New and current topics with emphasis on strategic planning. Open only to seniors or nonbusiness graduate students. Pr.: FINAN 450, MANGT 420, and MKTG 400.


MANGT 630. Labor Relations Law. (3) II. Detailed examination of the development and current status of labor relations law governing the private sector in interstate commerce. Topics to be discussed include antitrust prosecution of unions, injunctions, unfair labor practices, NLRB policies, employee rights, union rights, employer rights, and contract enforcement. Pr.: Junior standing.

MANGT 631. Collective Bargaining. (3) On sufficient demand. Study of the unionized labor market. The goals, strategies, and tactics of unions and management will be examined in detail. Other topics include the environment of collective bargaining, contract negotiations, administration, and enforcement. Pr.: MANGT 530; or ECON 120 and MANGT 630.


MANGT 641. Management of Quality. (3) I. Development of quality as a management philosophy through the study of ideas from contemporary quality philosophers of Deming, Juran, and Taguchi. Statistical process control charting as a process and quality improvement tool and product and process design as important components of quality. Pr.: MANGT 421.

MANGT 652. Application of Theory of Constraints. (3) II. In even years, The intent of this course is to provide an overview of application of Theory of Constraints (TOC).
TOC suggests that every process or system has at least one constraint that prevents the operation from being more efficient. TOC offers methodologies that are specifically developed to identify and manage constraints to enable the operation to achieve its goals. Students will be taught the skills required for the identification and management of constraints within an operation system. Pr.: MANGT 420, 421.

MANGT 653. Business Project Management. (3) I, II. This course provides an in-depth coverage of project management concepts and methodologies required for service and manufacturing operations. Topics to be covered include, but are not limited to: project selection and evaluation, project dynamics, motivation and evaluation of project team members, project scheduling, project budgeting, and project closure. Pr.: MANGT 420 and 421.


MANGT 661. Logistics and Service Operations Management. (3) II, in odd years. This course addresses the characteristics of logistics management and service operations management from the aspects of storage and delivery of goods to the customer. Recognition is given to the interrelationships of operations and other functional in the process of running operations. Pr.: MANGT 421.

MANGT 666. Applications of Data Models in Business. (3) I, S. Examination of interrelationships between managers and database designers from the user’s perspective. Database design strategies for the functional areas of business such as accounting, marketing, and manufacturing management with a focus on making data responsive to changing information needs and supportive of organizational plans and goals. Pr.: MANGT 367.

MANGT 670. Systems Design. (3) II. Application of fundamental concepts learned in introductory systems analysis course. Focus on the application and integration of different design methodologies using CASE tools, a structured programming language, and various structured design techniques. Pr.: MANGT 656 and 666.

MANGT 676. Management of Local Area Networks. (3) I, II. Study of telecommunications and its impact on business organizations. Coverage of networking models, hardware, software, distributed systems, and standards issues. Emphasis on Local Area Networks (LANs) and hands-on project management. Pr.: MANGT 367.

MANGT 686. Data Administration. (3) I. Study of the interrelationship of organizational information systems and the databases that support managerial decision making. The analytical/programming tools used to perform the data administration function will be implemented through realistic case settings. Pr.: MANGT 656 and 666.

MANGT 690. International Management. (3) On sufficient demand. Examination of business decision parameters and strategy in a multinational context. The influence of cultural, economic, political, and social differences on decision making and the operation of American enterprises in the international environment. Pr.: FINAN 450, MANGT 420, MKTG 400, or FINAN 710.

**Agribusiness option**

Marketing majors interested in agriculture may take an option in agribusiness. Students choosing the agribusiness option complete all requirements for the marketing major plus hours in agribusiness.

**Requirements for agribusiness option**

**BAPP program**

Complete the BAPP program with one exception: natural science requirements—9 credit hours; BIOL 198 Principles of Biology (4 hours) and CHM 110 General Chemistry (5 hours).

**Business core courses**

- FINAN 450 Introduction to Finance.................. 3
- MANGT 420 Management Concepts..................... 3
- MANGT 421 Introduction to Operation................ 3
- MANGT 595 Business Strategy.......................... 3
- MANGT 596 Business, Government, and Society ...... 3
- MKTG 400 Marketing........................................ 3
- STAT 351 Business and Economic Statistics II........ 3
- Major field courses............................................. 21
- MKTG 450 Consumer Behavior........................... 3
- MKTG 544 International Marketing ..................... 3
- MKTG 642 Marketing Research............................ 3
- MKTG 690 Marketing Management ....................... 3
- Plus 9 hours from the following:                   9
  - MKTG 442 Personal Selling............................... 3
  - MKTG 541 Retailing........................................ 3
  - MKTG 542 Sales Management............................. 3
  - MKTG 543 Integrated Marketing......................... 3
  - MKTG 545 Marketing Channels........................... 3
  - MKTG 546 Services Marketing........................... 3
  - MKTG 547 International Business ..................... 3
  - MKTG 548 Sports Marketing.............................. 3
  - MKTG 549 Electronic Marketing......................... 3
  - MKTG 550 Business Marketing......................... 3
- Economics electives........................................... 6
  One must be selected from the following five courses:
  - ECON 507 The Japanese Economy..................... 3
  - ECON 510 Intermediate Macroeconomics............. 3
  - ECON 520 Intermediate Microeconomics.............. 3
  - ECON 523 Human Resources Economics................ 3
  - ECON 530 Management...................................... 3
  - ECON 540 Managerial Economics........................ 3
  - ECON 681 International Trade........................... 3
- Restricted electives.......................................... 9
  Humanities, natural, quantitative, or social sciences below quality for restricted electives.
- Business Firms........................................ 3
- Research Methods........................................... 3
- Marketing Principles....................................... 3
- Marketing Management...................................... 3
- Business and Economics Statistics II................ 3
- Complete the BAPP program with one exception: natural science requirements—9 credit hours; BIOL 198 Principles of Biology (4 hours) and CHM 110 General Chemistry (5 hours)

**Marketing**

David M. Andrus,* Head
Professor Andrus,* Assistant Professors Donavan,* Gwinner,* Janda,* Martin,* McFarland,* and Trochta,* Instructors Fallin,* Fogg,* Karafa,*

www.cba.ksu.edu/cba/depart/market

Study in marketing covers such areas as consumer behavior, marketing channels, marketing research, international marketing, retailing, personal selling, sales management, business marketing, and marketing management. This background provides individuals with excellent opportunities for rapid advancement in professional marketing positions in organizations. Dual degree and dual major programs combining marketing other fields may be arranged by consulting the Department of Marketing.

**Requirements for major**

**BAPP program**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<td>Introduction to Finance</td>
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<td>ECON 523</td>
<td>Human Resources Economics</td>
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<td>ECON 530</td>
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<td>ECON 540</td>
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<td>ECON 557</td>
<td>Urban and Regional Economics</td>
<td>3</td>
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<td>ECON 631</td>
<td>Principles of Transportation</td>
<td>3</td>
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<td>ECON 633</td>
<td>Public Finance</td>
<td>3</td>
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<tr>
<td>ECON 681</td>
<td>International Trade</td>
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Sixteen hours must be taken from the following three groups of electives:

**Agribusiness electives**

Select 6 credit hours from the following:

- AGEC 410 Agricultural Policy ......................... 3
- AGEC 415 Global Agribusiness......................... 3
- AGEC 416 Agricultural Law and Economics ........... 3
- AGEC 420 Agribusiness......................... 3
- AGEC 513 Agricultural Finance ......................... 3
- AGEC 515 Agribusiness Marketing ..................... 3
- AGEC 520 Marketing Fundamentals and Futures Options 3
- AGEC 525 Natural Resource Economics ................ 3
- AGEC 598 Farm Management Strategy .................. 3
- AGEC 599 Food/Agribusiness Management Strategies 3
- AGEC 605 Price Analysis and Forecasting .......... 3
- AGEC 610 Agricultural and Natural Resources Policy 3
- AGEC 623 International Agricultural Trade .......... 3
- AGEC 632 Agribusiness Logistics ..................... 3
- AGEC 690 Agricultural Risk Management .............. 3

**Agricultural sciences and/or product technology electives**

Select six to eight credit hours from the following:

- AGRON 220 Crop Science ................................ 4
- HORT 201 Introduction to Horticultural Science ... 4
- AGRON 305 Soils ...................................... 4
- AGRON 349 Grain Grading ................................ 2
- AGRON 501 Range Management ........................... 3
- ASI 102 Principles of Animal Science ................. 3
- ASI 105 Animal Science and Industry Lab .............. 1
- ASI 106 Dairy/Poultry Science Lab ..................... 1
- ASI 300 Principles of Livestock Feeding .............. 3
- ASI 302 Introduction to Food Science .................. 3
- ASI 305 Fundamentals of Food Processing ............. 3
- ASI 350 Principles of Meat Science .................. 3
- ASI 361 Meat Processing ................................ 2

**Business Administration**

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Marketing courses

MKTG 400. Marketing. (3) I, II. S. 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. Pr.: Product or service design, distribution, pricing, and promotional programs. Pr.: ECON 110 and 120, junior standing.

MKTG 442. Personal Selling. (3) I, II. Focuses on the nature of interpersonal communications, both oral and written, between buyers and sellers. The mechanics and intricacies of personal sales promotions. Concepts of buyer behavior and communication theory. Students develop selling communications skills through practice. Pr.: MKTG 400.

MKTG 450. Consumer Behavior. (3) I, II. S. An examination of consumer motives, attitudes, and decision processes as they relate to product imagery and purchase symbolism. The sociological and psychological foundations of marketplace choice are analyzed, including life-style, social status, age, income, taste, habit, custom, fashion, self-concept, and opinion influences. Pr.: MKTG 400.

MKTG 495. Marketing Internship. (3) S. Eight weeks of applied marketing business experience designed to coordinate the interests of students and firms. Pr.: FINAN 450, MANGT420, MKTG 400, junior standing, and consent of instructor.

MKTG 498. Independent Study in Marketing. (Var.) I, II. S. Selected topics in marketing. Pr.: Consent of department head.
Education

Michael C. Holen, Dean.
Janice R. Wissman, Associate Dean
Paul R. Burden, Assistant Dean
Robert C. Newhouse, Assistant Dean
Michael F. Perl, Director, Center for Student
and Professional Services and Coordinator
of Laboratory Experiences
Candace Pannbacker, Certification Officer
and Associate Director, Center for Student
and Professional Services
Charles I. Rankin, Director, Midwest
Desegregation Center
6 Bluemont Hall
785-532-5525
www.educ.ksu.edu

College of Education programs prepare indi-
viduals for the broad spectrum of educational
positions.

Primary consideration is given to preparing
education students for the various positions
in elementary, secondary, occupational, and
vocational programs, and the personnel who
support these programs. In addition, the
college provides consultative services and
in-service training for the improvement of
various aspects of education programs at all
levels.

The College of Education cooperates with all
other colleges and departments in its interdis-
ciplinary approach to the preparation of teach-
ers and other educational personnel. This
includes participation in cooperative education
programs through Career and Employ-
ment Services.

The undergraduate teacher education pro-
grams are accredited by the Kansas State
Department of Education, North Central
Association of Colleges and Secondary
Schools, and the National Council for
Accreditation of Teacher Education (NCATE).

The College of Education participates in the
intercollegiate programs in women’s studies
and gerontology, described earlier in the
Secondary Majors section of this catalog.

Advising

All students admitted to the College of
Education are assigned a pre-professional
advisor from the Center for Student and
Professional Services (13 Bluemont Hall).

When students are admitted to the profes-
sional program, generally late in their sopho-
more or early in their junior year, they are
assigned a faculty advisor from the teaching
field of study which they have chosen.

Students remain with that faculty advisor
throughout the remainder of their program.

University
General Education

The College of Education requires 18 credit
hours to fulfill the university general educa-
tion requirements. These 18 credit hours,
which must be approved university general
education courses from outside of the major,
may overlay with the general studies require-
ments in the humanities, social sciences, and
natural sciences.

At least 1/3 (6 credit hours) of the 18 credit
hours must be taken in courses numbered
300 or above, and no more than 6 credit hours
may be counted in any one field of study
forward the required 18 credit hours. For
example, no more than 6 hours of ART, or
6 hours of HIST, may be counted toward the
18 hours. All courses must be approved uni-
versity general education courses.

In course descriptions, university general edu-
cation courses are marked with a ★. For more
information about university general educa-
tion requirements, see the Degrees section of
this catalog. For a current list of approved uni-
versity general education courses:
www.ksu.edu/registrar/enroll/gened.html

Honors Program

The honors program in the College of
Education has been established for undergrad-
uate students who have demonstrated high
academic achievement. The major purpose of
the honors program is to give selected stu-
dents an opportunity to expand their knowl-
edge of the teaching profession and to acquire
a desire to be leaders in the profession. The
program is designed for students in the
College of Education and other students who
are completing a teacher certification program
through another college at K-State.

Participants may expect to receive recognition
of academic ability and achievements; learn
and interact with other honor students in small
groups; establish close association with fac-
ulty members in seminars and research pro-
jects; exercise creativity and explore leader-
ship responsibilities; and have alternatives to
selected required courses in the professional
education component.

Admission requirements
1. Present a written statement of interest in the
program.
2. Submit an ACT Composite score of 28 or
higher or evidence of a cumulative grade
point average of 3.5 in a minimum of
9 semester hours of college work.
3. Enroll in the non-credit course DED 010
Introduction to the Honors Program.
4. Have a satisfactory interview with a faculty
member of the Honors Program
Coordinating Committee.

Student progression
after admission
1. Formal admission to the honors program
by the Coordinating Committee.
2. Enrollment each semester in DED 020
Honors Program (0).
3. Enrollment in a minimum of two Honors
Seminars (DED 320) prior to graduating.
4. Maintenance of a grade point average of
3.5 or better in all college work.
5. Completion of DED 420 Honors Research
(1–3), for at least 2 credit hours under the
supervision of a professor in the College of
Education.

Features of the honors program
Honor seminars are offered each semester.
Students will be encouraged to enroll in one
seminar each semester although the minimum
requirement for the program is two honors
seminars. One of the required seminars may
be taken in another college at K-State. The
seminars will focus on topics that will
broaden the knowledge of future teachers and
give them insights into leadership responsibil-
ities in their professions.

Honors Research gives students an opportu-
ity to work with professors having similar
research interests. Research topics may be
selected from a range of areas and they may
reflect the student’s particular interests.

Support Facilities
and Programs

In addition to major instructional and research
programs, the College of Education provides
service to K-State faculty and students, local
schools, and a variety of other entities in the
state and region.
Specific services of the College of Education are provided or coordinated through the following centers.

**Center for Extended Services and Studies**
The center initiates and responds to requests for staff development programs, curriculum studies, staff development needs assessments, program evaluations, and other studies designed to enhance education at all levels and environments. Formalized partnerships have been established through the center to provide technical assistance and leadership to selected education foundations in Kansas.

The center is staffed and maintained through the assignment of faculty and staff in the College of Education and through contracts with faculty from K-State and other professionals as determined by the nature of the project. Coordination of K-State’s educational development resources is a major responsibility of this service unit.

**Center for Rural Education and Small Schools**
Activities designed to address the unique educational needs of small schools and rural communities in Kansas and the plains states are the major focus of this center. Its basic services as ongoing endeavors are in research—to identify unique needs, effective techniques, and decision-making processes; and assistance programs centered on the development, coordination, and delivery of information and services. Development and maintenance of linkages with local schools and state and federal agencies are important functions of the center. A highly successful annual conference on rural education and small schools has attracted national attention and was initiated by the center and the College of Education.

**Center for Economic Education**
With support from K-State and the Kansas Council on Economic Education, the Center for Economic Education has a mission to improve the quality and increase the quantity of economics instruction in Kansas elementary and secondary schools. Center staff develop and conduct credit and noncredit pre-service and inservice programs on economic education and personal finance economics. Teachers are trained and provided with resources to integrate an understanding of economics into other disciplines, including math, language arts, history, science, and other areas. Teachers utilize the center’s lending library to enhance economics curriculum development and instruction. The center directs these programs in Kansas: PEP (Personal Economics Program); the Stock Market Game™, an economic simulation sponsored by the Securities Industry Foundation for Economic Education; and LifeSmarts®.

**Instructional Media Center**
The Instructional Media Center provides a range of services, instructional materials, and audiovisual equipment for faculty and students. Professional-quality materials such as tapes, overhead transparencies, slides, films, and displays are produced for faculty members. Students use the media center to prepare similar materials for use in class projects and in student teaching. Audiovisual equipment of many types is maintained and provided by the center. The instructional materials collection includes films, filmstrips, slides, and tapes used in teacher education.

The Instructional Media Center includes a full range of computers and computer services for use in instructional media classes and for independent use. The facilities include computers with a variety of word processing, database, and spreadsheet programs. Programs and equipment are also available for multimedia presentations with the use of hypermedia and other representation capabilities and also for desktop publishing. Portable workstations with most computer functions are available for use in other classrooms.

A video recording studio is used in the production of instructional television recordings. The Instructional Media Center also includes an outstanding audio recording studio. These studios accommodate production and reproduction of a variety of recorded teaching and individual study materials.

Facilities are available for group and individual uses of instructional media, including rooms for group viewing of films and video tapes, and an independent development laboratory for the individual use of instructional materials. The laboratory includes learning spaces with all materials and equipment needed for totally individualized instruction.

**Center for Science Education**
Administratively housed in the College of Education, the Center for Science Education is a university-wide vehicle for marshalling and coordinating K-State’s historically independent and compartmentalized endeavors in science, mathematics, technology, and environmental education. Groups of faculty affiliates specializing in science, mathematics, computer science, educational technology, and environmental education from across and beyond the K-State campus come together to address teaching and learning issues.

The center’s mission is to improve the quality of science, mathematics, and technology teaching and learning throughout Kansas, the prairie states, and the nation from kindergarten through the Ph.D. level. The center facilitates collaboration among individuals and units on and off campus for the purpose of conducting research; developing curriculum materials, pedagogical strategies, and organizational mechanisms; demonstrating their effectiveness in model school sites; and disseminating the latest knowledge to an audience of school administrators, teachers, researchers, other professionals, parents, and citizens in non-formal educational settings.

**Teacher Education**
The College of Education is the designated authority for all K-State teacher certification recommendations to the Kansas State Department of Education. All certification programs offered by K-State have been approved by the Kansas State Department of Education.

The programs are designed to develop competencies essential for teaching. Some programs are parts of degree requirements in colleges other than the College of Education. All College of Education program requirements are subject to revision as necessary to meet Kansas certification standards. Students should contact their advisors or the certification officer if they have questions about certification program changes.

Certification through the teacher education program is available for three teaching levels: early childhood education prepares for preschool teaching, birth to K; elementary education prepares for grades K–9; and secondary programs satisfy state certification requirements for grades 7–12.

Elementary education majors may add endorsements to teach at the middle level in English, mathematics, science, and social studies. Secondary majors may add an endorsement to teach at the middle level in family and consumer sciences.

**Admission requirements**
The application for admission to a teacher education program must be filed when the applicant has satisfied all of the admission requirements. Transfer students who have satisfied all the admission requirements should apply at the time of initial enrollment.

Students making changes in degree programs must reapply for teacher education.

**Hours**
Fifty total hours must be completed, including all transfer and K-State credits. Thirty-five of the fifty hours constitute a designated core of general education requirements.

**English composition**
Both Expository Writing I and II must be completed satisfactorily with a grade no lower than C (2.0).
Public speaking
A grade of C or better is required in SPCH 105, 106, or 109. Students may complete the requirement with the quiz-out conducted by the speech department. Courses in interpersonal communication do not apply.

Quantitative sciences
A grade of C or better is required in six credit hours of mathematics including college algebra, or a higher level of mathematics and a statistics course or a course that includes statistics.

Overall GPA
A 2.5 GPA is required in all college work attempted and K-State credits.

A 2.75 grade point average is required on a 35 hour general education core which is specified by each department. Students should consult with their advisors or inquire in 13 Bluemont Hall for specific requirements.

Teaching specialty GPA
For all majors except elementary education, a 2.5 GPA is required in all college work attempted in the teaching specialty at other institutions and at K-State.

Pre-professional skills tests
A transfer student may be admitted provisionally before the test is taken, but the student must take the test with passing scores the next time it is given on campus or he or she will be dropped from teacher education. Tests will be given throughout the year on dates specified by the testing service and will include sections on reading, writing, and mathematics. A score of 172 in writing, 173 in reading, and 174 in mathematics are required for admission to teacher education.

Early field experience
Early field experience is completed in EDSEC 102 for students in secondary education and in EDEL 300 for students in elementary education.

Application deadlines
To pre-enroll for summer or fall professional classes .................. February 15
To pre-enroll for spring professional classes ......................... October 1

When the applications are approved, students are notified of their acceptance into the respective teacher education professional program and are reassigned from a pre-professional advisor to a professional-level advisor. Students who do not meet the requirements will be notified of the options available to them.

Professional semester
The professional semester involves a full semester of teacher participation (student teaching). This semester usually occurs in the fall or spring of the senior year. There is no teaching participation experience offered during summer sessions.

Because of the school districts’ schedules, students may be required to begin their student teaching before the start of K-State’s semester schedule and/or end their student teaching after K-State’s semester schedule ends.

Students desiring to be recommended for certification by K-State must earn credit for teaching participation in residence. Students who have had any secondary methods course at another college or university will be required to audit the equivalent course at K-State.

Students may only take the courses prescribed for the professional semester unless permission is obtained through the Office of the Coordinator of Laboratory Experiences. Teaching participation is graded Credit/No Credit.

Application for student teaching
The application for student teaching must be submitted to the College of Education coordinator of laboratory experiences not later than December 20 of the year preceding the professional semester.

Students must submit the application by this deadline even though all admission requirements to the professional semester are not fully satisfied. Instructions for completing the application can be obtained from the coordinator of laboratory experiences. The application is made through the World Wide Web. Junior and senior transfer students from other educational institutions should file the application immediately upon enrollment.

Admission to the professional semester
Students will be approved for the professional semester when the requirements listed below have been met. If notified that all requirements for the professional semester have not been satisfied, students may request through the College of Education advisor that the application be postponed.

Requirements for all applicants to the professional semester
Full admittance to a teacher education program.

Completion of 90 semester hours.

An overall grade point average of 2.5 in all college or university course work attempted.

Physical examination by the student health center or by a licensed physician. The student verifies to the coordinator of laboratory experiences that the physical examination has been completed.

Additional requirements for elementary majors
Completion of FSHS 110, EDCEP 315, EDSP 324, EDCIP 455, EDETC 318, and Blocks A and B. Students must have a B average (3.0 GPA) in all Block A and B courses with no grade lower than a C in any blocked course. Students may retake blocked methods courses one time only.

Since the five elementary education methods courses of science, language arts, social studies, mathematics, and reading are offered only in Blocks A and B with field experiences attached, none may be transferred from another institution. EDEL 220 Orientation to Elementary/Middle Schools must be taken at K-State.

Additional requirements for secondary majors
A grade point average of 2.5 is required in all teaching fields based on all admission requirements attempted at K-State and at all colleges or universities attended. A student may not have a grade lower than a C in any professional course. Completion of FSHS 110, EDCEP 315, EDSP 323, Blocks I and II, and EDCIP 310 and EDETC 318 are required.

Student teaching assignment request
All student teaching options require a special application called the Student Teaching Assignment Request (STAR form). Instructions for completing the application can be obtained from the office of the coordinator of laboratory experiences and completed on the World Wide Web.

The deadline for completing the STAR form is September 25 for students participating in the spring professional semester, and February 25 for students participating in the fall professional semester.

Verification of Red Cross first aid/CPR certification (or an approved equivalent) must be submitted prior to completion of the STAR form.

Professional semester option
In addition to the conventional professional semester, the following option is available:

MITEC option
There is a Multi-Institutional Teacher Education Center in Kansas City. It includes Kansas City, Kansas, and portions of the suburban area. The MITEC option is a voluntary, full-semester, off-campus program. This professional semester option requires advanced planning with the education advisor and the coordinator of laboratory experiences. Students must make special requests for this program.

Interruption of degree
The following College of Education policy regarding interruption of academic programs applies to all people seeking teacher certification as well as those enrolled in degree programs in the College of Education.

Students who graduate within six years from the time they enter K-State without having previously earned credit from another institu-
tion shall have the opportunity to graduate under the academic program (course and total credit requirements) in existence at the time of entrance, unless the student cannot be certified by the state of Kansas under the original entry requirements.

If more than six years have elapsed since original entry, the student will need to complete the degree or teacher education program requirements in existence at the time he or she re-enters the university for the final and uninterrupted phase of the program.

This policy applies to students who are admitted to the university with previously attained credit as follows:

<table>
<thead>
<tr>
<th>Less than 30 credits</th>
<th>6 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 to 59 credit</td>
<td>5 years</td>
</tr>
<tr>
<td>60 to 89 credits</td>
<td>4 years</td>
</tr>
<tr>
<td>90 or more credits</td>
<td>3 years</td>
</tr>
</tbody>
</table>

Due to the number of credit hours required in their program, music education students will have an additional semester, for a total of 6½ years, to complete their teacher education program.

Most students who interrupt their educations for military service during peacetime do so by voluntary enlistment. In such a case, the above policy would hold. In wartime or national emergency, students with good grade records, students who are adding an endorsement to the certificate, students with degrees from other accredited institutions, or who have had a teaching certificate revoked in another state, will be expected to meet the requirements of the teacher education program.

People seeking initial certification who present degrees from other accredited institutions must meet all requirements of the teacher education program. For additional information, these individuals should contact the Office of Certification, 13 Bluemont Hall.

Additional certification endorsements
K-State will recommend for certification those individuals who are already certified, but who are adding an endorsement to the certificate (e.g., reading specialist, administrator, counselor, an additional teaching area, middle-level teaching in selected fields). K-State may become the recommending agent for individuals presenting degrees from other accredited institutions.

Recertification
Renewal applications not requesting an additional certification endorsement are sent directly to the Kansas State Department of Education.

For additional information on precertification testing, applications, or procedures, contact the Office of Certification in 13 Bluemont Hall.

Approved programs
All students preparing to be certified to teach in preschool, elementary, or secondary schools must fully complete the approved teacher education program regardless of which college awards the degree. The approved program consists of: general education studies, a major or specialization, and professional education studies.

The curricula in elementary education and in secondary education fulfill program requirements for teacher certification in the state of Kansas. Both degrees offered through the College of Education are four-year programs.

The state of Kansas will issue initial teaching certificates only to individuals who have completed an approved teacher education program, received the recommendation of their college or university, and successfully passed the precertification examination (Principles of Learning and Teaching, PLT). This test is administered at K-State several times each academic year. Anyone applying for initial certification in a state other than Kansas must also apply for Kansas certification.

Students transferring to K-State after earning credit at another institution will be enrolled in a pre-professional program until it has been determined that requirements for admission to teacher education have been satisfied. Students attending community colleges are encouraged to plan their degree programs in a four-year sequence. The College of Education invites students to seek advice from the Cen-

### Professional certification

#### Initial certification
The College of Education has the responsibility to serve as the recommending agent for all K-State graduates who wish to qualify for certification. The degrees earned in the College of Education in elementary education and in secondary education will fulfill certification program requirements in the state of Kansas. Early childhood, elementary, and secondary teaching certification may be accomplished through the completion of the approved program and the appropriate degree.

Students must meet the requirements for certification or for an endorsement area in effect at the time they apply for that certification or endorsement. Students who do not apply for the initial Kansas certification when they are eligible will be expected to meet the requirements in effect at the time they do apply for initial certification. Students enrolled in and earning degrees in colleges other than the College of Education must complete all requirements of an approved teacher education program.

### Elementary Education Program

Bachelor of science in elementary education
Minimum of 129 hours required
Certification K–9

#### General education requirements (53 hrs. minimum)

- **Communications (8–9 hrs.)**
  - ENGL 100 Expository Writing I ................... 3
  - ENGL 200 Expository Writing II .................. 3
  - SPCH 105 Public Speaking IA .................... 2
  - or
  - SPCH 106 Public Speaking I ...................... 3
  - or
  - SPCH 109 Public Speaking Honors ............... 3

- **Humanities (12 hrs.)**
  - Recommended courses are available in 13 Bluemont Hall.
  - Literature ........................................... 3
  - ENGL 355 Literature for Children ............... 3
  - Humanities .......................................... 3
  - Fine arts appreciation ............................ 3

- **Social science (12 hrs.)**
  - History: Choose from HIST 100, 101, 102, 251, 252, 531, 553.
  - Geography: Choose from GEOG 100, 310, 399, 440, 500.
  - Non-Western cultures: ANTH 204, AMETH 160, or at least three hours from cultures outside Western tradition, excludes those dealing with Greece, Rome, Western Europe, or North America.
  - Restricted elective: Three hours from the Departments of Anthropology (except ANTH 280 or 281), Economics, Psychology, History, Political Science, Sociology, or Geography (except GEOG 220 or 221).

- **Natural science (12 hrs.)**
  - (Recommended courses are available in 13 Bluemont Hall.)
  - Each area must include a lab.
  - Biological ............................................. 4
  - Physical .............................................. 4
  - Earth science ....................................... 4

- **Quantitative sciences (9 hrs.)**
  - MATH 100 College Algebra* ...................... 3
  - MATH 160 Introduction to Contemporary Mathematics* 3
  - or
  - STAT 320 Elements of Statistics* ............. 3
  - MATH 320 Math for Elementary School Teachers I ..................... 3

*Grade of C or better required.

#### Pre-professional
For the freshman and sophomore years, or until requirements for admission to teacher education have been satisfied, students in the College of Education will enroll in the appropriate pre-professional curriculum: elementary (EDPPE) or secondary (EDPDS). These students are advised by a College of Education pre-professional advisor in 13 Bluemont Hall concerning the courses essential for entry into the teacher education program.

Students transferring to K-State after earning credit at another institution will be enrolled in a pre-professional program until it has been determined that requirements for admission to teacher education have been satisfied. Students attending community colleges are encouraged to plan their degree programs in a four-year sequence. The College of Education invites students to seek advice from the Cen-
### Secondary Education Program

#### Bachelor of Science
- **Minimum of 126 hours required**
- Certification grades 7–12

All students wishing to teach in secondary schools must fully complete the approved teacher education program regardless of which college awards the degree. The approved program consists of: general education studies, professional education studies, and teaching field studies as specifically outlined in the following sections.

#### General education requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 100 Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 200 Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 105 Public Speaking IA</td>
<td>2</td>
</tr>
<tr>
<td>or SPCH 106 Public Speaking I</td>
<td>3</td>
</tr>
<tr>
<td>or SPCH 109 Public Speaking Honors</td>
<td>3</td>
</tr>
<tr>
<td>Humanities (9 hours)</td>
<td></td>
</tr>
<tr>
<td>Literature</td>
<td></td>
</tr>
<tr>
<td>Any department of English literature (except ENGL 230, 231, 233, 234, 355, or 545) or Department of Modern Languages literature course</td>
<td>3</td>
</tr>
<tr>
<td>Fine arts appreciation</td>
<td></td>
</tr>
<tr>
<td>Any nonperformance appreciation class in the Departments of Art, Music, Speech (theater or dance courses), or university general education approved courses from the College of Architecture, Planning, and Design</td>
<td>3</td>
</tr>
<tr>
<td>Restricted elective</td>
<td></td>
</tr>
<tr>
<td>Any course offered in the Department of Philosophy (except PHIL 110 or 220) or SPCH 320, 330, or 434, or any course in a modern language, or ENGL 230, 231, 233, or 234</td>
<td>3</td>
</tr>
<tr>
<td>Social science (9 hours)</td>
<td></td>
</tr>
<tr>
<td>History</td>
<td></td>
</tr>
<tr>
<td>Any course from the Department of History</td>
<td>3</td>
</tr>
<tr>
<td>Non-Western cultures</td>
<td></td>
</tr>
<tr>
<td>Recommended: ANTH 204; additional courses are available in ANTH, ECON, GEOG, HIST, POLSC, and SOCI. See your advisor for approved courses</td>
<td>3</td>
</tr>
<tr>
<td>Restricted elective</td>
<td></td>
</tr>
<tr>
<td>Any course in the Departments of Anthropology (except ANTH 280 and 281), Economics, Geography, (except GEOG 220 and 221), History, Political Science, Psychology, or Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Natural science (7 hours)</td>
<td></td>
</tr>
<tr>
<td>One lab required</td>
<td></td>
</tr>
</tbody>
</table>

#### Electives
- Hours will vary with majors
- Total credit hours required for graduation: 126

### Secondary Education Teaching Fields

#### Agricultural education

For agricultural education requirements, see the section on secondary education programs outside the College of Education.

#### Art education (EDART)

Students preparing for K–12 certification must complete ART 425 Art for Elementary Schools and student teaching on both the elementary and secondary levels.

- ART 100 2D Design
- ART 190 Drawing I
- ART 195 Survey of Art History I
- ART 196 Survey of Art History II
- ART 200 3D Design
- ART 210 Drawing II
- ART 220 Painting I
- ART 245 Ceramics I
- ART 270 Metalsmithing and Jewelry
- ART 295 Photography in Art
- ART 376 Studio Art Exploration
- ART 545 Twentieth Century Art History I
- ART 690 Techniques in Teaching Art
- Three additional art studio hours that build on prior course experience in that area

#### Business education (EDBUS)

- ACCCTG 231 Accounting for Business Operations
- ACCCTG 241 Accounting for Investments and Finances
- MANGT 390 Business Law
- MANGT 420 Management Concepts
- MKTG 400 Marketing
- SPEECH 311 Business and Professional Speaking
- EDSEC 215 Information Processing
- EDSEC 315 Administrative Data Applications
- EDSEC 415 Administrative Support Services and Technology
- EDSEC 416 Office Management
- ECON 530 Money and Banking
- FINANC 450 Introduction to Finance

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**Block I** — Admission to teacher education required.
- Courses must be taken concurrently and are a prerequisite for Block II.
- EDCEP 315 Educational Psychology
- EDSP 323 Exceptional Students
- EDSEC 376 Core Teaching Skills and Lab

**Block II** — Courses must be taken concurrently and are a prerequisite for Block III.
- EDSEC 477 Middle-Level/Secondary Reading
- EDSEC 500 Content Area Methods
- EDSEC 520 Content and Reading Methods
- EDCEP 455 Teaching in a Multicultural Society
- EDCEP 525 Interpersonal Relations in the School

**Block III** — Courses must be taken concurrently.
- EDSEC 586 Teaching Participation
- Secondary School

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**Area of concentration (15 hours)**
- The 15 hours selected in the area of concentration are in addition to those that meet general education requirements. Guidelines for applicable courses are available in the Center for Student and Professional Services. Concentrations are offered in the following fields: art, biological science, communication arts, dance, English, family studies, general science, health education, mathematics, modern foreign languages, music, physical science, social science, special education, and speech pathology.

**Minimum hours required in the area of concentration**: 15

**Total credit hours required for graduation**: 129

**Middle-level endorsement**
- An endorsement to teach at the middle level grades in the fields of English, mathematics, science, and social studies may be added to the elementary education program. See your advisor for information on specific requirements.

**English as a second language endorsement**
- An endorsement for English as a second language for grades K–9 may be added to the elementary education program. See your advisor for information on specific requirements.
Select one of the following:

FINAN 460 Insurance ........................................... 3
MANGT 440 Entrepreneurship .............................. 3
MANGT 466 Management Information Systems ...... 4

**Option A: Computer literacy**

CIS 300 Algorithms and Data Structures ............ 3
or
EDTEC 723 Logo and Problem Solving ................. 3
EDTEC 718 Microcomputers in Instruction ......... 2
EDTEC 719 Microcomputers in Instruction Lab ... 1
EDSEC 590 Content Area Methods in the Secondary School: Computers ......................... 2

**Option B: Vocational office education**

EDSEC 611 Coordination Techniques ................... 1
EDSEC 612 Job Analysis ..................................... 1
EDSEC 620 Principles and Philosophy of Vocational Education ................................. 1
EDSEC 701 Administration and Supervision of Vocational Education ...................... 2

**Option C: Accounting**

ACCTG .......................................................... 3
ACCTG .......................................................... 3

Supporting courses required

ECON 110 Principles of Macroeconomics ....... 3
ECON 120 Principles of Microeconomics ....... 3
CIS 101, 102, 103, and 104 Introduction to Information Technology and Microcomputers .... 4
CIS 200 Fundamentals of Computer Programming .................. 4

Select one of the following:

FSHS 105 Introduction to Personal and Family Finance .............................................. 3
FSHS 400 Family Economics ............................... 3
FSHS 405 Advanced Personal and Family Finance .............................................. 3

**Mathematics (EDMTH)**

MATH 220 Analytic Geometry and Calculus I .......... 4
MATH 221 Analytic Geometry and Calculus II ....... 4
MATH 520 Foundations of Analysis ...................... 4
MATH 551 Applied Matrix Theory ................. 3
MATH 591 Topics of Secondary School Teaching ... 3

Supported courses required:

STAT 320 Elements of Statistics ...................... 3
STAT 510 Introductory Probability and Statistics I ...... 3
CIS 200 Fundamentals of Computer Programming ................. 4

Certification to teach elementary school foreign language is an optional extension of secondary school certification. The following must be added to the requirements for secondary modern foreign language certification if elementary foreign language certification is desired:

**English (EDENG)**

Three of the following four survey courses:

ENGL 361 British Survey I ................................. 3
ENGL 362 British Survey II ............................... 3
ENGL 381 American Survey I ............................ 3
ENGL 382 American Survey II ......................... 3

Required:

ENGL 252 Introduction to Literary Studies .......... 3
ENGL 350 Introduction to Shakespeare .............. 3
ENGL 400 Advanced Expository Writing for Prospective Teachers .................. 3
ENGL 430 The Structure of English ..................... 3
ENGL 490 Development of the English Language ... 3
ENGL 545 Literature for Adolescents ................. 3
ENGL 610 World literature ............................... 3
ENGL 660 English Electives at 600 level and above ................................................................ 6

ENGL Composition elective (may include ENGL 500, 761, or 763) ......................... 3

**English/journalism (EDENJ)**

Two of the following:

ENGL 361 British Survey I ................................. 3
ENGL 362 British Survey II ............................... 3
ENGL 381 American Survey I ............................ 3
ENGL 382 American Survey II ......................... 3

Required:

ENGL 252 Introduction to Literary Studies .......... 3
ENGL 350 Introduction to Shakespeare .............. 3
ENGL 400 Advanced Expository Writing for Prospective Teachers .................. 3
ENGL 430 The Structure of English ..................... 3
ENGL 490 Development of the English Language ... 3
ENGL 545 Literature for Adolescents ................. 3
ENGL 610 World literature ............................... 3
ENGL Literature Elective above 600 level ......... 3
MC 235 Mass Communication in Society .......... 3
MC 400 News and Feature Writing ................. 3
MC 430 Photography I ..................................... 3
MC 440 Editing and Design ......................... 3
MC 565 Law of Mass Communications .......... 3
MC 605 Supervision of School Publications ...... 3
PSYCH 650 Psychology of Learning .............. 3

It is recommended that a course in physics be included as part of general education.

**Modern languages (EDMLA)**

Modern language majors must demonstrate proficiency in speaking and understanding the foreign language during the semester preceding methods (EDSEC 500) by scoring at least an “advanced” on the Department of Modern Languages oral proficiency interview. The interview is conducted by members of the modern language department faculty by arrangement with each individual. Students should contact the modern language education advisor for additional information.

**French**

Required:

FREN 211 French III ....................................... 5
FREN 213 French IV ....................................... 4
FREN 214 French Conversation IVA ............... 2

**German**

Required:

GRMN 221 German III ..................................... 5
GRMN 223 German IV ..................................... 4
GRMN 224 German Conversation IVA ............... 2
GRMN 521 Introduction to German Literature I .... 3
GRMN 522 Introduction to German Literature II .... 3
GRMN 530 German Civilization ....................... 3
GRMN 731 Advanced Spoken and Written German ........................................... 3
GRMN German electives at 500 and above ....... 9

**Spanish**

Required:

SPAN 261 Spanish III ..................................... 5
SPAN 262 Spanish IV ..................................... 4
SPAN 264 Elementary Spanish Conversation IVA ... 2
SPAN 563 Introduction to the Literature of Spanish America ............................... 3
SPAN 564 Spanish Composition and Grammar .... 3
SPAN 565 Spanish Civilization ............................. 3
SPAN 566 Hispanic-American Civilization .......... 3
SPAN 567 Introduction to the Literature of Spain .... 3
SPAN 571 Advanced Spanish Conversation ........... 3
SPAN Spanish electives at 500 and above .......... 6

**Natural sciences**

**Biological science (EDBSC)**

BIOL 198 Principles of Biology ...................... 4
BIOL 201 Organismic Biology ....................... 5
BIOL 410 Biology of the Cancer Cell ............... 2
BIOL 455 General Microbiology ..................... 4
BIOL 503 Ecology of Environmental Problems .... 3
BIOL 529 Fundamentals of Ecology ................. 3
ASI 500 Genetics ........................................... 3
BIOL 400 Human Genetics .............................. 3

Eight hours of biology electives. Many different biology courses may be used but it is suggested that the following courses be considered:

ENTOM 312 General Entomology ....................... 2
ENTOM 313 General Entomology Laboratory ....... 1
BIOL 310 Bioethics ........................................ 3
BIOL 510 Embryology ..................................... 3
BIOL 540 Molecular Biology ......................... 3
BIOL 620 Evolution ........................................ 3

Chemistry courses required:

CHM 210 Chemistry I ...................................... 4
CHM 230 Chemistry II .................................... 4
CHM 350 General Organic Chemistry ............... 3
CHM 351 General Organic Chemistry Lab ......... 2

Other required courses:

GEOL 103 Geology Laboratory ....................... 1
GEOL 512 Earth Science .................................. 3
PHYS 115 Descriptive Physics ....................... 5
PHYS 191 Descriptive Astronomy ..................... 3
MATH 100 College Algebra ............................... 3
MATH 150 Plane Trigonometry ............................ 3
MATH 312 Finite Applications of Math .................. 3
STAT 320 Elements of Statistics .......................... 3
EDSEC 614 Lab Techniques in Teaching Science ...... 3

Chemistry (EDCHM)
CHM 210 Chemistry I ........................................ 3
CHM 230 Chemistry II ......................................... 4
CHM 350 General Organic Chemistry .................. 3
CHM 351 General Organic Chemistry Laboratory 2
CHM 371 Chemical Analysis .............................. 4
CHM 500 General Physical Chemistry ................. 3
CHM Chemistry electives ................................. 5

Supporting courses required:
BIOL 198 Principles of Biology ........................... 4
GEOL 100 Earth in Action .................................... 3
GEOL 103 Geology Lab ....................................... 1
MATH 220 Analytic Geometry and Calculus I ........... 4
MATH 221 Analytic Geometry and Calculus II .......... 4
MATH 222 Analytic Geometry and Calculus III .......... 4

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in biology or physics. The course selection should be made in consultation with the science education advisor.

Earth science (EDESC)
GEOL 100 Earth in Action .................................... 3
GEOL 102 Earth Through Time ............................ 3
GEOL 103 Geology Laboratory ............................. 1
GEOL 105 Oceanography ...................................... 3
GEOL 301 Historical Geology Lab .......................... 1
GEOL 502 Mineralogy ......................................... 3
GEOL 520 Geomorphology .................................... 2

Supporting courses required:
BIOL 198 Principles of Biology ........................... 4
CHM 210 Chemistry I ........................................ 4
CHM 230 Chemistry II ......................................... 4
GEOS 221 Environmental Geography II .................. 3
MATH 100 College Algebra ................................... 3
MATH 150 Plane Trigonometry ............................ 3
MATH 220 Analytic Geometry and Calculus I ........... 4
MATH 221 Analytic Geometry and Calculus II .......... 4
MATH 222 Analytic Geometry and Calculus III .......... 4

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in chemistry or mathematics. The course selection should be made in consultation with the science education advisor.

Physical science (EDPSC)
PHYS 113 General Physics I .................................. 4
PHYS 114 General Physics II .................................. 4
PHYS 191 Descriptive Astronomy .......................... 4
PHYS 432 Contemporary Physics ........................... 4
CHM 210 Chemistry I ........................................ 4
CHM 230 Chemistry II ......................................... 4
CHM 350 General Organic Chemistry .................. 3
CHM 351 General Organic Chemistry Laboratory 2

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in biology, physics, or chemistry. The course selection should be made in consultation with the science education advisor.

Geography (EDGEO)
Courses required:
ANTH 200 Introduction to Cultural Anthropology ..... 3
ANTH 204 General Education Introduction to Cultural Anthropology ..... 3
ECON 110 Principles of Macroeconomics ............... 3
GEOG 100 World Regional Geography .................. 3
GEOG 200 Human Geography .............................. 3
POLS 110 Introduction to Political Science .......... 3
POLS 321 Kansas Politics and Government ............. 3
POLS 325 U.S. Politics ....................................... 3
SOCIO 211 Introduction to Sociology .................... 3
HIST 101 World Civilization: Rise of Europe .......... 3
HIST 102 World Civilization: Modern Era ............. 3
HIST 251 U.S. History to 1877 ............................ 3
HIST 252 U.S. History Since 1877 ........................ 3

Supporting courses:
GEOG 220 Environmental Geography I .................. 4
GEOG 440 Geography of Natural Resources ............ 3
GEOG 450 Geography of Economic Behavior .......... 3
GEOG 500 Geography of the United States ............. 3

Three hours of 500 level or above from geography:
GEOG ...................................................... 3

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in economics, history, political science, or sociology.

ECON/GEOG/POLS/SOCIO ............................................. 3

Social sciences
Economics (EDEC)
Courses required:
ANTH 200 Introduction to Cultural Anthropology ..... 3
ANTH 204 General Education Introduction to Cultural Anthropology ..... 3
ECON 110 Principles of Macroeconomics ............... 3
GEOG 100 World Regional Geography .................. 3
GEOG 200 Human Geography .............................. 3
POLS 110 Introduction to Political Science .......... 3
POLS 321 Kansas Politics and Government ............. 3
POLS 325 U.S. Politics ....................................... 3
SOCIO 211 Introduction to Sociology .................... 3
HIST 101 World Civilization: Rise of Europe .......... 3
HIST 102 World Civilization: Modern Era ............. 3
HIST 251 U.S. History to 1877 ............................ 3
HIST 252 U.S. History Since 1877 ........................ 3

Supporting course:
HIST 586 Junior Seminar .................................... 3

Nine hours of 500 level or above from history distributed in 3 of the following areas:
Ancient medieval and early modern Europe
HIST ......................................................... 3
Modern Europe including Britain
HIST ......................................................... 3
The Third World (Asia, Africa, Latin America)
HIST ......................................................... 3
The United States
HIST ......................................................... 3
History of science, technology, and military history
HIST ......................................................... 3

Political science (EDPLS)
Courses required:
ANTH 200 Introduction to Cultural Anthropology ..... 3
ANTH 204 General Education Introduction to Cultural Anthropology ..... 3
ECON 110 Principles of Macroeconomics ............... 3
GEOG 100 World Regional Geography .................. 3
GEOG 200 Human Geography .............................. 3
POLS 110 Introduction to Political Science .......... 3

Three hours of 500 level or above from economics, geograpy, political science, or sociology
ECON/GEOG/POLS/SOCIO ........................................ 3

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in economics, geography, political science, or sociology.
Optional Secondary Certification Programs

Certification in one or more of these optional programs is available only to students who have successfully completed an approved full certification program in another (first or primary) teaching area.

These optional programs give individuals the opportunity to teach in more than one area. These options lead to full certification in the subject or subject area for grades 7 through 12. A cumulative 2.5 grade point average is required in all courses attempted in the subject or subject area. K-State will recommend an endorsement to the teaching certificate for any additional teaching area when all requirements have been completed, provided all requirements of the approved degree program and the secondary area of certification have also been completed.

Business

EDSEC 215 Information Processing ........................................... 3
EDSEC 315 Administrative Data Applications .................. 3
EDSEC 415 Administrative Support Services and Technology ........................................... 3
EDSEC 416 Office Management ........................................... 3
EDSEC 500 Methods of Teaching Business in the Secondary School ........................ 3
EDSEC 520 Block III Lab/Business ........................................... 3
ACCTG 241 Accounting for Business Operations .................. 3
ACCTG 241 Accounting for Investments and Finances ........................................... 3
MANG 390 Business Law ........................................... 3
ECON 110 Principles of Macroeconomics .................. 3
ECON 530 Money and Banking ........................................... 3
FIN 450 Introduction to Finance ........................................... 3
CIS 200 Fundamentals of Computer Programming .................. 4

This prepares a student to teach typing, business law, business economics, bookkeeping, office practice, and data processing.

Computer studies

Computer science component

CIS 101 Introduction to Information Technology ........................................... 1
CIS 102 Introduction to Micro Spreadsheet Applications ........................................... 1
CIS 103 Introduction to Micro Database Management ........................................... 1
CIS 104 Introduction to Micro Word Processing Applications ........................................... 1
CIS 200 Fundamentals of Computer Programming ........................................... 4
CIS 300 Algorithmic Processes ........................................... 3

EDSEC 723 Logo and Problem Solving ........................................... 3

Professional knowledge component

EDSEC 500 Methods of Teaching in the Secondary School (Computer Studies) .................. 2
EDSEC 718 Microcomputers in Instruction Lab ........................................... 2
EDSEC 719 Microcomputers in Instruction Lab ........................................... 1

English

Select one of the following two courses:
ENGL 361 British Survey I ........................................... 3
ENGL 362 British Survey II ........................................... 3

Select one of the following two courses:
ENGL 381 American Survey I ........................................... 3
ENGL 382 American Survey II ........................................... 3
ENGL 350 Introduction to Shakespeare ........................................... 3
ENGL 400 Advanced Expository Writing ........................................... 3
ENGL 430 The Structure of English ........................................... 3
ENGL 490 Development of the English Language ........................................... 3
ENGL 545 A world literature course ........................................... 3
ENGL 545 Literature for Adolescents ........................................... 3
EDSEC 500 Methods of Teaching English in the Secondary School ........................................... 2
EDSEC 520 Block III Lab/Language Arts ........................................... 1

English as a second language (7–12)

Secondary education majors may choose to complete course work leading to certification in English as a second language (ESL). Endorsement in ESL can only be achieved in conjunction with the completion of a secondary initial certification program.

To add English as a second language endorsement to a secondary teaching certificate, the following course work is required:

ANTH 200 Introduction to Cultural Anthropology ........................................... 3
ANTH 522 Becoming American ........................................... 3
DED 560 Introduction to American Ethnic Studies ........................................... 3
EDSEC 733 Curriculum Materials for Ethnic Diversity ........................................... 3
ENGL 600 Principles of Linguistics ........................................... 3
EDSEC 731 ESL/Dual Language Linguistics ........................................... 3
EDSEC 500 Methods of Teaching Foreign Language in a Secondary School ........................................... 3
EDSEC 520 Methods of Teaching Foreign Language in a Secondary School Lab ........................................... 1
EDSEC 742 ESL/Dual Language Assessment ........................................... 3
EDSEC 745 ESL/Language Practicum ........................................... 3

Mathematics

MATH 220 Analytic Geometry and Calculus I ........................................... 4
MATH 221 Analytic Geometry and Calculus II ........................................... 4
MATH 222 Analytic Geometry and Calculus III ........................................... 4
MATH 240 Elementary Differential Equations ........................................... 4
MATH 312 Finite Applications of Mathematics ........................................... 3
MATH 312 Introduction to Algebraic Systems ........................................... 3
MATH 410 History of Mathematics ........................................... 3
MATH 520 Foundations of Geometry ........................................... 3

Speech (EDSPH)

All speech education majors are required to complete 36 hours of speech and theatre courses in addition to SPCH 105 or 106, Public Speaking I or II.

The following courses are required:
SPCH 321 Public Speaking II ........................................... 3
SPCH 322 Interpersonal Communication ........................................... 3
SPCH 324 Small Group Discussion ........................................... 3
THTRE 261 Fundamentals of Acting ........................................... 3
THTRE 263 Oral Interpretation of Literature ........................................... 3
THTRE 270 Introduction to Theatre ........................................... 3
THTRE 368 Fundamentals of Technical Production ........................................... 3
THTRE 370 Dramatic Structure ........................................... 3
THTRE 565 Principles of Directing ........................................... 3
MC 235 Mass Communications in Society ........................................... 3

Sociology (EDSOC)

Courses required:
ANTH 200 Introduction to Cultural Anthropology ........................................... 3
or
ANTH 204 General Education Introduction to Cultural Anthropology ........................................... 3
ECON 110 Principles of Macroeconomics ........................................... 3
ECON 100 World Regional Geography ........................................... 3
ECON 200 Human Geography ........................................... 3
POLSC 110 Introduction to Political Science ........................................... 3
POLSC 321 Kansas Politics and Government ........................................... 3
POLSC 325 U.S. Politics ........................................... 3
SOCIO 211 Introduction to Sociology ........................................... 3
HIST 101 World Civilization: Rise of Europe ........................................... 3
HIST 102 World Civilization: Modern Era ........................................... 3
HIST 251 U.S. History to 1877 ........................................... 3
HIST 252 U.S. History Since 1877 ........................................... 3

Supporting courses:
SOCIO 101 Introduction to Social Science ........................................... 3
SOCIO 102 Methods of Social Research ........................................... 3
SOCIO 103 Population Dynamics ........................................... 3
SOCIO 401 Social Interaction ........................................... 3
or
SOCIO 640 Sociology of Family ........................................... 3
Three hours of 500 level or above from sociology: ........................ 3
SOCIO ........................................... 3
Three hours of 300 level or above from history: ........................ 3
HIST ........................................... 3

Speech (EDSPH)

All speech education majors are required to complete 36 hours of speech and theatre courses in addition to SPCH 105 or 106, Public Speaking I or II.

The following courses are required:
SPCH 325 Argumentation and Debate ........................................... 3
SPCH 328 Persuasion and Debate ........................................... 3
SPCH 330 Rhetoric in Western Thought ........................................... 3
SPCH 426 Coaching and Directing Speech Activities ........................................... 3
SPCH 500 level or above in general speech ........................................... 3
SPCH 322 Interpersonal Communication ........................................... 3
or
SPCH 326 Small Group Discussion ........................................... 3
THTRE 261 Fundamentals of Acting ........................................... 3
THTRE 263 Oral Interpretation of Literature ........................................... 3
THTRE 270 Introduction to Theatre ........................................... 3
THTRE 368 Fundamentals of Technical Production ........................................... 3
THTRE 370 Dramatic Structure ........................................... 3
THTRE 565 Principles of Directing ........................................... 3
MC 235 Mass Communications in Society ........................................... 3

Mathematics

MATH 220 Analytic Geometry and Calculus I ........................................... 4
MATH 221 Analytic Geometry and Calculus II ........................................... 4
MATH 222 Analytic Geometry and Calculus III ........................................... 4
MATH 240 Elementary Differential Equations ........................................... 4
MATH 312 Finite Applications of Mathematics ........................................... 3
MATH 312 Introduction to Algebraic Systems ........................................... 3
MATH 410 History of Mathematics ........................................... 3
MATH 520 Foundations of Geometry ........................................... 3
A supporting course in physics is recommended.

Modern language

Students seeking modern language endorsement must demonstrate proficiency in speaking and understanding the foreign language during the semester preceding the test administered by the Department of Modern Languages. The interview is conducted by members of the modern language department faculty by arrangement with each individual. Contact the modern language education advisor for additional information.

French

- FREN 211 French III ............................ 5
- FREN 213 French IV ................................. 4
- FREN 214 French Conversation IVA .......... 2
- FREN 511 Masterpieces of French Literature I ... 3
- or FREN 512 Masterpieces of French Literature II ... 3
- FREN 513 French Composition and Grammar .... 3
- FREN 514 French Civilization ......................... 3
- FREN Methods of Teaching Foreign Language in the Secondary School ............ 3
- or EDSEC 500 Methods of Teaching Foreign Language in the Secondary School .......... 2
- EDSEC 520 Block IIIab/Modern Language ........ 1

German

- GRMN 221 German III ............................. 5
- GRMN 223 German IV ............................... 4
- GRMN 224 German Conversation IVA .......... 1
- GRMN 521 Introduction to German Literature II .... 3
- or GRMN 522 Introduction to German Literature III .... 3
- GRMN 523 German Composition .................... 3
- GRMN 530 German Civilization .................... 3
- GRMN German electives at 500 or above .......... 6
- EDSEC 500 Methods of Teaching Foreign Language in the Secondary School .......... 2
- EDSEC 520 Block IIIab/Modern Language ........ 1

Spanish

- SPAN 261 Spanish III ................................ 5
- SPAN 263 Spanish IV .................................. 4
- SPAN 264 Elementary Spanish Conversation IVA .... 2
- SPAN 564 Spanish Composition and Grammar .... 3
- SPAN 565 Spanish Civilization ........................ 3
- or SPAN Spanish electives at 500 or above .......... 6
- SPAN 566 Hispanic-American Civilization ......... 3
- SPAN 567 Spanish-American Masterpieces .......... 3
- or SPAN Spanish Masterpieces ........................ 3
- EDSEC 500 Methods of Teaching Foreign Language in the Secondary School (offered fall only) .......... 2
- EDSEC 520 Block IIIab/Modern Language ........ 1

Modern foreign language secondary school

Certification to teach elementary school foreign language is an optional extension of secondary school certification. The following must be added to the requirements for secondary modern foreign language certification:

- EDDEL 585 Teaching Participation in the Elementary School .......................... 2
- EDDEL 720 Foreign Language Methods for Elementary Schools (offered spring only) ........ 3
- EDSEC 502 Foreign Language Elementary School Practicum .......................... 1

Natural science

**Biology**

- BION 198 Principles of Biology .................. 4
- BION 201 Organismic Biology .................... 4
- BION 303 Ecology of Environmental Problems .... 3
- or BION 529 Fundamentals of Ecology .......... 3
- or BIOL 455 General Microbiology ............... 4
- or CHM 110/111 General Chemistry/Lab ............ 4
- or CHM 210 Chemistry I ............................ 4
- or EDSEC 614 Laboratory Techniques in Teaching Science ........................... 3
- or EDSEC 500 Methods of Teaching Science in the Secondary School ............ 2
- or EDSEC 520 Block IIIab/Science ................. 1
- or GEOL 100 Earth in Action ....................... 3
- or GEOL 103 Geology Lab .......................... 1
- or PHYS 113 General Physics ...................... 4
- or PHYS 115 Descriptive Physics .................... 5
- or PHYS 191 Descriptive Astronomy ............... 3
- or MATH 100* College Algebra ..................... 3
- or MATH 150* Plane Trigonometry .................. 3
- or MATH 312* Finite Applications of Math .......... 3
- or STAT 320 Elements of Statistics ............... 3

*Higher-level math courses may meet this requirement.

Other biology department courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor.

**Chemistry**

- CHM 210 Chemistry I ............................. 4
- or CHM 230 Chemistry II ........................... 4
- or CHM 330 General Organic Chemistry .......... 3
- or CHM 352 General Organic Chemistry Lab ...... 2
- or CHM 371 Chemical Analysis .................... 4
- or BION 198 Principles of Biology ............... 3
- or GEOL 100 Earth in Action ...................... 3
- or GEOL 103 Geology Lab .......................... 1
- or PHYS 113 General Physics ...................... 4
- or PHYS 115 Descriptive Physics .................... 5
- or PHYS 191 Descriptive Astronomy ............... 3
- or EDSEC 614 Laboratory Techniques in Teaching Science ........................... 3
- or EDSEC 500 Methods of Teaching Science in the Secondary School ............ 2
- or EDSEC 520 Block IIIab/Science ................. 1
- or EDSEC 520 Block IIIab/Science ................. 1
- or MATH 100* College Algebra ..................... 3
- or MATH 150* Plane Trigonometry .................. 3
- or MATH 312* Finite Applications of Math .......... 3
- or STAT 320 Elements of Statistics ............... 3

*Required for chemistry and physics options.

**Higher-level math courses may meet this requirement.

In addition to the core, candidates must complete at least one option below:

**Biology option**

- BIOL 201 Organismic Biology .................... 5
- BIOL 303 Ecology of Environmental Problems .... 3
- or BIOL 529 Fundamentals of Ecology .......... 3

**Chemistry option**

- CHM 230 Chemistry II ............................ 4
- or CHM 350 General Organic Chemistry .......... 3
- or CHM 371 Chemical Analysis .................... 4
- or CHM 350 General Organic Chemistry Lab ...... 2
- or CHM 371 Chemical Analysis .................... 4
- or CHM 380 General Organic Chemistry .......... 3
- or CHM 380 General Organic Chemistry Lab ...... 3

**Physics option**

A minimum of 12 hours

- PHYS 114 General Physics II ..................... 4
- PHYS One physics course that has Physics II as a prerequisite
- PHYS Additional physics courses necessary to bring option total to 12 hours.

**Earth science option**

- GEOL 102 Earth Through Time .................... 3
- or GEOL 105 Oceanography ......................... 3
- At least one course selected from the following:
  - GEOL 502 Mineralogy ............................. 3
  - GEOL 520 Geomorphology ....................... 2
- Other natural science courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor.

**Physics**

- BIOL 198 Principles of Biology .................. 4
- or CHM 210 Chemistry I ............................ 4
- or PHYS 113 General Physics I ..................... 4
- or PHYS 114 General Physics II .................... 4
- or PHYS 115 Descriptive Astronomy ............... 3

**Education**

- EDSEC 500 Methods of Teaching Science in the Secondary School .................... 2
- EDSEC 520 Block IIIab/Science ................. 1
- EDSEC 614 Laboratory Techniques in Teaching Science ........................... 3
- or MATH 100* College Algebra ..................... 3
- or MATH 150* Plane Trigonometry .................. 3
- or MATH 312* Finite Applications of Math .......... 3
- or STAT 320 Elements of Statistics ............... 3

*Higher-level math courses may meet this requirement.

Other biology or physics courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor.
Phys 452 Contemporary Physics 4
Geol 100 Earth in Action 3
Geol 103 Geology Lab 1
Math 100* College Algebra 3
Math 150* Plane Trigonometry 3
Math 210* Technical Calculus 3
Math 211* Technical Calculus II 3
Math 312* Finite Applications of Math 3
Stat 320 Elements of Statistics 3
Edsec 500 Methods of Teaching Science in the Secondary School 2
Edsec 520 Block Ill/Science 1
Edsec 614 Laboratory Techniques in Teaching Science 3

FSHS 313 Preschool Child Laboratory 1
FSHS 350 Family Relationships and Gender Roles 3
FSHS 670 Working with Parents 3
Fn 413 Science of Food 4
Fn 400 Human Nutrition 3
Idh 410 Housing and Its Environment 3
CT 265 Textiles 2
CT 266 Textiles Lab 2
CT 440 Fundamentals of Apparel Evaluation 3
Edsec 500 Content Area Methods: Family and Consumer Sciences/Health Education 2
Edsec 520 Block II Lab: Family and Consumer Sciences/Health Education 1
Edel/Edsec 405 Middle Level Education 3
Edsec 621 Program Planning in Vocational Education: Family and Consumer Sciences 2

 Psy Sec 39–40

Psychology
Psych 110 General Psychology 3
Psych 350 Experimental Methods in Psychology 3
Psych 520 Life Span Personality Development 3
Psych 535 Social Psychology 3
Psych 460 Cognitive Psychology 3
Psych 475 Principles of Learning 3
Psych 480 Fundamentals of Perception and Sensation 3

Supporting courses required:
Stat 320 Elements of Statistics 3
Stat 330 Elementary Statistics for the Social Sciences 3
Edsec 715 Principles of Assessment 3
Edsec 500 Methods of Teaching Social Science in the Secondary School 2
Edsec 520 Block Ill/Science 1

Speech
Spch 321 Public Speaking II 3
Thtre 263 Oral Interpretation of Literature 3
Spch 426 Coaching and Directing Speech Activities 3
Spch 325 Argumentation and Debate 3
Thtre 270 Introduction to Theatre 3
Thtre 261 Fundamentals of Acting 3
Thtre 588 Fundamentals of Technical Production 3
Thtre 565 Principles of Directing 3
Edsec 500 Methods of Teaching Speech in the Secondary School 2
Edsec 520 Block Ill/Arts Languages Arts 1

Family and consumer sciences education
Students planning to be vocational family and consumer sciences education teachers must complete the approved teacher certification program as part of the requirements for the bachelor of science in human ecology degree program in the College of Human Ecology, family and consumer sciences education. Completion of this program satisfies state of Kansas program requirements for vocational family and consumer sciences education certification for grades 7–12.

Professional education requirements
Edsec 120 Teaching as a Career 1
FSHS 110 Introduction to Human Development 3

The following courses may be taken before entry into the professional semester:
Edcep 315 Educational Psychology 3
Edcep 525 Interpersonal Relations in the School 1
Edsp 323 Exceptional Students in the Secondary School 2
Edcep 455 Teaching in a Multicultural Society 1
Edet 318 Instructional Media and Technology 2

Professional seminar (see information earlier for specific prerequisites):
Edsec 586 Teaching Participation in the Secondary School 12

Music education (MUSED)
Students planning to be music teachers must complete the approved teacher certification program as part of the requirements for the bachelor of music education in the College of Arts and Sciences. Completion of this program satisfies state of Kansas program requirements for certification for grades K–12.

The following courses are required for admission to teacher education:
Edsec 102 Teaching as a Career 1

The following course may be taken before the student is admitted to teacher education:
FSHS 110 Introduction to Human Development 3
Edcep 310 Foundations of Education 3
Edet 318 Instructional Media and Technology 2

The application for admission to a teacher education program must be filed and approved before a student may enroll in any of the following courses which must be completed before entry into the professional semester. Refer to an earlier section for specific requirements for admission to teacher education:
MUSIC 511 Music in the Schools K-6 4
MUSIC 512 Music in the Junior/Senior High School 4
Edcep 315 Educational Psychology 3
Edsp 323 Exceptional Students in the Secondary School 2

Optional Secondary Certification Program at the Middle Level

Middle-level family and consumer sciences
FSHS 105 Introduction to Personal and Family Finance 3
FSHS 200 Sexuality and Health 2
FSHS 302 You and Your Sexuality 3
FSHS 310 Early Childhood 3

Secondary Education Programs Outside the College of Education
The general education requirements as outlined in an earlier section must be completed by all students expecting to be certified to teach with the exception of students in agriculture. Students in these fields should see their academic advisor for specific requirements.

Students who pursue degrees in certifiable majors in the College of Arts and Sciences are responsible for satisfying all the requirements for teacher education as well as the degree requirements of arts and sciences.

Agricultural education (AED)
Students planning to be agricultural education teachers must complete the approved teacher certification program as part of the requirement for the bachelor of science in agricultural education in the College of Agriculture. Completion of this program satisfies state of Kansas program requirements for agricultural education certification for grades 7–12.

Professional education requirements
Edsec 400 Leadership and Personal Development in Agricultural Education 1
Edsec 503 Teaching Adult Classes in Agriculture 1
Edsec 505 Field Experiences in Agricultural Education 1
Edsec 620 Principles and Philosophy of Vocational Education 3
Edsec 621 Program Planning in Vocational Education 3
FSHS 110 Introduction to Human Development 3

The following courses must be completed before admission to the professional semester:
Edcep 315 Educational Psychology 3
Edcep 525 Interpersonal Relations in the Schools 1
Edsp 323 Exceptional Students in the Secondary School 2
Edcep 455 Teaching in a Multicultural Society 1

The application for admission to a teacher education program must be filed and approved before a student may enroll in any of the following courses which must be completed before entry into the professional semester. Refer to an earlier section for specific requirements for admission to teacher education:
MUSIC 511 Music in the Schools K-6 4
MUSIC 512 Music in the Junior/Senior High School 4
Edcep 315 Educational Psychology 3
Edsp 323 Exceptional Students in the Secondary School 2
EDCEP 525  Interpersonal Relations in the School ................................. 1
EDSEC 376  Core Teaching Skills and Lab ........................................... 3
EDCIP 455  Teaching in a Multicultural Society .................................... 1
EDSEC 477  Middle Level/Secondary Reading ...................................... 2
MUSIC 670  Advanced Studies in Music Education ............................... 2

Professional seminar (see information earlier for specific prerequisites):
EDSEC 582  Teaching Participation in Music* ........................................... 12

*A full semester of student teaching is required in music education.

Early childhood education
Bachelor of science in human development and family studies
Minimum of 125 hours required
Early childhood certification, birth to kindergarten eligibility

Students planning to be certified as early childhood teachers must complete the approved program in early childhood education in the College of Human Ecology, Department of Human Development and Family Studies.

The general education requirements as outlined in an earlier section must be completed. Reference should be made to the section Admission to Teacher Education at the beginning of the College of Education section of this catalog.

Speech–language pathologist
The speech pathology program at K-State meets the requirements for the Certificate of Clinical Competence of the American Speech-Language–Hearing Association, and the Kansas Department of Education requirements for speech–language pathologist. The approved program requires both undergraduate- and graduate-level course work in the School of Family Studies and Human Services of the College of Human Ecology resulting in the M.A. degree from the Graduate School. Students interested in the program are encouraged to obtain an advisor in the speech pathology program. Late entry into the program as a junior or senior is possible.

Other Program Choices

Leadership studies minor
See the Department of Educational Administration and Leadership.

Coaching endorsement
The coaching endorsement is open to students who plan to coach at the high school level after graduation. The Kansas State High School Activities Association accepts the K-State College of Education coaching endorsement as a substitute for the American Coaching Effectiveness Program, which is currently offered through the KSHSAA educational program.

Any student interested in the College of Education endorsement program should take the following hours of course work:

- EDSEC 250  Scientific Principles of Coaching ......................................... 3
- EDSEC 320  Care and Prevention of Athletic Injuries ............................ 3
- EDSEC 587  Supervised Practicum for Athletic Coaches ........................ 2

Examples:
- EDSEC 302  Coaching and Officiating Basketball ................................. 3
- EDSEC 305  Coaching and Officiating Football ...................................... 2
- EDSEC 306  Coaching and Officiating Volleyball ................................... 1

Athletic training
The athletic training department is jointly supported by the College of Education and the Department of Intercollegiate Athletics. Course work includes prevention and treatment of athletic injuries, evaluation and emergency management of athletic injuries, therapeutic modalities in athletic injuries, rehabilitation and conditioning for athletic training, administration of athletic training programs, and supervised internship.

The following courses comprise the core courses in athletic training:

- EDSEC 320  Care and Prevention of Athletic Injuries ............................ 3
- EDSEC 551  Evaluation and Emergency Management of Athletic Injuries 3
- EDSEC 555  Therapeutic Modalities in Athletic Training ........................ 3
- EDSEC 556  Rehabilitation and Conditioning ....................................... 3
- EDSEC 557  Seminar in Issues in Administration of Athletic Training Programs ........................................ 3
- EDSEC 585  Internship in Athletic Training ......................................... 1

General Courses

General courses in education
DED 620. Honors Program. (0) I, II. All students accepted into the College of Education honors program must enroll each semester. Pr.: Sophomore or higher standing, 3.5 cumulative grade point average, acceptance into the honors program.

DED 651. Study Skills Laboratory. (1–3) I, II. Helps students to improve their study habits, organize their time, understand how to use resources, analyze information, and develop study skills. Pr.: Sophomore or higher standing.

DED 100. Pre-Professional Laboratory Experiences. (1) I, II. Supervised experiences in education designed to facilitate orientation and investigation of teaching through the teacher aide program. Maximum credit of 3 hours. No more than 1 credit per semester.

DED 105. Introduction to Women’s Studies. (3) I, II. A systematic introduction to women’s studies as an academic discipline, drawing research from humanities, social science, education, human ecology, and management to analyze images of women, status of women, sex differences, gender roles and stereotypes, patterns of success, women and responsibilities, current controversial issues affecting women, and feminism as a social and historical movement. An academic perspective on issues of equality and justice for women, emphasizing scholarship on how women perceive their own lives.

DED 160. Introduction to American Ethnic Studies. (3) I. This course introduces students to the major concepts related to ethnicity and to some of the major American ethnic groups.

DED 315. Introduction to Gerontology. (3) II. A multi-disciplinary introduction to the field of aging. Examines social, psychological, developmental, organizational, and economic aspects of aging. Theoretical, methodological, and applied issues of aging will be related to contemporary American society. Same as DAS 315; also offered through the Colleges of Agriculture, Architecture and Design, and Human Ecology.

DED 320. Honors Seminar. (1) I, II. Selected topics in education. May be taken more than once for credit.

DED 405. Senior Seminar in Women’s Studies. (3) I. An intercollegiate, interdisciplinary course organized topically with students presenting papers which draw upon previous and concurrent academic experience and which approach a given topic in a consistent focus on the role of women. Provides supervised independent study and subsequent discussion, allowing students to integrate and order their perceptions about the unique roles, problems, and contributions of women. Pr.: DED 105 Introduction to Women’s Studies and 15 hours of women’s studies courses.

DED 415. Senior Seminar in Gerontology. (3) I. Integrative course work in gerontology with an in-depth project in a special interest area. Pr.: Completion of 15 hours of course work in gerontology second major. Same as DAS 315; also offered through the Colleges of Agriculture, Architecture, Planning, and Design, and Human Ecology.

DED 420. Honors Research. (1–3) I, II. Individual research projects under the supervision of a professor in the College of Education. For students in honors program only. Pr.: A minimum of 2 hours credit in DED 320 or 1 hour credit in DED 320 and 1 hour selected from GENAG 310, DAS 399, GNHE 399.

DED 499. Senior Seminar in American Ethnic Studies. (3) Guided research in American ethnic studies. Students prepare a research paper on a relevant subject of their choice. Each student is responsible for arranging to work with a member of the American ethnic studies faculty. Pr.: DED 160 Introduction to American Ethnic Studies.

DED 500. Topics in Women’s Studies. (Var.) I, II, S. Exploration of an interdisciplinary topic in women’s studies. Cross-listed with the Dean of Human Ecology and the Dean of Arts and Sciences.

DED 505. Independent Study in Women’s Studies. (1–3) I, II. Independent, interdisciplinary, supervised studies in an area of women’s studies which does not fall within the boundaries of a traditional department. May be repeated once for credit with change of topic. Pr.: Junior standing, consent of instructor(s), and approval of women’s studies faculty.

DED 506. Contemporary Feminist Frameworks. (3) I. Surveys major contemporary U.S. theories of gender and their development, including impact of feminist movement on the development of theory, interactions of race and gender, women’s culture, and men’s roles. Compares approaches of social sciences and humanities. Pr.: Six semester hours women’s studies.


EDU 340. College Success. (3) I, II. A three-credit hour course designed to help students make the transition from high school to college. Special emphasis is placed on proper study habits, time management, note-taking, library research, and career planning. Pr.: Freshman or sophomore standing.

EDU 350. College Success. (3) I, II. A three-credit hour course designed to help students make the transition from high school to college. Special emphasis is placed on proper study habits, time management, note-taking, library research, and career planning. Pr.: Freshman or sophomore standing.

EDU 350. College Success. (3) I, II. A three-credit hour course designed to help students make the transition from high school to college. Special emphasis is placed on proper study habits, time management, note-taking, library research, and career planning. Pr.: Freshman or sophomore standing.

EDU 350. College Success. (3) I, II. A three-credit hour course designed to help students make the transition from high school to college. Special emphasis is placed on proper study habits, time management, note-taking, library research, and career planning. Pr.: Freshman or sophomore standing.
Counseling and Educational Psychology

Stephen Benton,* Chair

www.educ.ksu.edu/Departments/EdPsych/overview.html

The Department of Counseling and Educational Psychology contributes to the undergraduate teacher preparation program through its offerings in educational psychology and interpersonal relations in schools.

Counseling and educational psychology courses

EDCEP 111. The University Experience. (1–3) I, II. 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.

EDCEP 120. Academic and Career Decisions. (1) I, II. Addresses general principles of academic and career choice through lectures, class discussions, and individual research. Topics include decision-making models and principles; exploration of interests, abilities, and values through assessments; and academic and career investigation using interactive software, library materials, Internet resources, and experimental learning opportunities.

EDCEP 202. Career and Life Planning. (2) I, II. Applies theory and research concerning assessment of interests and career choice-making to individuals’ planning and decision-making. Focuses on increasing understanding of the complexities of the world of work and on skills of integrating such understanding with each person’s experience, characteristics, motives, and values in the career exploration process. Reviews resume writing, interviewing skills, and job search techniques.

EDCEP 211. Leadership Training Seminar. (2) I, II. General principles of leadership as applied to small groups. Study of the role of the leader, group processes and interaction, defining group goals, and techniques of observation. Workshop and supervision in small group leadership. Pr.: Sophomore standing and consent of instructor.

EDCEP 311. Interaction and Guidance for the Paraprofessional. (3) I, II. Application of a systematic approach to interaction skills in a paraprofessional helping relationship. Includes background knowledge of listening skills and practice in emitting skills which influence interaction quality. Pr.: Junior standing.

EDCEP 315. Educational Psychology. (3) I, II, S. The application of psychological principles to the teaching-learning process with special emphasis on principles of learning, motivation, information processing, individual differences, and assessment. Pr.: Admission to teacher education, and HDGES 110. Secondary education students must take this course simultaneously with EDSP 323 and EDSEC 376.

EDCEP 502. Independent Study in Education. (1–3) I, II. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department chair.

EDCEP 525. Interpersonal Relations in the Schools. (1–2) I, II. A didactic and experiential course designed to develop an understanding of human relations skills in the schools. Provides knowledge and skills necessary to work effectively with students, parents, and school personnel. Particular emphasis is on the basis for interpersonal relations in education, communication skills, the facilitative relationship, working with students in groups, and conducting meetings with parents and school personnel. Pr.: EDSE 376, EDSP 323, EDCEP 315. Simultaneous enrollment required for EDSE 477, 500, 520, and EDCEP 525 and EDCEP 455.

EDCEP 711. Middle School Classroom Guidance. (3) I, II. On sufficient demand. Techniques of integrating guidance principles for pre- and early teens into middle school concept; investigation of classroom dynamics for middle school teachers as members of the guidance team; involvement of teachers in model guidance programs. Pr.: EDCEP 315.


EDCEP 721. Mental Hygiene in the School and Community. (3) On sufficient demand. Dynamics creating different personalities and deviant behavior. The educative process as it affects personality integrity. Pr.: PSYCH 280 or FSHS 110.


EDCEP 786. Topics in Education. (1–3) I, II, S. Examination of current topic in specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110. Consent of department chair.

EDCEP 795. Problems in Education. Credit arranged. I, II, S. Selected students are permitted to secure specialized training appropriate to the needs of the individual. The student’s project may involve intensive library investigation in a special field or the collection and analysis of data pertinent to a given problem. All work is done independently under the direction of a faculty member. As many conferences are held as necessary to assure successful completion of a project. Pr.: Background of courses necessary for the problem undertaken, consent of instructor, and consent of department chair.

Leadership studies minor

K-State’s interdisciplinary minor in leadership studies focuses on leadership development, personal development, and on-site experiences. The program will provide you with such fundamental leadership knowledge as historic and current leadership theories and the processes of political, societal, and cultural change.

The minor requires 18 semester hours. Some of these courses may already be part of your major, while others will be courses taken to enhance your program of study. Three core courses are required:

- EDADL 212 Introduction to Leadership Concepts ........................ 2
- EDADL 405 Leadership in Practice ........................................ 2
- EDADG 450 Senior Seminar in Leadership ............................ 2

You must earn at least 12 additional hours to complete the minor, with at least one 3-hour course from each of the following areas (see your advisor for specific choices):

- Foundations/skills
- Ethics
- Theories of leadership/organizational behavior
- Societal and organizational applications of leadership

For more information

Leadership Studies and Programs
914 Manhattan Avenue
785-532-6085
Fax: 785-532-6542

Educational administration and leadership courses

EDADL 212. Introduction to Leadership Concepts. (2) I, II, S. This course is organized to provide students with a broad overview of leadership theories, an introduction to ethical decision making, examination of personal leadership styles, and current societal issues for leaders. Pr.: None.

EDADL 213. Applied Leadership Skills. (3) I, II, S. This course provides opportunities for all interested students to be introduced to leadership skills application, with emphasis on practice in supervised clinical settings. Pr.: None.

EDADL 405. Leadership in Practice. (2) I, II. Students will identify a leadership setting associated with their academic major, in a community or business organization, or through a student leadership position. The students will observe and participate in these leadership settings as a means of integrating and applying theory to practice. Students will analyze what transpires in their leadership settings through class discussions, weekly worksheets, and a synthesis paper. Pr.: EDADL 212.

EDADL 430. Women and Leadership. (3) I. This course addresses issues related to leadership as it intersects with women’s studies scholarship, such as women’s styles of leadership, women and competition, sexism in the workplace, gender differences in communication, and feminist models of leadership. This course will explore issues related to women’s leadership development in the theoretical contexts of leadership studies and women’s studies. Pr.: EDADL 212 or WOMST 105.

EDADL 450. Senior Seminar in Leadership Studies. (2) I, II. Foundation texts of leadership studies as well as current research will be highlighted. The goal of this course is to assist students in the integration of their academic leadership course work and leadership experiences in preparation for their roles as members of the contemporary work force. Pr.: EDADL 405 or conc.

EDADL 502. Independent Study in Education. (0–3) I, II, S. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department head.

Educational Administration and Leadership

David Thompson,* Chair
Professors Bailey,* Shoop,* Stewart,* Thompson,* and Wilson,* Associate Professors Bosco, Salsberry,* and Scott; Adjunct Professors Devin, Franklin, Lumley, Peak, and Yunk; Emeritus: Keys.

www.ksu.edu/Departments/EdAdmin/Overview.html
www.ksu.edu/leadership
centration.

Elementary Education

Paul Burden,* Chair
Professors Burden,* Fallin,* Heller,* Smith,* and Staver,* Associate Professors Goldston,* Hancock,* Herrera,* Perl,* and Shroyer,* Assistant Professors Bay,* K. Holen,* Kellstrom,* and Norton–Meier; Emeriti: Bloomquist,* Brookhart,* Kurtz,* McAnarney,* Schell,* and Trennepohl.

www.educ.ksu.edu/Departments/ElemEd/overview.html

The Department of Elementary Education offers a four-year program leading to certification in the elementary school with the option of adding a middle-level endorsement. The studies for the bachelor’s degree include three areas: general education, professional education, and area of concentration.

Elementary education courses


EDEL 220. Orientation to Elementary/Middle School. (I) Orientation to the undergraduate elementary/middle school teacher preparation program including field experiences and general information relative to the education profession.

EDEL 300. Principles of Elementary Education. (3) I, II. An overview of the foundations of the elementary school: organization, management, history, philosophy, purpose, curriculum trends, and pupil characteristics. Includes 40 hours of supervised field experiences. Pr.: EDEL 220.

EDEL 379. Elementary/Middle-Level Physical Education Methods. (2) I. Materials, techniques, and programs in physical education suitable for the developmental levels in the elementary and middle school. Two contact hours required and two hours of lab per week. Pr.: Sophomore standing and EDEL 220.

EDEL 405. Middle-Level Education. (3) I. This course provides an overview of the characteristics of middle schools; the social, psychological, and physical characteristics of early adolescent development; middle-level curriculum; ways to organize for instruction; and the teacher’s role in the guidance of students at the middle level. Cross-listed with EDSEC 405. Pr.: Admission to teacher education.

EDEL 420. Block A Clinical Experience. (1) I, II. Application of media/technology, mathematics, and science methods at the elementary/middle school level. Pr.: Admission to teacher education and conc. enrollment in EDEL 470, 473, and EDETC 318.

EDEL 430. Block B Practicum. (1) I, II. A field experience designed to give students opportunities in applying teaching methods in language arts, reading, and social studies. Pr.: Admission to teacher education and conc. enrollment in EDEL 471, 472, and 474.

EDEL 469. Physical Education in Elementary Schools. (3) I, II. Methods of teaching and organization of materials in a progression for an elementary physical education program. Pr.: Admission to teacher education, KIN 206, and at least two courses from the elementary physical education specialization.

EDEL 470. Elementary/Middle-Level Science Methods. (3) I, II. An introduction to the principles and methods of teaching science in the elementary and middle school, including the nature of science, student learning, curriculum, instructional methods and activities, equity issues, and student assessment. Pr.: Admission to teacher education.

EDEL 471. Elementary/Middle-Level Language Arts Methods. (3) I, II. An introduction to the content, methods, and materials of the elementary and middle school language arts curriculum, which encompasses oral language, listening, reading, and writing. Pr.: Admission to teacher education.

EDEL 472. Elementary/Middle-Level Social Studies Methods. (3) I, II. Methods and resources for teaching social studies in elementary and middle schools with the goal of helping elementary and middle school students develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an independent world. Pr.: Admission to teacher education.

EDEL 473. Elementary/Middle-Level Mathematics Methods. (3) I, II. The teaching of mathematics in the elementary and middle school, including the nature of mathematical processes, how teaching and learning takes place, and the selection of appropriate instructional strategies. Pr.: Admission to teacher education.

EDEL 474. Elementary/Middle-Level Reading Methods. (3) I, II. An introduction to the objectives, content, methods, and resources of the total reading program in the elementary and middle school. Pr.: Admission to teacher education.


EDEL 585. Teaching Participation in the Elementary School. (Var.) I, II. Observation and teaching participation under the direction of selected elementary teachers. Pr.: EDEL 300, 470, 471, 472, 473, 474, and admission to student teaching. Conc. successful completion of EDEL 600 required.

EDEL 600. Reading with Practicum. (3) I, II. Supervised observation and teaching of reading in approved school classrooms. Pr.: EDEL 474 or teaching experience. May not apply to reading specialist endorsement.

EDEL 700. Introduction to Bilingual/ESL Education. (3) I, S. This course focuses on the history and foundations of bilingual education, as well as an in-depth examination of contemporary programming models and trends in bilingual education. The dynamics of bilingualism at the individual, system, and societal level will also be an emphasis of study. Pr.: Junior standing.

EDEL 714. Reading and the Bilingual Child. (3) I, II. The course will focus on appropriate instructional literacy and reading skill development among second language learners. A particular emphasis will be the development of literacy skill among students whose dominant language is other than English. Pr.: Junior standing/target language proficiency.


EDEL 720. Foreign Language Methods for Elementary Schools. (3) On sufficient demand. Methods of teaching and organization of materials for the foreign language program in the elementary school. Pr.: Educational Psychology II, 24 hours in the foreign language and advanced oral proficiency, and conc. enrollment in either Preprofessional Lab (DED 100, 1 cr) or FLES Practicum (EDEL 502, 1–3 cr).

EDEL 730. ESL/Dual Language Methods. (3) I, S. An exploration of contemporary approaches, methods, and strategies for the appropriate instruction of second language learners. Also provided as a foundational perspective on ESL/dual language approaches, including the communicative, cognitive, and grammatical. Pr.: Junior standing.

EDEL 731. ESL/Dual Language Linguistics. (3) I. Explores the theoretical underpinnings of language acquisition and linguistics that educators need to understand, in order to better plan appropriately adapted curriculum and instruction for second language learners. The course encompasses problematic aspects of English language learning, the ways in which languages may differ, and certain universal aspects of language. Pr.: Junior standing.

EDEL 739. Environmental Education. (1–3) On sufficient demand. The selection, adaptation, and development of environmental education K–12 curriculum materials; procedures for an integrated curricular implementation; the selection of appropriate instructional strategies. Pr.: A course in environmental studies.

EDEL 742. ESL/Dual Language Assessment. (3) I, S. An in-depth examination of key issues/challenges in the appropriate language assessment of culturally and linguistically diverse students. Among focal topics in theory, research, and practice discussed will be pre- and post-instructional assessment, authentic and alternative assessment, language testing, and placement for programming in ESL/dual language classrooms. Pr.: Junior standing.

EDEL 745. ESL/Dual Language Practicum. (3) I, II. The practicum is a portfolio-based experience providing the student with application experiences in ESL/dual language methods, assessment, and multicultural competence as well as the opportunity to demonstrate understanding of second language acquisition. Students will be required to spend 60 hours in a school setting where they can practice and implement ESL/BIE lessons/methodology. Pr.: EDEL 730, 731, 742, and EDCIP 733.

EDEL 775. Readings in Education. (1–3) I, II. S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: FSHS 110.

EDEL 779. Primary School Education. (3) On sufficient demand. A course for those interested in the kindergarten and primary school child. Emphasis will be placed on curriculum development, pertinent research and innovative practices in early education. Pr.: FSHS 110.

EDEL 780. Kindergarten Education. (3) On sufficient demand. A specialized study of the kindergarten in the American school: methods and materials for working with the kindergarten child, including communication and explanation skills and readiness for reading. Pr.: FSHS 110, EDEL 300, and junior standing.

EDEL 786. Topics in Education. (1–3) I, II, S. Examination of current topic in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDEL 795. Problems in Education. (Var) I, II, S. Independent study of a special problem in curriculum or instruction. Pr.: Junior standing or higher.

Foundations and Adult Education

Robert C. Newhouse,* Interim Chair
Professors Byrne,* Litz,* Parish,* Oaklief,* Rankin,* Spikes,* and Wright,* Associate Professors Griffith,* Knupfer,* McGrath,* Polson,* and Spears,* Assistant Professors

Education 173
Adult and Continuing education courses

EDACE 318. Adult and Continuing Education Colloquium. (Var.) On sufficient demand. Discussion, assigned readings, and lectures over selected trends, developments, and problems which are peculiar to the overall field of adult and continuing education. Students are encouraged to engage in self-study concerning their place in the profession of adult and continuing education. No more than 6 hours may apply to a degree.

Undergraduate and graduate credit in minor field
EDACE 502. Independent Study in Education. (1–3) I, II. Selected topics in professional education. Maximum of 3 hours applicable toward degree requirements. Pr.: Consent of department head.

Undergraduate and graduate credit
EDACE 704. Extension Organization and Programs. (1–3) I, II. An introduction to Cooperative Extension and other university adult education programs; with emphasis on programs and procedures. Cross-listed as EDSEC/EDACE 704. Pr.: Consent of instructor.

EDACE 706. Principles of Teaching Adults in Extension. (3) II. Methods and principles of adult teaching, with emphasis on Cooperative Extension Service; application to various adult education programs. Cross-listed as EDSEC/EDACE 706. Pr.: Senior standing, juniors by consent of instructor.

EDACE 713. Occupational Analysis. (2–3) I, II. An introduction to the theories, principles, and practices used in analyzing occupations and jobs. Emphasis on developing and organizing related instructional materials and content. Cross-listed with EDACE/EDSEC 713. Pr. or conc.: EDSEC 620.


EDACE 725. Adult Basic Education Techniques. (3) On sufficient demand. Emphasis on providing students with knowledge of the importance of adult education, utility, and development of adult basic education reference, resources, and other materials. Pr.: FSHS 110.

EDACE 733 and 738. Practica in Adult Education. (1–6) On sufficient demand. Related occupational or professional experiences in approved institutions, school, Cooperative Extension Service, or similar agency setting under faculty supervision. Pr.: Consent of instructor.

EDACE 733. Adult Education.

EDACE 738. Occupations in Business and Industry.

EDACE 739. Coordination of Cooperative Vocational Education. (2–3) I, II. Emphasis on the legal aspects and other minimum requirements essential to conducting cooperative vocational education programs at the secondary and postsecondary levels. Pr. or conc.: EDSEC 620.

EDACE 750. Women, Education, and Work. (2–3) I, II. Emphasizes the collective and individual educational needs of women in and out of the work force and the part that occupational/educational preparation contributes to their participation in the work force. Pr.: SOCIO 211 or equiv.

EDCEP 310. Independent Study in Education. (1–3) I, II. Application of multicultural understandings to teaching in a multicultural society. Strategies for working effectively with students to achieve educational equity. Pr.: EDSEP 315, EDSP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 477, 500, 520, and EDCEP 525, and EDCEP 455.

EDCEP 502. Independent Study in Education. (1–3) I, II. Selected topics in professional education. Maximum of 3 hours applicable toward degree requirements. Pr.: Consent of department head.

EDCEP 611. Educational Sociology. (3) I, II. A study to gain an understanding of the ways in which the school can effectively use the social process in developing and educating the individual and to show the interrelationships of such institutions as the family, the church, the playgrounds, and the various youth-serving agencies with the school. Pr.: Senior standing.

EDCEP 704. Extra-Class Activities. (3) On sufficient demand. Organization, sponsorship, and objectives of clubs, publications, student activities, dramatic organizations, assemblies, home room, and student council in junior and senior high schools. Pr.: Senior standing or consent of instructor.

EDCIP 706. Aerospace Education Workshop. (3) To provide elementary and secondary teachers with knowledge, skills, and attitudes about aerospace activities and the total impact of air and space vehicles upon society. Pr.: EDSEC 586 or teaching experience.

EDCIP 721. Economic Education Workshop. (3) S. Basic economic concepts and how to integrate them into elementary and secondary curriculums and an examination of recent economic education materials. Pr.: Senior standing or higher.


EDCIP 733. Curriculum Materials for Ethnic Diversity. (3) On sufficient demand. An examination and analysis of recent materials and practices of schools serving multiethic student bodies, particularly minorities from disadvantaged backgrounds. Materials include any items used by the school in implementing the curriculum. Pr.: Senior standing or higher.

EDCIP 735. Curriculum Materials for Nonsexist Teaching. (3) II. S. Analysis of recent materials from perspectives of concern with their potential for sex-role stereotyping. Examination of teaching resource materials for curriculum intended to facilitate nonsexist teaching. Pr.: Junior standing or higher.

EDCIP 737. Drug Abuse Education. (3) On sufficient demand. Emphasis on the development of effective drug abuse education programs with attention given to the role delineation for schools and teachers. Materials and procedures for developing values and attitudes in an education setting. Pr.: Senior standing.

EDCIP 775. Readings in Education. (1–3) I, II. S. Readings in research and application in specialized areas in education. Pr.: Freshman standing. May be taken more than once. Pr.: FSHS 110.

EDCIP 786. Topics in Education. (1–3) I, II. S. Examina- tion of current topic in area of specialization of faculty. Pr.: Senior standing.

EDCIP 795. Problems in Education. (Var.) I, II. S. Independent study of special problems in the areas of adult or occupational education.

Curriculum, instruction, and policy courses

EDCIP 310. Foundations of Education. (1–3) I, II. S. For prospective teachers. The philosophical, historical, sociological, and political influences on education as they relate to and explain contemporary issues in education in the United States. Pr.: Junior standing and admission to teacher education.

EDCIP 455. Teaching in a Multicultural Society. (1–1) I, II. Application of multicultural understandings to teaching in a multicultural society. Strategies for working effectively with students to achieve educational equity.

EDCIP 502. Independent Study in Education. (1–3) I, II. S. A study to gain an understanding of the ways in which the school can effectively use the social process in developing and educating the individual and to show the interrelationships of such institutions as the family, the church, the playgrounds, and the various youth-serving agencies with the school. Pr.: Senior standing.

EDCIP 704. Extra-Class Activities. (3) On sufficient demand. Organization, sponsorship, and objectives of clubs, publications, student activities, dramatic organizations, assemblies, home room, and student council in junior and senior high schools. Pr.: Senior standing or consent of instructor.

EDCIP 706. Aerospace Education Workshop. (3) To provide elementary and secondary teachers with knowledge, skills, and attitudes about aerospace activities and the total impact of air and space vehicles upon society. Pr.: EDSEC 586 or teaching experience.

EDCIP 721. Economic Education Workshop. (3) S. Basic economic concepts and how to integrate them into elementary and secondary curriculums and an examination of recent economic education materials. Pr.: Senior standing or higher.


EDCIP 733. Curriculum Materials for Ethnic Diversity. (3) On sufficient demand. An examination and analysis of recent materials and practices of schools serving multiethnic student bodies, particularly minorities from disadvantaged backgrounds. Materials include any items used by the school in implementing the curriculum. Pr.: Senior standing or higher.

EDCIP 735. Curriculum Materials for Nonsexist Teaching. (3) II. S. Analysis of recent materials from perspectives of concern with their potential for sex-role stereotyping. Examination of teaching resource materials for curriculum intended to facilitate nonsexist teaching. Pr.: Junior standing or higher.

EDCIP 737. Drug Abuse Education. (3) On sufficient demand. Emphasis on the development of effective drug abuse education programs with attention given to the role delineation for schools and teachers. Materials and procedures for developing values and attitudes in an education setting. Pr.: Senior standing.

EDCIP 775. Readings in Education. (1–3) I, II. S. Readings in research and application in specialized areas in education. Pr.: Freshman standing. May be taken more than once. Pr.: FSHS 110.

EDCIP 786. Topics in Education. (1–3) I, II. S. Examination of current topic in area of specialization of faculty. Pr.: Senior standing.

EDCIP 795. Problems in Education. (Var.) I, II. S. Independent study of special problems in a curriculums or instruction. Pr.: Junior standing or higher.

Secondary Education

Lawrence C. Scharmann,* Chair

Professors Heerman,* Scharmann,* Talab,* and Wisssman;* Associate Professors Dalida, Harbstreit,* Hortin,* Royse,* and Yahnke;* Assistant Professors Byars,* Goodson,* Griffin,* Instructors Chance–Reay, Jankovich, Kane, P. Staver, and Stone; Courtesy appoint- ments: McFarlin and B. Newhouse; Emeritus: Alexander, Carpenter, Hause, Laurie, Prawl, Terrass, Waithier, Welton, and Weimer.

www.educ.ksu.edu/Departments/SecEd/overview.html

The Department of Secondary Education offers a four-year degree program leading to certification as a secondary school teacher in one or more of the following fields: art, business, English, journalism, mathematics, mod-
ern languages, speech, natural sciences, and social science. In addition, the department provides teaching methods courses, field experiences, and secondary education student teaching experiences to serve students in music education. The department also provides similar courses for students in agricultural education and family and consumer sciences education.

Secondary education courses

EDSEC 050. Developmental Reading Laboratory. (3) I, II. Improves the college student’s reading skills, rates of comprehension, vocabulary, and study skills. Pr.: Consent of instructor.

EDSEC 102. Teaching as a Career. (1) I, II. Introduction to teaching as a career and to teacher preparation. Includes visits to and teacher aiding in public school classrooms with emphasis on the teacher’s role. For lower-division students not yet admitted to teacher education.

EDSEC 215. Information Processing. (3) I. Application of technical knowledge and decision-making skills in development of usable printed business documents. Emphasis is placed upon teaching theories and strategies as they apply to keyboarding.

EDSEC 218. Secondary Teacher Education Colloquium. (1–2) On sufficient demand. Discussion, assigned readings, and lectures on selected trends, developments, and problems in the field of teaching.

EDSEC 250. Scientific Principles of Coaching. (3) I. Physiological, psychological, and kinesiological principles of coaching. Topics include training and conditioning, motivation, psychological factors affecting sport skill in performance, and mechanical principles underlying sport performance. Not for kinesiology majors.


EDSEC 299. Coaching and Officiating Swimming. (2) In even years. Study of rules, theory, and practices; methods of coaching. Pr.: EDSEC 250.

EDSEC 300. Introduction to Agricultural Education. (1) I. Introduction to the program responsibilities, methodology, organization, current trends and issues, and future direction of programs in agricultural education. Students will be actively involved in the discussion and application of course material both in the classroom and in early field experiences conducted as a part of this course.


EDSEC 303. Coaching and Umpiring Baseball. (2) In even years. Study of rules, theory, and practices; methods of coaching. Pr.: EDSEC 250.

EDSEC 304. Coaching and Officiating Track and Field. (2) In odd years. Study of rules, theory, and practices; methods of coaching. Pr.: EDSEC 250.


EDSEC 309. Coaching and Officiating Tennis and Golf. (2) In odd years. Study of rules, theory, and practices; methods of coaching. Pr.: EDSEC 250.

EDSEC 315. Administrative Data Applications. (3) I. Development of competencies in the usage of integrated software packages as they apply to the automated business environment. Pr.: EDSEC 215.

EDSEC 320. Care and Prevention of Athletic Injuries. (3) I, II. Principles and practices of treatment, taping, and care of minor athletic injuries. Pr.: EDSEC 250 or BIOL 240 or conc. enrollment in BIOL 240.

EDSEC 376. Core Teaching Skills: Secondary/Middle. (3) I, II. General teaching opportunity. Students will be expected to apply that information in a laboratory setting. Two hours of lab and two of lab a week. Pr.: Admission to teacher education, DED 102, and FHS 110. Must be taken simultaneously with EDCEP 315 and EDSP 323.

EDSEC 400. Leadership and Personal Development in Agricultural Education. (1) I, II. An examination of the role of the FFA advisor in the leadership and personal development of agricultural education students.

EDSEC 405. Middle-Level Education. (3) I. This course provides an overview of the characteristics of middle schools; the social, psychological, and physical characteristics of early adolescent development; middle-level curriculum; ways to organize for instruction; and the teacher’s role in the guidance of students at the middle level. Cross-listed with EDEL 405. Pr.: Admission to teacher education.

EDSEC 415. Administrative Support Services and Technology. (3) I. Intended to develop subject matter competencies needed for careers in the business office: Computer usage (desktop publishing), uses of various office equipment and process of computer networking, telecommunication and emerging technology.

EDSEC 416. Office Management. (3) I. An examination of the management and operation of the office from a practical viewpoint including a study of administrative systems, the ergonomic environment of the office, and the management of human resources in the office. Pr.: PSYCH 110.

EDSEC 477. Middle Level/Secondary Reading. (2) I, II. Introduction and development of effective study/skilled reading strategies and abilities for learning from content area text material. Pr.: EDCEP 315, EDSP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 477, 500, 520, and EDSCP 525 and EDCIP 455.

EDSEC 500. Content Area Methods in the Secondary School. (2–3) I, II. Principles of teaching applied to content instruction in the secondary school; motivation; organization of subject matter; lesson planning; evaluation and reporting; challenging the levels of ability; organization and management of the classroom; methodology and materials of the secondary schools. Pr.: EDSEC 315, EDSP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 477, 500, 520, and EDSCP 525 and EDCIP 455.

EDSEC 502. Independent Study in Education. (1–3) I, II. Selected topics in professional education. Maximum of 3 hours applicable toward degree requirements. Pr.: Consent of department head.

EDSEC 503. Teaching Adult Classes in Agriculture. (2–3) On sufficient demand. A course for prospective teachers to help bridge the gap between classroom theory and student teaching. Emphasis will be on observational and participation in school and community organizations and programs. Pr.: EDSEC 300 and FHS 110 and consent of instructor.

EDSEC 520. Block II Lab: Content and Reading Methods. (1) I, II. Field-based experience to help the pre-professional teacher practice the incorporation of specific content area with reading comprehension strategies in the secondary and middle schools. Pr.: EDCEP 315, EDSP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 477, 500, 520, and EDSCP 525 and EDCIP 455.


EDSEC 555. Therapeutic Modalities in Athletic Training. (3) I. The theory and application of the various energy systems used in the treatment of athletic injuries.

Practical experiences will be emphasized. Pr.: EDSEC 320, PHYS 115.


EDSEC 557. Seminar in Issues in Administration of Athletic Training Programs. (3) I. Application of various problems and issues affecting the athletic trainers in their roles as administrators in the areas of role delineation, budgeting, legal aspects of sport, facility design, and drug testing/drug education.

EDSEC 560. Art for Exceptional Children. (3) I, II. Use of art courses and activities to meet the needs of the mentally retarded, physically impaired, emotionally disturbed, or gifted child. Three hours lec. Pr.: PSYCH 110. Same as ART 560.

EDSEC 576. Safety Education. (2) I, II. Personal safety in home, school, community, and work place will be addressed. Special attention is given to local, state, and national resources related to safety practice and safety education.

EDSEC 582. Teaching Participation in Music. (8–12) I, II. Observation and teaching participation under the direction of selected teachers in middle and senior high schools. Students will participate in seminar sessions to discuss issues and experiences encountered during this school-based experience. Pr.: EDSEC 476, and 477. Selected music teachers.

EDSEC 586. Teaching Participation in the Secondary Schools and Professional Development Seminar. (Var.) I, II. Guided observation, teaching participation, and study of teaching practices under direction of selected teachers in middle/junior and senior high schools. Students will participate in seminar sessions to discuss issues and experiences encountered during this school-based experience. Pr.: EDSEC 476, 477, and 560. May be repeated for a total of 4 credit hours with additional prerequisite of KIN 330 and 335 required for last four semesters.

EDSEC 587. Supervised Practicum for Athletic Coaches. (2) I, II. Observation and coaching participation under the direction of selected coaches in public school, club, city recreation, or other nonpublic school sport settings. Pr.: EDSEC 250, 320, and one coaching and officiating course.

EDSEC 611. Coordination Techniques. (3) I. Acquaints students with techniques in selecting, implementing, and coordinating occupational programs between the school and the business community. Pr.: EDSEC 620.

EDSEC 612. Job Analysis. (3) I. Acquaints students with techniques of analyzing jobs and tasks related to occupations. Pr.: EDSEC 620.

EDSEC 614. Laboratory Techniques in Teaching Science. (3) I, II. Rationale for laboratory in secondary school science. The design and implementation of laboratory activities and demonstrations in a high school science program. Pr.: EDSEC 500 (Science).

EDSEC 615. Laboratory and Safety Techniques in Teaching Agriculture. (3) I. The course is designed to provide students with the knowledge and skills necessary to design, organize, and conduct programs in agricultural laboratory instruction in secondary agriculture education programs. Students will gain experiences in the development of laboratory lesson plans, safety and technical demonstrations, student management in a laboratory setting, laboratory design, and laboratory curriculum development. Pr.: Conc. enrollment in EDSEC 520 Block II Lab/Ag.

EDSEC 620. Principles and Philosophy of Vocational Education. (3) I, II. A study of modern education in Kansas and other states and countries; principles and philosophy underlying such education, relation of vocational education to school objectives and community, state, and national needs. Pr.: EDCEP 315.

EDSEC 621. Program Planning in Vocational Education. (2–3) I, II. The program development and planning process; development of guides for teachers and evaluating reimbursable secondary programs. Pr.: EDSEC 620.
EDSEC 700. Introduction to Bilingual/ESL Education. (3) I. S. This course focuses on the history and foundations of bilingual education, as well as an in-depth examination of contemporary programming models and trends in bilingual education. Pr.: Consent of instructor.

EDSEC 706. Principles of Teaching Adults in Extension. (3) I, S. Methods and principles of adult teaching, with emphasis on Cooperative Extension Service; application to various adult education programs. Cross-listed with EDACE/EDSEC 706. Pr.: Senior standing; consent of instructor.

EDSEC 710. Occupational Family and Consumer Sciences Education. (Var.) I, II. Principles and procedures in planning and organizing home economics-related occupations programs. The course includes an approved occupational experience in business/industry and consideration of methods and teaching materials peculiar to these programs. Pr.: FSHS 110 or coreq. enrollment.


EDSEC 714. Reading and the Bilingual Child. (3) I, II. The course will focus on appropriate instructional literacy and reading skill development among second language learners. The course is offered within the Department of Education. Pr.: Junior standing/target language proficiency.

EDSEC 715. Reading in the Content Areas. (3) I, II. An introduction to various techniques used in analyzing occupations and jobs. Emphasis on developing and organizing related instructional materials and content. Cross-listed with EDACE/EDSEC 715. Pr.: Coreq.: EDSEC 620.

EDSEC 730. ESL/Dual Language Methods. (3) I, S. An exploration of contemporary approaches, methods, and strategies for the appropriate instruction of second language learners. Also provided is a foundational perspective on ESL/dual language approaches, including the communicative, cognitive, and grammatical. Pr.: Junior standing.

EDSEC 731. ESL/Dual Language Linguistics. (3) I. Explores the theoretical underpinnings of language acquisition and linguistics that educators need to understand, in order to better plan appropriately adapted curriculum for second language learners. The course emphasizes understanding aspects of English language learning, the ways in which languages may differ, and certain universal aspects of language. Pr.: Junior standing.

EDSEC 732-737. Practica in Education. (1–6) On sufficient demand. Related occupational or professional experiences in approved industry, school, Cooperative Extension Service, or similar agency setting under faculty supervision. Pr.: Consent of instructor.

EDSEC 732. Career Education.

EDSEC 734. Agriculture-Related Occupations.
Special Education

Mary Kay Zabel,* Chair
Professors Dettmer,* Dyck,* Thurston,* White,* M. K. Zabel,* and R. Zabel;* Associate Professor Navarette; Assistant Professors Kaff and Knackendoffel.

www.educ.ksu.edu/Departments/SpecialEd/Overview.html

Studies in special education accommodate students who wish to specialize in teaching children and youth with certain exceptionalities. Students must complete an undergraduate teacher education program leading to certification for either elementary or secondary education. Prerequisites for teaching exceptional children and youth vary at the preschool, elementary, and secondary levels.

Special education courses


EDSP 324. Exceptional Child in the Regular Classroom. (3) I, II. S. Designed for general education teachers in meeting the needs of exceptional children. Support strategies for teachers and exceptional children in the mainstream of education will be explored. Pr.: Admission to teacher education, and EDCEP 315 (may be taken simultaneously).

EDSP 400. The Culture of Childhood. (3) I. This course, designed for the General Education Core, is a study of childhood and children from a variety of perspectives. Exploring the ways children are viewed from historical, cultural, scientic, artistic, religious, philosophical, educational, and sociological frameworks will be a major focus. Students from various disciplines within the university will examine how their particular specialty influences and is influenced by the concept of childhood. Pr.: Sophomore standing.

EDSP 500. Introduction to Human Exceptionality. (3) II. Survey of history and legal aspects of service, etiologies, characteristics, and special needs of exceptional individuals. Pr.: FSHS 110 or PSYCH 100.

EDSP 502. Independent Study in Education. (1–3) I, II. S. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department chair.

EDSP 710. Education of Exceptional Individuals. (3) I, II. S. A general study of special education, with emphasis on legislation, Individual Education Plans, cross-cultural assessment and intervention, and strategies for exceptional students at the preschool, elementary, and secondary levels. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 721. Characteristics of Learning Disabilities. (3) I, II. An explanation of important concepts and practices in the area of learning disabilities. Emphasis will be placed upon diagnosis of underlying causes and their characteristics. Pr.: EDSP 323 or 324, and EDCEP 315.

EDSP 724. Characteristics of Mental Retardation. (3) I. Etiological, psychological, sociological, and educational aspects of mental retardation. Pr.: EDSP 323 or 324, and EDCEP 315.

EDSP 728. Characteristics of Emotional and Behavioral Disorders. (3) I, II. Study of conceptual models for understanding emotional and behavioral disorders of childhood and adolescents, and their implications for educators. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 750. Introduction to Education of the Gifted. (3) On sufficient demand. An overview of historical perspectives related to gifted child education, various facets of intellectual and creative functioning, national and state guidelines for planning and implementing gifted programs, modifying curriculum and classroom strategies to nurture gifted potential, current issues in gifted education. Pr.: EDSP 323 or 324.

EDSP 775. Readings in Special Education. (1–3) I, II. S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: EDCEP 215.

EDSP 777. Behavior Management for Exceptional Individuals. (3) II. Theoretical and practical applications of behavior analysis with emphasis on preventing and remediating behavior problems of students with disabilities. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 778. Technology for Special Education. (2) II. Designed to help special educators develop an awareness of technology that can assist in the lives and learning of students receiving special education. Administrative applications of technology related to special education will also be covered. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 786. Topics in Education. (1–3) I, II. S. Examination of current topic in specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: EDCEP 315 and EDSP 323 or EDSP 324.

EDSP 787. Field Experiences in Special Education. (1–3) On sufficient demand. Observation and supervised activities in schools, camps, clinics, or institutions related to student’s area of special interest or preparation. Pr.: EDSP 323 or EDSP 324 and EDSP 710.

EDSP 795. Problems in Special Education. Credit arranged. I, II. S. Selected students are permitted to secure specialized training appropriate to the needs of the individual. The student’s project may involve intensive library investigation in a special field or the collection and analysis of data pertinent to a given problem. All work is done independently under the direction of a faculty member. As many conferences are held as necessary to assure successful completion of a project. Pr.: Background of courses necessary for the problem undertaken and consent of instructor.
Engineering

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Richard Gallagher, Associate Dean
Tom C. Roberts, Assistant Dean
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A course of study leading to a degree in the College of Engineering provides a well-rounded university education and equips students with a broad theoretical and practical background to meet the new and demanding problems of our technological society.

The College of Engineering offers the bachelor of science degree in the following fields: architectural engineering, biological and agricultural engineering, chemical engineering, civil engineering, computer engineering, computer science, construction science and management, electrical engineering, industrial engineering, manufacturing systems engineering, information systems, mechanical engineering, and nuclear reactor technology. The College of Engineering at K-State is the most comprehensive college of engineering in Kansas. All degree programs are nationally accredited.

Objectives and Design Basis

Our design of engineering education for the future will be based on three fundamental requirements. Engineering education at Kansas State University will be practiced-oriented while firmly rooted in fundamentals, learning-based, and integrative and holistic. The curricular objectives for the College of Engineering are consistent with the university’s educational objectives. They also provide the framework for the curricular objectives of each program in the college. Graduates will be:

- Proficient in the use of the basic sciences and engineering sciences, be able to formulate problems, analyze, synthesize, and develop appropriate engineering solutions.
- Recognize and appreciate the importance of intensive laboratory and experimental environments that focus on problem solving and engineering design.

- Be able to work in a team environment with interdisciplinary (lateral) and disciplinary (vertical) depth.
- Be able to communicate effectively among peers as well as with diverse groups, including nonengineers.
- Be able to integrate engineering practice into the social, economic, and political arenas.
- Possess sensitivity in interpersonal relationships, multicultural understandings, and ability to interact on a professional/ethical basis at the national and international levels.
- Be motivated to continue increasing their knowledge base through career-long learning.

General Requirements

High school graduates

Admission to the College of Engineering is granted to any individual who has graduated from an accredited Kansas high school. Out-of-state students are expected to have a strong academic rank in class and good ACT scores.

Transfer students

Applicants with previous college credit, earned after graduation from high school, must apply as transfer students. All applicants to the college with 12 combined or more transfer hours, must have a 2.75 cumulative GPA or higher. Transfer students with a GPA between 2.5 and 2.75 will be admitted on a conditional basis in general engineering. Given extenuating circumstances, exceptions to this policy may be granted with the recommendation of the pre-engineering advisor at the transfer institution. The advisor should send a letter of recommendation with the student application and fee to the Office of Admissions with a copy of the letter to the College of Engineering.

International students

Applications for admission of international students are judged by several factors, including, but not limited to: secondary school record, test scores, academic record at the college and university level, trend in grades, and grades in mathematics, physical sciences, and related areas.

Because of a limitation on the number of international students that can be accommodated, the College of Engineering reserves the right to apply more rigorous admissions criteria to applicants who are not U.S. citizens.

Scholarships

All students applying for College of Engineering scholarships must complete the K-State scholarship application. Obtain an application from your high school counselor, community college financial aid office, or the Office of Student Financial Assistance. In addition to scholarships awarded by the Office of Student Financial Assistance, the College of Engineering awards numerous scholarships directly to incoming and continuing students. Initial inquiries by prospective students for engineering scholarships should be directed to the Scholarship Director, College of Engineering.

Selection of a major

Students often select a curriculum or major when entering the college. They are provided academic advisors by their major departments. Entering students who are undecided as to a major in engineering may enroll in general engineering for one year. These students are assigned an advisor from the dean’s office. Students are encouraged to choose a major by the beginning of their sophomore year.

Extracurricular activities

Leadership, communication, and interpersonal skills are essential for today’s engineering graduate. The College of Engineering offers many opportunities to become involved on campus through departmental student chapters, open house, student government, competition teams, and much more. Each contributes to greater personal and professional development.

Engineering equipment fee

The engineering equipment fee is in addition to the normal university fees. Beginning in fall 2001, students enrolling in engineering courses will be assessed $14 per student credit hour plus a $1 per student credit hour university technology fee.

For further information see the Fees section of this catalog. Questions should be referred to the College of Engineering Student Services Office.

Grade requirements

In addition to the university standards and policies for grades, the College of Engineering has the following standards:
Prerequisite courses
Before attempting a course taught in the College of Engineering, a grade of C or better must be earned in the prerequisite courses.

Transfer students
Transfer students admitted on a conditional basis are required to obtain a 2.5 GPA the first semester after their transfer in order to continue their studies in the College of Engineering.

Transfer students with a GPA below 2.5 after their first semester may be allowed to continue in the College of Engineering, provided they are making adequate progress in math and science-related courses.

Summer school
Many of the courses appearing in the engineering curricula, not only those which are offered in the College of Engineering but also those in the College of Arts and Sciences, may be taken during the summer term.

High school seniors who have had insufficient mathematics to enroll in MATH 220 Analytical Geometry and Calculus I are urged to investigate the possibility of summer school to remove this mathematics deficiency.

MATH 100 College Algebra and MATH 150 Plane Trigonometry are offered during the summer sessions and provide an excellent transition from high school mathematics into the engineering curriculum.

University General Education

To satisfy university degree requirements, an engineering student must take a minimum of 18 credit hours of approved university general education courses. A minimum of three credit hours must be taken in humanities and three credit hours in the social sciences, and at least six credit hours of the humanities and social science credit hours must be at the 300 level or above.

This requirement may be met with required courses in the curriculum and/or with electives, e.g., humanities and social science electives, which have also been designated as university general education courses. In most instances, courses will be used as ‘‘overlays,’’ e.g., to satisfy concurrently a requirement based on accreditation criteria and a university general education requirement.

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Basic pre-engineering subjects

Use in various curricular; credit hours at K-State

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<th>CE</th>
<th>CMPEN</th>
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*Elective, may depend on departmental options.
**Computer programming: F = Fortran, J = Java, C = “C” Language.
***Expository Writing II is optional for all programs (except CS and IS) if a grade of A or B is achieved in Expository Writing I.
+General Calculus and Linear Algebra (MATH 205) and Finite Applications of Math (MATH 312).
++Construction science and information systems students may take algebra-based courses.
+++Two courses (6 hours) must be junior/senior level (300+, not available at two-year schools).
@Confer with Engineering Student Services Office on statics requirements. These programs use a 4-hour combined Statics and Dynamics course. (Dynamics is not available at two-year schools).
@@Option in mechanical engineering.

Requirements

The minimum university general education requirements of the college include:

- Humanities and social science: 9 credit hours
- Natural science: 3 credit hours
- Unrestricted disciplines: 6 credit hours

No more than 7 credit hours from a single department.
No more than 3 credit hours from the College of Engineering. This course may not be in the student’s major unless approved by the Faculty Senate.
All courses must be taken for a letter grade.

For a list of approved university general education courses, refer to the latest Course Schedule or to college advising information.

The classification of various humanities and social science electives is determined by the respective accrediting organization.

Students who have pursued and acquired acceptable academic credit prior to fall 1997 are not obligated. Students who pursue and complete their first acceptable credit in fall 1997 or later must meet all aspects of the university general education program.
In course descriptions, general education courses are marked with a ●. For more information about university general education requirements, see the Degrees section of this catalog. For a current list of approved university general education courses: www.ksu.edu/registrar/enroll/gedned.html

### Degree Programs

Engineering is a profession in which knowledge of mathematics and natural science is applied to develop ways to utilize the materials and forces of nature for the benefit of mankind. The curricula for the College of Engineering is designed to meet the Accreditation Board of Engineering and Technology (ABET) degree program criteria. The overall curriculum provides an integrated educational experience and includes coursework in the following areas:

- Physical sciences and mathematics
- Communications
- Humanities and social sciences
- Engineering sciences
- Discipline-specific courses and technical electives.

All K-State ABET programs exceed the minimum, so when coupled with the English and speech requirements of the university, graduates of these programs have taken at least 60 credit hours outside the College of Engineering.

A college requirement for engineering sciences ensures that students will take courses in two to four engineering departments outside their major department. Consequently, when one considers the breadth of our ABET accredited programs, they should not consider solely the proposed general education program of the college, but the other curricular requirements as well. From this perspective, significant program breadth will continue to be ensured.

The construction science and management major is accredited by the American Council for Construction Education. This program requires 18 credit hours of humanities and social science courses: ECON 110, DEN 210, plus 12 credit hours of electives. The computer science major is accredited by the Computing Sciences Accreditation Board.

Many of the fundamental courses required for a degree in engineering may be obtained through pre-engineering programs at other four-year institutions or at community colleges. In general, two years of course work will be transferable. However, there are differences among the curricula: students electing this route should work closely with the advisors and K-State to ensure a proper selection of courses. Questions should be referred to the College of Engineering Student Services Office.

The chart on the previous page indicates the number of transferable credit hours for various courses, and is a guide to courses that current K-State students will be taking.

The grade or Cr is not acceptable for transfer into College of Engineering programs.

Engineering subjects that normally are offered during the summer include:

**Civil Engineering**
- CE 530 Statics and Dynamics 4
- CIS 209 C Programming for Engineers 3
- CIS 300 Data and Program Structures 3
- CIS 501 Software Architecture and Design 3
- ECE 519 Electric Circuits and Controls 4
- ME 512 Dynamics 3
- ME 513 Thermodynamics I 3
- ME 571 Fluid Mechanics 3

### Humanities and social science electives

To add breadth to education and to help prepare for a more effective role in society, each engineering student may be required by their engineering curriculum to take additional courses in social sciences and humanities beyond the university general education requirements. These courses must be selected from the most recent list of electives approved by the engineering faculty. The following list of electives has been approved by the faculty. Students should obtain the most recent list from the Office of Student Services.

American ethnic studies: AMETH 160
- Anthropology: Any course in cultural anthropology, including Archaeology
- Architecture: Any course in history or appreciation of architecture
- Art: Any course
- Economics: Any course above 110, which is required
- Engineering: DSN 299 Honors Seminar in Engineering (2); DSN 399 Honors colloquium in Engineering (1); DSN 450 Impact of Engineering and Technology on Society (3)
- DEN 210 History of Building and Construction (3)
- English: Any course in literature
- Geography: Any course except 220, 221, 508, 555, 700, 702, 705, 708, 709, and 711
- History: Any course
- Mathematics: Any course
- Mass communications: 235, 500, 530, 560, 710, 715, and 720
- Modern languages: Any course (except English or the student’s native language)
- Music: Any course in theory, history, or appreciation of music (Music 160 must be the 2-credit-hour-class)
- Philosophy: Any course above 110, 220, and 510
- Political science: Any course
- Psychology: Any course
- Sociology: Any course except 520, 724, 725, and social work courses
- Women’s studies: WOMST 105

### Credit by examination

K-State offers students a variety of quiz-out programs through which a student may earn academic credit in specific courses. Engineering students may earned quiz-out credits in chemistry, computer science, English, mathematics, modern languages, and speech.

### Advanced Placement

Many students earn credits by completing Advanced Placement tests. Students who have completed these tests should have the Educational Testing Service (ETS) forward an official report of their scores to the Office of Admissions at Kansas State University in order to receive credit.

For more information contact:
Office of Admissions
Kansas State University
119 Anderson Hall
Manhattan, KS 66506–0102
785-532-6250 or 1-800-432-8270 (in Kansas)
E-mail: kstatese@ksu.edu

### Engineering sciences

Engineering sciences apply science and mathematics to the basic engineering areas. Students pursuing a B.S. degree in engineering must satisfy the following requirements:

A minimum of 32 semester hours of engineering science courses.

At least 9 semester hours of engineering science courses outside the student’s major department.

At least four of the six subject areas in the following list must be represented in the 32 semester hours.

#### Engineering materials
- CHE 350 Engineering Materials 2
- CHE 351 Engineering Materials 2
- EECE 795 Solid State Engineering 3

#### Analytical mechanics
- Either
- CE 333 Statics 3 or ME 512 Dynamics 3
- CE 530 Statics and Dynamics 4

#### Circuits, fields, and electronics
- CHE 510 Circuit Theory I 3
- ECE 519 Electric Circuits and Controls 4
- ECE 557 Electromagnetic Theory I 4

#### Thermodynamics
- CHE 520 Chemical Engineering Thermodynamics I 2
- ME 513 Thermodynamics I 3

#### Flow and rate processes
- ME 571 Fluid Mechanics 3
- CHE 530 Transport Phenomena I 3

### Computing and information sciences

There are other courses in these subject areas that may properly be considered as belonging to engineering sciences. In addition, there are areas of engineering science that are not listed.

### Program Options

#### Honors program

The honors program in the College of Engineering offers all interested students an intellectual challenge consistent with ability and interests. Entering engineering students with high school averages or entrance examination scores within the top five percent are encouraged to join the program. Transfer students with superior academic records are also
eligible and will be invited to join the honors program. Sophomores and juniors enrolled in engineering who are qualified for the honors program may, with the endorsement of a member of the engineering faculty and the approval of the honors program director, join the program. Because all credits obtained in the honors program are applicable to degree requirements, participation in the honors program will not alter the time required for graduation for most students and should prove to be a stimulating experience. In addition to enrolling in honors sections in many courses, honors students may enroll in a variety of seminars, colloquia, and independent study programs designed to enrich and challenge each participant. The engineering honors program is closely integrated with the honors programs of the other colleges at K-State and provides participation in special enrichment activities. Students in the honors program may elect to withdraw from the program at any time.

The college has approved the development of individual programs for students participating in the honors program. Such programs will be developed between the student and a faculty advisor. Engineering advisors are encouraged to seek out students qualifying for the honors program, learn of their academic potential and their special interests, and help them develop programs of study that will meet their academic and professional interests. The academic programs developed must be approved by the student’s advisor and department head.

Entering freshmen with a composite ACT score of at least 29 or in the upper five percent of their high school graduating class will be invited to join the honors program. Transfer students with a cumulative GPA of 3.50 or greater in at least 12 semester hours and students with a K-State cumulative GPA of 3.50 or greater in at least 12 semester hours will also be invited to join. For a student to remain in the honors program, a minimum 3.50 composite GPA must be maintained. The student may be on probation from the honors program for one semester if the GPA falls below 3.50. A student may be reinstated to the program if the composite GPA is raised to 3.50 or above that semester. Students previously in the honors program but dropped because of a low GPA may be reinstated on petition from an engineering faculty member and with the approval of the director of the engineering honors program.

Diplomas and transcripts of students completing the engineering honors program will be inscribed “Honors Program.” To complete the honors program, the student must qualify for an engineering degree with a composite GPA of at least 3.50 and must complete at least 4 semester hours of engineering honors courses including a minimum of 2 honors research hours.

Cooperative education
The College of Engineering, through its cooperative education program, offers students in engineering an opportunity to obtain experience in industry as an integral part of their formal education. After completing the freshman year, engineering students alternate sessions of work and study (alternating schedule), work part-time and go to school part-time (parallel schedule), or work more than one summer (summer schedule).

While the program may extend the time required to earn a degree by one year, students may obtain as much as 20 months of experience and earn a significant portion of their college expenses. Applications for the program are accepted through Career and Employment Services any time after the student is enrolled in the College of Engineering. Final selection is made through formal employment interviews with participating companies.

Minors program
A minors program has been created to enable students to take 15 credit hours or more in an area of special interest outside their major field. Minors may be earned in a variety of areas including chemistry, leadership, business, computer science, and engineering management. Contact the College of Engineering Student Services Office for further information.

Upon completion of the requirements established by the faculty responsible for the minor field, an appropriate entry will be made on the student’s transcript.

Minor in ergonomics/safety
A minor in ergonomics and safety emphasizes the consideration of the well being of the human being in industrial operations.

Required courses:
- IMSE 250 Introduction to Manufacturing Processes and Systems 2
- IMSE 251 Manufacturing Processes Lab 1
- IMSE 602 Topics in Industrial Engineering Advanced Safety Principles 3
- IMSE 623 Industrial Ergonomics 3
- IMSE 625 Work Environments 3
- IMSE 610 Occupational Safety Engineering 3

Minor in manufacturing systems
A minor in manufacturing systems provides knowledge about efficient manufacturing practices and current manufacturing techniques, methods and technologies. Students take four core courses and select at least one course from the manufacturing systems elective course list.

Required courses:
Core courses:
- IMSE 250 Introduction to Manufacturing Processes and Systems 2
- IMSE 251 Manufacturing Processes Lab 1
- IMSE 563 Manufacturing Processes Engineering 4
- IMSE 564 Product and Process Engineering 3
- IMSE 662 Computer Aided Manufacturing 3

Elective courses:
- IMSE 541 Statistical Quality Control 3
- IMSE 623 Industrial Ergonomics 3
- IMSE 633 Production Planning and Inventory Control 3
- IMSE 641 Statistical Process Control in Manufacturing 3
- IMSE 643 Industrial Simulation 3
- IMSE 671 Topics in Automated Factory Concepts 3
- IMSE 672 Robotic Applications 3
- IMSE 685 Principles of Manufacturing Information Systems 3

Minor in engineering management
A minor in engineering management focuses on concepts, techniques, and tools applicable to the management of engineering work. Topics in the minor include: engineering economy, industrial management, operations research, and concepts in total quality management. Other engineering management topics may be selected for the elective course.

Required courses:
- IMSE 501 Industrial Management 3
- IMSE 530 Industrial Project Evaluation 3
- IMSE 560 Introduction to Operations Research 3
- IMSE 605 Advanced Industrial Management 3

Elective courses (choose one):
- STAT 511 Introduction to Probability and Statistics II 3
- ACCTG 231 Accounting for Business Operations 3
- MANGT 531 Personnel and Human Relations Management 3
- MANGT 630 Labor Relations Law 3
- SOCIO 647 Sociology of Work 3
- PSYCH 560 Industrial Psychology 3
- PSYCH 564 Psychology of Organization 3
- PSYCH 625 Engineering Psychology 3

Minor in digital systems
The Department of Electrical and Computer Engineering offers a minor in digital systems. The following courses are required with a grade of C or better.

Required courses:
- EECE 241 Introduction to Computer Engineering 3
- EECE 431 Microcontrollers 3
- EECE 541 Design of Digital Systems 3
- EECE 543 Computer System Interfacing Lab 1
- EECE 643 Computer Engineering Design Lab 2
- EECE 649 Computer Design I 3

Elective courses:
- EECE 241 Introduction to Computer Engineering 3
- EECE 431 Microcontrollers 3
- EECE 541 Design of Digital Systems 3
- EECE 543 Computer System Interfacing Lab 1
- EECE 643 Computer Engineering Design Lab 2
- EECE 649 Computer Design I 3

Students pursuing the degrees in B.S. in electrical engineering and B.S. in computer engineering are not eligible for this minor.

Minor in operations research
A minor in operations research develops knowledge of operations research techniques and challenges the student to appropriately apply mathematical models to solve complex engineering and management problems.

Required courses:
- STAT 511 Introduction to Probability and Statistics I 3
- IMSE 560 Introduction to Operations Research 3
- IMSE 633 Production Planning and Inventory Control 3
- IMSE 643 Industrial Simulation 3
- IMSE 660 Introduction to Operations Research II 3

Students pursuing the degrees in B.S. in electrical engineering and B.S. in computer engineering are not eligible for this minor.

T5 Engineering □ 181
Minor in computing and information sciences

Required courses:
- CIS 200 Fundamentals of Software Design and Implementation ................. 4
- CIS 300 Data and Program Structures ........................................... 3
- CIS 501 Software Architecture and Design .................................... 3
- Two additional 500- or 600-level courses in CIS ........................ 6

Multicultural Engineering Program

Thirkelle H. Howard, Director

The Multicultural Engineering Program is a comprehensive program designed to identify, recruit, retain, educate, and graduate quality students of color with an aptitude for math and science, to provide a support base to foster academic and social growth, and to assist in the transition into corporate society upon graduation.

Multicultural engineering students are involved in key leadership positions within the College of Engineering and throughout the university. The MEP provides: academic advising; scholarships, tutoring, peer counseling, internships, co-op and job placement assistance; leadership training and professional development, math and science workshops; and a study center.

Women in Engineering and Science Program

Suzanne E. Franks, Director

The Women in Engineering and Science Program is jointly administered by the Colleges of Engineering and Arts and Sciences. WESP has a two-fold mission of recruitment and retention of women in engineering and science from the middle school through postgraduate levels. The program is designed to help create an academic and social climate at K-State that is conducive to both women and men in science and engineering. WESP activities include on-campus speakers, career exploration panels, workforce preparation programs, and social events to facilitate student and faculty contact. Students are also encouraged to become involved in WESP’s ongoing research and outreach programs to young women in middle and high school.

Integrated master’s degree

A five-year integrated program leading to a B.S. degree in any engineering field at the end of four years and a master of science degree at the end of five years is available for promising undergraduate students. In architectural engineering, the comparable numbers are five and six years.

Students who have completed the sophomore year and have outstanding scholastic records are invited to join the program. Each student, in consultation with a faculty advisor, will plan an individualized program of study that meets requirements for the B.S. and M.S. degrees. Features of the program include integrated planning, participation in research as an undergraduate, and enrollment in graduate-level courses in the senior year. Students participating in the program will be considered for financial assistance in the form of scholarships, fellowships, research assistantships, and part-time work.

Interdisciplinary Studies

Although engineering curricula are generally structured, it is possible to pursue a secondary field of interest through the judicious selection of electives. If added flexibility is needed to pursue specific goals, students may petition the advisor and department head for the substitution of required courses. Some of the more popular secondary areas are:

Bioengineering

Bioengineering is a broad field overlapping the life sciences and many engineering disciplines. Some of the subareas are biomechanics, ergonomics, bioinstrumentation, biomaterials, bioenergetics, water and waste treatment, food engineering, and environmental engineering. In addition to the courses listed in the pre-medicine section, other courses of interest include:

BAE 510 Environmental Design of Agricultural Buildings
BAE 521 Energy in Biological Systems
BAE 700 Agricultural Process Engineering
CHE 715 Biochemical Engineering
CHE 725 Bioreaction Phenomena
CE 563 Environmental Engineering Fundamentals
CE 565 Water and Wastewater Engineering
CE 762 Water Treatment Processes
CE 766 Wastewater Engineering: Biological Processes
EECE 771 Control Theory Applied to Bioengineering
EECE 772 Theory and Techniques of Bioinstrumentation
EECE 773 Bioinstrumentation Design Laboratory
IMSE 623 Industrial Ergonomics
IMSE 625 Work Environments
ME 622 Environmental Engineering I
ME 722 Environmental Engineering II

Business administration

Increasing numbers of engineers are assuming managerial positions in all phases of industrial operations. Some of the courses listed in the section of dual degrees could be appropriate technical electives for students with goals in management.

Energy systems engineering

The increasing demand for energy is one of the major problems confronting all nations. New energy sources are needed in addition to more effective use of present resources. Interested students should select courses from the following areas: thermodynamics, energy conversion, nuclear reactor technology, electric energy systems, and engineering economics.

Pre-medicine

Many recent advances in medical research techniques, patient monitoring systems, artificial limbs and organs, and aerospace and undersea medicine have developed from the partnership of medicine and engineering. Engineering students wishing to satisfy entrance requirements to a typical school of medicine must take at least two semesters of biology and two semesters of organic chemistry, and should take additional social science/humanities electives. The pre-medical advisor in the College of Arts and Sciences should be consulted prior to the sophomore year.

Pre-law

A graduate degree in law can be desirable for engineers wishing to pursue careers in industrial management or patent law. While there are no specific courses required for entry to law school, appropriate elective areas are economics, political science, history, sociology, psychology, anthropology, accounting, and finance. The pre-law advisor in the College of Arts and Sciences should be consulted prior to the junior year.

Computer science

Computers are powerful tools for the solution of complex engineering and/or management problems. Individuals with training in both engineering and computer science possess the background to attack problems over a broad range of areas. Appropriate courses include:

Languages
- CIS 200 Fundamentals of Software Design and Implementation
- CIS 300 Data and Program Structures
- CIS 450 Computer Architecture and Organization
- CIS 505 Introduction to Programming Languages

Design
- EECE 241 Introduction to Computer Engineering
- EECE 541 Design of Digital Systems
- EECE 543 Computer System Interfacing Lab
- EECE 643 Computer Engineering Design Lab

Computational techniques
- CHE 316 Chemical Engineering Computational Techniques
- IMSE 560 Introduction to Operations Research
- IMSE 573 Industrial Simulation
- ME 760 Engineering Analysis I

Mathematics, physics, and chemistry

Engineering students with interests in research should plan on graduate study. Preparation at the undergraduate (B.S.) level could be enhanced by additional courses in mathematics and the basic sciences. Refer to the departmental listings in the College of Arts and Sciences section for possible electives.
Food engineering
Engineers are needed in the food industry for process development and design, equipment design, and management of operations. Students should select technical electives to augment a background in chemistry, microbiology, agricultural and food sciences, and process engineering.

Natural resources/environmental sciences secondary major
Increasing national and international concerns have generated opportunities for individuals to contribute to the resolution of environmental and resource problems. These issues are so complex that they lie beyond the scope of any one discipline.

The secondary major prepares students to apply broadly-based knowledge to the use, management, sustainability, and quality of soil, air, water, mineral, biological, and energy resources. See the Secondary Majors section of this catalog.

Dual Degrees
Students who want to pursue interdisciplinary interests in depth may wish to enroll in a dual degree program. There are no minimum semester hours required, but the requirements for both degrees must be satisfied. To complete two degrees in an optimum time, students should consult with an assistant dean in the Engineering Student Services Office at the earliest opportunity. Students will also be required to consult with the dean’s office in the college from which the second degree is earned. Popular combinations are:

Engineering and business administration
The management option is the most popular, but the option in marketing is an excellent combination for the engineering student planning a career in technical sales. Because of course sequence requirements, students should begin the dual degree program in their sophomore year.

Instead of a dual degree, students with a 3.0 GPA or higher should consider an MBA, or the engineering management option of the M.S. degree in industrial engineering.

Agricultural engineering and grain science and industry
The two most popular options are feed science and management, and milling science and management.

Construction science and architecture
Students enrolled in architectural engineering and construction science and management programs that also earn a dual degree in architecture have additional opportunities in the building industry.

Civil engineering and geology
Students interested in specializing in foundation engineering are advised to complete the B.S. degree requirements in civil engineering plus the requirements to qualify for the B.S. degree in geology.

Chemistry and chemical engineering
In addition to the required courses in chemical engineering, interested students should take courses in foreign languages and chemistry to qualify for the B.S. degree in chemistry.

Electrical engineering and computer engineering
This dual degree allows a person to function across a wider range of technical areas.

Electrical engineering and mechanical engineering
Some job opportunities in the fields of energy, controls, and heating and air conditioning require the combined background of these two areas.

Support Services

Center for Effective Teaching
Richard R. Gallagher, Associate Dean
The Center for Effective Teaching is organized to further the college’s goal of excellence in teaching. The center sponsors programs to enhance teaching, including specialized training for young engineering educators, seminars in educational methods and techniques for all engineering faculty (e.g., Engineering LEA/RN), student evaluation of undergraduate teaching, and monetary awards for excellence in teaching.

The center’s activities are coordinated by an advisory committee with representation from each department in the College of Engineering.

Research Centers

Engineering Experiment Station
Byron W. Jones, Director and Associate Dean for Research and Graduate Programs
The College of Engineering is committed to the concept that good teaching and good research complement each other to the benefit of the student, the public, and the faculty member. The experiment station is the division of the college responsible for the administration of research.

The research faculty of the experiment station is composed of members of all departments of the college. Researchers from the Engineering Experiment Station work closely with those from the Agricultural Experiment Station and with others from within the university on projects of mutual concern.

The activities of the Engineering Experiment Station are funded by state appropriations and by grants and contracts from governmental agencies and private industries.

Center of Excellence, Advanced Manufacturing Institute
Farhad Azadivar, Director
The Advanced Manufacturing Institute is a research center of excellence for development and transfer of technology to manufacturing enterprises. In this center, faculty, graduate students, undergraduate students, and a 20-member professional staff work on manufacturing-related research and development projects. Major areas of research include integrated and intelligent manufacturing systems, non-contact measurement and sensing in manufacturing, and intelligent processing of materials.

A major component of AMI is a Manufacturing Learning Center. MLC consists of a 22,000-square-foot manufacturing plant equipped with modern manufacturing hardware and software and staffed with 14 professional engineering staff. Manufacturing industries refer their new product development and manufacturing processes problems to MLC. Teams of students, faculty, and professional staff develop the needed technologies, design and build prototypes, design the manufacturing process, and deliver the desired deliverables to companies. Not only companies are assisted: undergraduate and graduate student interns get hands-on engineering experience and become productive engineers immediately upon graduation. Internships for students are available at the MLC for both graduate and undergraduate students.
Center for Hazardous Substance Research
Larry E. Erickson, Director
Lakshmi Reddi, Associate Director
The Center for Hazardous Substance Research is the regional headquarters for the Environmental Protection Agency’s Great Plains and Rocky Mountain Hazardous Substance Research Center. The center provides a focal point for research and research communication. Specific goals and objectives are to: (1) provide leadership and foster the conduct of hazardous substance research, (2) have a point of contact for industrial and governmental officials with hazardous waste research concerns, (3) develop a professional staff of faculty members who can conduct contract and grant research for industry and government, (4) maintain safe and proper environment for the conduct of hazardous and toxic waste processing industry, (5) furnish well-equipped laboratories for hazardous substance research, (6) generate opportunities for research training of students in the area of hazardous substance research, and (7) enhance the climate for economic development in Kansas for the waste processing industry.

Center for Transportation Research and Training
Eugene R. Russell, Sr., Director
The center conducts interdisciplinary research and training in the planning, design, and operation of rural and urban transportation systems.

The center carries out mission-oriented research concerning national, regional, state, and local transportation problems; disseminates the results of research through publication of reports and seminars for university, industry, and government representatives to assure that the results can and will be applied to the solution of practical transportation problems; and provides training to students and personnel from the transportation community to upgrade their professional competence.

The center also hosts an annual transportation conference for state and local public employees in the transportation sector.

In 1995 the U.S. Department of Transportation selected K-State to be one of five universities participating in the Region 7 Consortium for Transportation Research and Education-the mid-America Transportation Center. The consortium coordinates over $3 million in a four-state region.

In performing the stated missions of the center, systems analysis and synthesis techniques are emphasized, and the safety, aesthetic, and environmental aspects of transportation systems are not neglected.

Institute for Computational Research in Engineering and Science
Virgil Wallentine, Director
The Institute for Computational Research in Engineering and Science was established to promote computational research, to develop better research computing facilities, to provide administrative support for computer-oriented activities, and to foster cooperative efforts among members of K-State’s research community.

The activities of ICRES are interdisciplinary in nature and span a wide range of research topics with emphasis on computer modeling and simulation. ICRES serves as a university-wide center for the exchange of computational techniques among researchers and for the development of computer facilities dedicated to research. The institute presently is serving as a focus to develop high-end computing capabilities to meet the needs of computational researchers in engineering and science.

Other objectives of the institute include preparation of research proposals for computational research; the encouragement of creative uses of computers; the dissemination of computing information through seminars, conferences, and institute publications; and the development of software for engineering and scientific research.

Institute for Environmental Research
M.H. Hosni, Director
Elizabeth A. McCullough, Co-Director
The Institute for Environmental Research serves as a focal point for interdisciplinary research on thermal environmental engineering and the thermal interaction between people and their thermal environment.

The institute is administered by the College of Engineering and research is administered through the Engineering Experiment Station. It works in cooperation with academic departments from throughout the university. Faculty and students from these departments participate in the institute’s research programs, use the facilities for their own research, and utilize the facilities for specialized graduate courses and seminars. Research funding is primarily from contracts with private companies and government agencies.

Research facilities are available for controlling and measuring thermal environmental parameters over a range of conditions, for measuring thermal characteristics of clothing, and for measuring human physiological variables.

Major facilities include: environmental chambers ranging in size from 45 to 420 square feet and with operating temperatures ranging from −30 to 150 degrees F.; thermal manikins for measuring clothing insulation; hot plates for measuring the thermal resistance of fabric or insulation systems; and an infrared thermal imaging system for measuring human body, clothing, or building surface temperature profiles.

Institute for Systems Design and Optimization
L. T. Fan, Director
The Institute for Systems Design and Optimization promotes interdisciplinary research, teaching, and communications in systems engineering.

The institute is administered through the College of Engineering and the Engineering Experiment Station and provides channels of communication between disciplines throughout the university in engineering systems design.

Specific objectives of the institute include interdisciplinary research; systems seminars and conferences; preparation of research proposals; and providing assistance in recruiting of graduate students, post-doctoral students, and faculty.

Laboratory for Civil Infrastructure
Hani G. Melhem, Director
The facility is a center for cooperation between academia, industry, and state departments of transportation. It includes a pavement Accelerated Testing Laboratory and a shake-table for dynamic testing of model buildings. Future plans include structural testing of bridge components and pre-stressed concrete girders.

The pavement research and testing activity is sponsored by the Midwest States Accelerated Testing Pooled Funds Program. It fulfills the needs of the surrounding states for full-scale testing and addresses research topics of national and international importance. Dynamic tests include applying simulated historic earthquake ground motion and acceleration to the base and foundations of structures.

The testing laboratory presents an opportunity for students to get exposed to civil engineering practice and actual methods of highway construction, pavement management, and performance monitoring. The students and laboratory personnel use instruments and techniques applied in the current engineering profession and interact with state transportation officials, professional engineers, pavement contractors, and construction companies.

For students, the lab provides practical training and part-time employment opportunities in a civil engineering professional environment.
Nuclear Reactor Facility/Neutron Activation Analysis Laboratory

Kansas State University has a TRIGA Mark II pulsing nuclear reactor, a radiation instruments calibration facility, and a well-equipped neutron activation analysis laboratory. The reactor, which is licensed for steady-state operation to 250 kilowatts and pulsed operation to 250 megawatts, is used for teaching and research by many departments. The reactor is used in part for radiation effects studies, neutron radiography, fission-track studies, and for neutron activation analysis, an analytical technique that is essentially nondestructive and offers sensitivities greater than one part per billion for some elements.

Neutron activation analysis finds application in diverse fields such as diagnostic medicine, plant improvement studies, nutrition studies, age dating of geological specimens, forensics, toxicology, and metabolic studies. Students involved in these projects emerge with a greater appreciation of interdisciplinary efforts and the importance of being able to communicate with scientists and technologists with varying backgrounds.

National Gas Machinery Laboratory

Kirby S. Chapman, Director

The National Gas Machinery Laboratory supports all technological advancements of the natural gas industry through research, education, service, and technology transfer. The National Gas Machinery Laboratory was established in 1995 by the Department of Mechanical Engineering with strong support from the ANR Pipeline Company. The results of the research efforts of the laboratory are brought to the classroom at both the undergraduate and graduate levels. Team efforts involve students and faculty and provide valuable experiences for students who are interested in the energy industry.

The laboratory has grown into a nationally recognized research and educational facility with more than $2 million in accumulated funding the support of a steering committee made up of industry professionals. The laboratory plays an increasingly important role in the natural gas industry by better preparing new engineers for work in the energy industry.

The laboratory transfers technology to existing natural gas industry employees through short courses at Kansas State University, presentations, and site visits.

Extension and Outreach

Engineering Extension Programs

Richard B. Hayter, Director

Engineering Extension offers a range of services created to serve Kansans through the transfer of technology from the campus and laboratory to business and industry.

Engineering Extension reaches out through its own short courses, conferences, seminars, and workshops to provide information to audiences ranging from the lay public to users of sophisticated technology, including engineering and manufacturing personnel.

Engineering Extension’s educational and training programs focus on energy and the environment. Energy information emphasizes construction and retrofit for energy efficiency, maintenance techniques in commercial and institutional buildings, building environmental control systems, and system design for energy efficiency. Engineering Extension targets these programs toward building designers, contractors, building operators, and owners.

In its environmental efforts, Engineering Extension focuses on pollution prevention, assisting Kansas businesses in removing wastes from their manufacturing processes in ways that are safer and more economical.

Engineering Extension also coordinates off-campus graduate courses by the College of Engineering. These courses can be available to the general public or be packaged as educational activities delivered for, and supported by, a specific industry or organization. Many of these courses are delivered electronically to educational sites in selected areas of Kansas.

General Engineering

Terry S. King, Dean

Tom C. Roberts, P.E., Assistant Dean

Ray E. Hightower, Assistant Dean

General engineering (DEN)

Entering freshmen who are undecided in their major in engineering may enroll in general engineering for one year. They will take the following program of study, which is completely applicable to all engineering programs. Undecided students are encouraged to select a major by the beginning of their sophomore year.

Engineering

Fall semester

ENGL 100 Expository Writing I ................. 3
CHM 210 Chemistry I .................................. 4
MATH 220 Analytic Geometry and Calculus I ... 4
DEN 160 Engineering Concepts ..................... 3
Humanities or social science elective ............... 3

Spring semester

SPCH 105 Public Speaking IA .................... 2
CHM 230 Chemistry II ............................. 4
MATH 221 Analytic Geometry and Calculus II .... 4
ECON 110 Principles of Macroeconomics ........ 3
Humanities or social science elective ............... 3

Courses in personal and professional development, engineering honors, minority engineering, and other student development programs are included in general engineering.

Courses related to the B.S. degree in nuclear reactor technology are also included in general engineering to support outreach programs to the nuclear power industry.

Nuclear reactor technology

This program provides the education necessary for careers associated with assisting engineers in the design, construction, inspection, maintenance, monitoring, and management of nuclear reactor power generation facilities. Primary employment positions are senior reactor operators and shift technical advisors. Other employment opportunities include similar responsibilities in medical and industrial facilities where radioactive materials are used.

Area of specialization (62 hours)

Required courses (48 hours)

CE 231 Statics A ............................................ 3
CE 331 Mechanics of Materials A .................... 3
CHM 230 Chemistry II .................................. 4
ET 410 Properties of Engineering Materials ... 2
ET 436 Digital Logic Systems I .................... 4
ET 480 Materials of Nuclear Reactor Systems ... 2
ET 481 Nuclear Reactor Technology I ............ 3
ET 482 Nuclear Reactor Technology Analysis ..... 3
ET 512 Mechanics of Fluids ....................... 3
ET 514 Energy Conversion Technology .......... 3
ET 554 Automatic Control Technology .......... 3
ET 537 Electronic Measurements .................. 4
ET 583 Nuclear Reactor Technology II ........... 3
ET 584 Radiation Detection and Monitoring ..... 3
ET 585 Nuclear Reactor Thermal Technology ... 3
ET 586 Radiation Protection Technology ......... 2
Technical electives ......................................... 10
Management electives .................................. 3
Free elective .................................................. 3

General engineering courses

DEN 015. New Student Orientation Seminar. (0) I, II.
Introduction to the College of Engineering. Emphasis is on new student (freshmen and transfer) transition to college life. Students obtain computer id’s, information on college procedures (drop/add, curriculum change, and wait list), and receive guidance on how to become a successful student in the College of Engineering. NSOS has a lecture/small group discussion format and meets only 3–4 times at the beginning of the semester.

DEN 120. Minority Engineering Enrichment Seminar. (3) I. Introduction to the academic and intellectual demands of an engineering curriculum from a multicultural perspective. Develop group cohesion and an attitude of mutual support by engaging in collaborative learning. Help students acquire effective study methods, analyze/compare learning/teaching styles, prepare for and improve examina-
tion performance, promote optimum utilization of campus resources, develop leadership and communication skills and enhance self-esteem. Credit may not be applied towards an engineering degree.

DEN 160. Engineering Concepts. (1) I. An introduction to engineering and engineering design. Problems involving the basic concepts of engineering science are considered. One rec. and one seminar a week. Pr.: Two high school units of algebra, one high school unit of geometry, and one-half high school unit of trigonometry.

DEN 200. Kansas State Engineer Publications. (1) I, II. Editorial, business, and production staff work on the Kansas State Engineer magazine, Kansas State Engineer on line, and the Critical Angle electronic newspaper. Staff members write, edit, photograph, illustrate, and design publications that report on the engineering arena, locally and globally, from the student perspective. May be repeated. One-hour rec.–staff meeting a week.

DEN 201. Amateur Radio Theory I. (1) I, II. Theory and practice of amateur (“ham”) radio operation. Basics of radio electronics, antennas, FCC regulations, Morse code; successful completion of the course should ensure passing the FCC Novice and “no-code” technician examinations. Credit may not be applied toward an engineering degree. Two hours rec. week. (Includes exam. fee.)

DEN 202. Amateur Radio Theory II. (1) I, II. Theory and practice of amateur (“ham”) radio operation. More basics of radio electronics, antennas, FCC regulations, Morse code; successful completion of the course should ensure passing the FCC General class examination. Credit may not be applied toward an engineering degree. One hour rec. and one hour Morse code lab a week. Pr.: DEN 201 or FCC Novice or “no-code” technician.

◆DEN 210. History of Building and Construction. (3) I. An introduction to the art and science of building. Historical review from ancient to contemporary including related construction methods, equipment, and systems. Three hours rec. a week.

DEN 220. Minority Engineering Colloquium. (1) II. Continuation of DEN 120. Emphasis on career exploration and development, introduction to graduate school options, preparation and responsibility for advising process, tips on breaking the failure cycle, behavior modification strategies, and developing and utilizing leadership skills. Credit may not be applied toward an engineering degree. Three hours rec. a week.

◆DEN 275. Introduction to Personal and Professional Development. (1) I, II. Overview of major topics related to personal and professional development, including communication, leadership, teamwork, total quality management, and ethics. One hour rec. and one hour activity a week. Pr.: Sophomore standing.

DEN 299. Honors Seminar in Engineering. (1) I, II. Selected topics of general interest. May be taken twice for credit by engineering honor students starting in the second semester of the freshman year.

DEN 300. Introduction to Total Quality Management. (1) I, II. Overview of major topics related to Total Quality Management (TQM), including managerial and engineering aspects. One hour rec. a week. Pr.: MATH 100, sophomore standing. Cross-listed with MGMT 300.

DEN 398. Problems in Engineering and Technology. (Var.) I, II, S. A study of problems or topics in a specialized area of engineering or technology. Pr.: Approval of department head or dean.

DEN 399. Honors Colloquium in Engineering. (1) I, II. Selected topics of general interest. Open to students in the engineering honors program for one semester.

DEN 420. Introduction to Alternative Energy Sources. (3) II. Introduction to solar, geothermal, wind, tidal, thermal sea gradients, breeder reactor, and fusion energy sources. Concepts, devices, potential, economics, and status of each energy source. Introduction to the all-electric economy. Three hours rec. a week. Open to all nonengineering and first- and second-year engineering students.

DEN 425. Introduction to Energy and Environmental Technology. (2) I, II. An introductory course for nonengineering students. An introduction to the technology employed in analyzing energy and pollution control processes. The course emphasizes energy problems, control of water and air pollution, food and land use problems, and material recycling concepts. Not open to engineering students. Two hours rec. a week.

DEN 450. Impact of Technology on Society. (3) I, II. A study of social, economic, and environmental problems as a function of technology. Study of effect of various significant technological developments on present society and parallels with present developments. Study of current problems, detection of causes, and analysis of solutions. Implications for the future: governmental, industrial, and individual responsibility in detection of potential problems and methods of control or solution. Three hours rec. a week. Sophomore standing or above.

DEN 499. Honors Research in Engineering. (1) I, II. Individual research problem selected with approval of faculty advisor. Open to seniors in the engineering honors program for two semesters. Written report is presented at end of second semester.

DEN 550. Engineering Law. (3) I, II. An introduction to the concepts of law pertinent to engineering practice. These include contracts, torts, products liability, business associations, engineering licensing, real and personal property law, commercial law, and taxes. Three hours rec. a week. Pr.: Junior standing.

◆DEN 582. Natural Resources/Environmental Sciences Project (NRES). (3) I, II. A comprehensive project in NRES. Requires integration of information and understanding acquired in NRES secondary major courses. Students must prepare and present written and oral reports. Three hours rec. a week. Pr.: ENGL 415, SPCH 105. Pr or conc.: 15 hours of approved courses in NRES secondary major. Cross listed with DAS 582 and GENAG 582.

Nuclear engineering technology courses

ET 480. Materials of Nuclear Reactor Systems. (2) On sufficient demand. The properties and behavior of fuel and nonfuel materials used in nuclear reactor systems are considered. Selected nuclear fuel cycle topics are covered. Two hours rec. a week. Pr.: ET 410.

ET 481. Nuclear Reactor Technology I. (3) On sufficient demand. Introduction to nuclear and neutron physics, including: interaction of neutrons, gamma rays, and beta and alpha particles with matter; production of neutrons and the neutron life cycle; basic neutron diffusion principles; and the nuclear fuel cycle. Three hours rec. a week. Pr.: PHYS 114, STAT 320.

ET 482. Nuclear Reactor Technology Analysis. (3) On sufficient demand. Applied numerical analysis emphasizing solutions of elementary differential equations with a very strong emphasis on applications in nuclear reactor technology. Three hours rec. a week. Pr.: MATH 211 or equiv.

ET 583. Nuclear Reactor Technology II. (3) On sufficient demand. Theory of diffusion and slowing down of neutrons with application to subcritical and critical reactors; introduction to the time behavior of reactor systems. Three hours rec. a week. Pr.: ET 481.


ET 585. Nuclear Reactor Thermal Technology. (3) On sufficient demand. Introduction to conduction, convection, and radiation heat transfer as applied to reactor cores and systems. Consideration of nuclear reactor safety and power reactor systems. Three hours rec. a week. Pr.: ET 481.


Architectural Engineering/Construction Science and Management

David Fritchen,* Head

Professors Bissey,* Burton,* and Goddard;* Associate Professors Fritchen,* Moser,* Riblett,* Roberts, and Tredway,* Assistant Professors Baltimore,* Goodman, Hafling, Pacheco, and Wipplinger; Instructors Knight and Lewis-Smith; Emeriti: Professors Dahl, Hodges, Lindley, Mingle, and Thorson; Associate Professor Blackman.

E-mail: arecns@ksu.edu www.engg.ksu.edu/AREDEPT/home.html

Pre-professional programs admission

New students, including transfer students, should submit the standard application form directly to the Office of Admissions. The admission criteria are the same as those for the university and the College of Engineering. Any student who has completed more than 15 credit hours at Kansas State University in any major outside the Department of Architectural Engineering and Construction Science may change majors into either pre-professional program provided that the student has a resident cumulative GPA of 2.3 or better.

Admission to the professional programs

There are two distinct and separate pre-professional programs within the department, the pre-professional architectural engineering program and the pre-professional construction science and management program, each containing different course requirements. Other than course requirements specific to each program, the general procedures for acceptance into the respective professional program are similar and are described in the following paragraphs.

The pre-professional students must complete the first portion of the program prior to taking any upper-division professional program courses.

An application to the professional program must be submitted to the department of Architectural Engineering and Construction Science by the end of the eighth week of either the spring or fall semester. This submission will be immediately prior to the student’s pre-enrollment into any of the upper-division professional program courses. All courses in the lower-division pre-professional program core of the program of application, valid at the time the student entered the university, must be completed and all grade criteria must be
met by the end of the semester that the application is submitted. An exception to this rule is the student who expects to complete these criteria during the summer term. Those students should also make application in the spring semester prior to pre-enrollment. All eligible applicants will be allowed to pre-enroll into professional program courses with the understanding that they will be dropped if they do not complete the requirements for admission to the professional program prior to the beginning of the subsequent semester. Applications will be reviewed by the department’s Academic Affairs Committee and accepted or rejected as soon as possible after semester grades are issued.

Course requirements
Applicants must meet the following criteria for admission to the professional program of the curriculum as follows. Students must have:

1. Achieved a GPA of 2.3 or better in all of the courses in the lower-division pre-professional program core and courses which apply to the professional program, and;
2. Earned a grade of credit (CR) in a departmental seminar for each semester that the applicant was enrolled in the lower-division pre-professional program core, and;
3. Completed the following courses (or equivalent) with grades of C or better:

Architectural engineering
MATH220 Analytical Geometry and Calculus I
MATH221 Analytical Geometry and Calculus II
MATH222 Analytical Geometry and Calculus III
MATH240 Elementary Differential Equations
CHEM210 Chemistry I
CHEM 230 Chemistry II
PHYS213 Engineering Physics I
PHYS214 Engineering Physics II
ENVD205 Graphics I
ENVD206 Graphics II
GEOL100 Earth in Action
ARE 100 Architectural Engineering Orientation
CNS 320 Construction Materials
CNS 210 Introduction to Construction Computer Programming
CE 333 Statics
ENGL100 Expository Writing I
SPCH 105 Public Speaking IA
ECON 110 Principles of Macro-Economics

Construction science
MATH220 Analytical Geometry and Calculus I
PHYS113 General Physics I
PHYS114 General Physics II
ENVD 205 Graphics I
ENVD206 Graphics II
GEOL100 Earth in Action
DEN 210 History of Building and Construction
CNS 100 Construction Science and Management Orientation
CNS 210 Introduction to Construction Computer Programming
CNS 320 Construction Materials
CE 212 Elementary Surveying
CE 231 Statics A
ENGL100 Expository Writing I
SPCH 105 Public Speaking IA
ECON 210 Principles of Macro-Economics
ACCTG 231 Accounting for Business Operations

None of the above courses in math, chemistry, or physics may be repeated more than once, with the exception of MATH 220.

Academic standards
After admission to the professional program, students will be subject to the following academic standards that are more stringent than those for the university.

1. Warning of unsatisfactory progress
Regardless of the overall GPA, a student with any D or F grade in any term or who has a term GPA below 2.3 will receive a warning of unsatisfactory progress. This warning will be removed if the student earns C grades or better in at least 12 credit hours of core courses with no D or F grades during the next semester in residence.

A student whose cumulative resident GPA drops below 2.3 will receive a warning of unsatisfactory progress. This warning will be removed if the student raises his or her cumulative resident GPA to 2.3 or above during the following term.

2. Suspension from the professional program for unsatisfactory progress
Regardless of the overall GPA, a student who has received a warning of unsatisfactory progress will be suspended from the professional program for unsatisfactory progress if he or she receives a D or F or earns below a 2.3 semester GPA for the second consecutive term.

A student whose cumulative resident GPA has dropped below 2.3 and has received a warning of unsatisfactory progress will also be suspended from the professional program if he or she does not raise his or her cumulative resident GPA to 2.3 or above during the following semester. A suspended student may not enroll in any Department of Architectural Engineering and Construction Science courses.

A suspended student must change to the pre-professional program or to another major. A suspended student who intends to appeal for removal of a suspension and reapply to the professional program must change to the pre-professional program. The suspended student may reapply to the professional program after one semester of suspension. The suspended student must take 15 hours of technical courses, to be selected by the Academic Affairs Committee of the department and the student’s advisor, and achieve a minimum GPA of 2.5 during the “layout semester” to be eligible to reapply for the professional program.

Any appeal for removal of a suspension may be made by filing an appeal form with the head of the Department of Architectural Engineering and Construction Science at least one week prior to the first day of fee payment. The department head may reject any application or may submit it to the Academic Affairs Committee for consideration. Any and all actions on applications submitted by the department head will be made by the Academic Affairs Committee of the department in a hearing in which the student will be interviewed.

If a suspended student is readmitted to the professional program, any subsequent grade of D or F during any subsequent term will result in permanent suspension from the professional program.

The warning and suspension referred above are departmental actions that are separate and distinct from the university’s academic warning and academic dismissal. Grades earned during an intersession will not be considered in the determination of unsatisfactory academic progress.

Architectural engineering
The architectural engineering program is planned for students who are particularly interested in the engineering aspects of building design. The educational objective of the five-year architectural engineering program is to prepare the student with fundamental engineering competence in the analysis and design of buildings and their systems. Specifically, the student must be able to understand and apply engineering fundamentals and design principles for engineering the infrastructure of architecture—that infrastructure being structural, mechanical, and electrical building systems and all the subdisciplines related to these primary designations.

As important members of building design teams, they must be able to create designs that will fulfill the economic, safety, and aesthetic requirements of a project.

Included in the academic program are exercises in many of the courses beginning in the freshman year and continuing through the fifth year to develop skills in the engineering design process. The last course in this sequence is Senior Project, a culmination of all the previous design experiences from the first four and one-half years of the curriculum. Architectural engineers must have a working ability with total building and system design concepts.

Curriculum in architectural engineering (ARE)
Bachelor of science in architectural engineering
162 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Pre-professional program (ARE)
Freshman
Fall semester
ENVD 205 Graphics I ............................................. 2
ENGL 100 Expository Writing I ................................ 3
MATH 220 Analytic Geometry and Calculus I .......... 4
CHM 210 Chemistry I ........................................... 4
DEN 210 History of Building and Construction ....... 3
ARE 100 Architectural Engineering Orientation ...... 1
ARE 020 Architectural Engineering Seminar ........... 0

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<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
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<td>ENVD 206 Graphics II</td>
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<td>MATH 221 Analytic Geometry and Calculus II</td>
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<td>CHM 230 Chemistry II</td>
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<td>ECON 110 Principles of Macroeconomics</td>
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<td>SPCH 105 Public Speaking IA</td>
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<td>ARE 020 Architectural Engineering Seminar</td>
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<tr>
<td>Sophomore Fall semester</td>
<td>CNS 320 Construction Materials and Detailing</td>
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<tr>
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<td>PHYS 213 Engineering Physics I</td>
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<td>MATH 222 Analytic Geometry and Calculus III</td>
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<td></td>
<td>CNS 210 Introduction to Construction Computer Programming</td>
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<td></td>
<td>ENGL 200 Expository Writing II†</td>
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<td>Humanities or social science elective</td>
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<td>ARE 020 Architectural Engineering Seminar</td>
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<tr>
<td>Spring semester</td>
<td>ART 100 2D Design</td>
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<td>ART 200 3D Design</td>
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<tr>
<td></td>
<td>CE 333 Statics</td>
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<tr>
<td></td>
<td>PHYS 214 Engineering Physics II</td>
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<td>MATH 240 Elementary Differential Equations</td>
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<td>GEOL 100 Earth in Action</td>
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<td>ARE 020 Architectural Engineering Seminar</td>
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<tr>
<td>Professional program (ARE) Junior Fall semester</td>
<td>CNS 321 Construction Techniques and Detailing</td>
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<td>CE 533 Mechanics of Materials</td>
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<td>CE 534 Mechanics of Materials Lab</td>
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<td>ME 513 Thermodynamics I</td>
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<td>ME 560 Engineering Economics</td>
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<td>ARE 532 Lighting Systems Design</td>
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<td>ARE 020 Architectural Engineering Seminar</td>
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<td>Spring semester</td>
<td>CNS 325 Construction Drawing</td>
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<td>ME 512 Dynamics</td>
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<td>CE 537 Introduction to Structural Analysis</td>
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<td>ARE 534 Thermal Systems</td>
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<td>CE 212 Elementary Surveying Engineering</td>
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<td>Senior Fall semester</td>
<td>ARE 415 Architectural Engineering Design</td>
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<td>ENGL 415 Written Communications for Engineers</td>
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<td>EECE 519 Electrical Circuits and Control</td>
<td>4</td>
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<td></td>
<td>ARE 523 Timber Structures</td>
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<td>ARE 537 Acoustics Systems</td>
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<td></td>
<td>Humanities or social science elective (upper level)</td>
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<td>ARE 020 Architectural Engineering Seminar</td>
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<tr>
<td>Spring semester</td>
<td>ARE 524 Theory of Structures II</td>
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<td></td>
<td>CE 522 Soil Mechanics I</td>
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<td>ARE 533 Building Electrical Systems</td>
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<td>ME 571 Fluid Mechanics</td>
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<td>Complementary elective</td>
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<td>ARE 020 Architectural Engineering Seminar</td>
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<tr>
<td>Fifth year</td>
<td>ARE 590 Integrated Building System Design</td>
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<td>ARE 536 Plumbing and Fire Protection Systems Design</td>
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<td>ARE 640 Building Mechanical Systems</td>
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<td>ARE 528 Theory of Structures III</td>
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<td>Complementary elective</td>
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Free elective? ................................................. 3
ARE 020 Architectural Engineering Seminar ....... 0

Spring semester
ARE 690 Senior Project .................................... 3
ARE 539 Architectural Engineering Management Complementary elective .................................. 3
Complementary elective ........................................ 3
Humans or social science elective (upper level)† | 3
ARE 020 Architectural Engineering Seminar | 0

*Expository Writing II is optional if prerequisites for Written Communications for Engineers (ENGL 415) are met from Expository Writing I.
†Not considered part of the pre-professional program or professional program.

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<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>Sophomore Fall semester</td>
<td>CE 231 Statics A</td>
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<td>PHYS 114 General Physics II</td>
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<td>CNS 210 Introduction to Construction Computer Programming</td>
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<td>ACCTG 231 Accounting for Business Operations</td>
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<td>ENGL 200 Expository Writing II†</td>
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<td>SPCH 105 Public Speaking IA</td>
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<td>Professional program (CNSM) Spring semester</td>
<td>CE 331 Strength of Materials</td>
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<td>Junior</td>
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<td>CNS 534 Heating and Air Conditioning</td>
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<tr>
<td>Spring semester</td>
<td>CNS 525 Timber Construction</td>
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<td>CNS 540 Construction Methods and Equipment</td>
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<td>CNS 535 Electrical Service and Installation</td>
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<td>ENGL 415 Written Communications for Engineers</td>
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<td>CNS 640 Construction Operations</td>
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<td>CNS 641 Construction Estimating</td>
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</table>
| | CNS 016 Construction Seminar | 0

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Accredited by the American Council for Construction Education

Pre-professional program (PCNSM)

Freshman Fall semester
ENVD 206 Graphics I ........................................ 2
MATH 220 Analytic Geometry and Calculus I .............. 4
DEN 210 History of Building and Construction .......... 3
ENG 100 Expository Writing I .................................. 3
GEOL 100 Earth in Action .................................... 3
CNS 100 Construction Science and Management Orientation | 1
CNS 016 Construction Seminar ................................ 0

Spring semester
ENVD 206 Graphics II ........................................ 2
PHYS 113 General Physics I .................................. 4
CE 212 elementary Surveying Engineering .......... 3
CNS 320 Construction Materials ......................... 2
ECON 110 Principles of Macroeconomics ................. 3
CNS 016 Construction Seminar ................................ 0

Sophomore Fall semester
CE 231 Statics A .............................................. 3
PHYS 114 General Physics II ................................ 4
CNS 210 Introduction to Construction .................. 3
ACCTG 231 Accounting for Business Operations .... 3
ENGL 200 Expository Writing II† ................................
Humans or social science elective | 3

Professional program (CNSM)

Spring semester
CE 331 Strength of Materials | 3
CE 332 Strength of Materials Lab | 1
CNS 321 Construction Techniques and Detailing | 3
CNS 330 Site Construction | 3
MANGT 390 Business Law I | 3
Humans or social science elective (upper level)† | 3
CNS 016 Construction Seminar | 0

Junior
CNS 522 Theory of Structures | 3
CNS 325 Construction Drawings | 3
CNS 536 Water Supply and Plumbing | 3
CNS 534 Heating and Air Conditioning | 3
ARE 537 Acoustics Systems | 2
Management elective (general)† | 3
CNS 016 Construction Seminar | 0

Spring semester
CNS 525 Timber Construction | 2
CNS 540 Construction Methods and Equipment | 3
CNS 535 Electrical Service and Installation | 3
ENGL 415 Written Communications for Engineers | 3
Management elective (labor)† | 3
CNS 650 Construction Safety | 2
CNS 016 Construction Seminar | 0

Senior
CNS 524 Steel Construction | 3
CNS 640 Construction Operations | 3
CNS 641 Construction Estimating | 3
CNS 642 Construction Management | 3
Management elective | 3
Professional elective | 2
CNS 016 Construction Seminar | 0

Curriculum in construction science and management (CNSM)

Bachelor of science in construction science and management
134 hours required for graduation
ARE 404. Theory of Loads in Buildings. (3) I, II. Analysis and design of building loads, acting on buildings, including both solid and laminated materials. Two hours rec. and two hours lab a week. Pr.: PHYS 114 or 214.

ARE 532. Structural Analysis. (2) I, II. Analysis and design of reinforced concrete building frames, footings, columns and floor systems, attention being given to costs and economic design. Three hours rec. a week. Pr.: CE 537.

ARE 533. Site Construction. (3) I. Study of site preparation problems and procedures, site survey and investigations, review of site plans, construction layouts, earthwork calculation, excavation/shoring methods, computer applications. Two hours rec. and three hours lab a week. Pr.: CE 212, CNS 210, ENVD 206, PHYS 113.

ARE 549. Honors Research in Architectural Engineering. (Var.) I, II. Individual research project selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally in writing during the last semester.

ARE 553. Timber Structures. (2) I, II. Determination of loads, including wind and seismic. Discussion of load probabilities. Analysis and design of timber structures using solid and laminated materials. Two hours rec. a week. Pr.: CE 537.

ARE 524. Theory of Structures II. (3) I. Analysis and design of steel structures following the AISC/LRFD Specifications for buildings. Includes background on the probability-based LRFD method. Three hours rec. a week. Pr.: CE 537.

ARE 528. Theory of Structures III. (3) I, II. Design of reinforced concrete building frames, footings, columns and floor systems, attention being given to costs and economic design. Three hours rec. a week. Pr.: CE 537.

ARE 731. Advanced Lighting Design. (3) I. Lighting modeling and analysis used in lighting design practice, and computer-assisted lighting analysis. Two hours rec. and two hours lab a week. Pr.: ARE 532.

ARE 732. Construction Science and Management. (3) I. Study and analysis of construction materials, their properties, selection, and use. Two hours rec. a week. Pr.: ENVD 205.

ARE 734. Building Thermal Systems Design. (3) II. Design and specifications of selected thermal and mechanical systems for structures. The course uses all the modern techniques of thermal/mechanical systems design for buildings. Students are required to develop term research design projects. Two hours rec. and three hours lab a week. Pr.: ARE 640 and ECEE 519.


ARE 741. Building Communications Systems. (3) I. Detailed design and analysis of special electrical systems for buildings including fire alarm and communications systems. Three hours rec. a week. Pr.: ARE 533.

ARE 760. Masonry Structural Design. (3) II. Introduction to masonry materials, testing and construction methods. The design of reinforced and reinforced masonry structures according to applicable building codes. Three hours rec. a week. Pr.: ARE 528 or equivalent course in reinforced concrete design.

ARE 780. Theory of Structures IV. (3) II. Continuation of Theory II and III, with special emphasis on the complete problem of the structure as a whole. Three hours a week. Pr.: CE 537 and ARE 523, 524, and 528.

ARE 890. Master's Thesis. (Var.) I, II. S. Topics selected with approval of a major professor and department head.

ARE 899. Master's Thesis. (Var.) I, II. S. Topics selected with approval of major professor and department head.
Biological and Agricultural Engineering

James K. Koelliker,* Head
Professors Chung,* G. Clark,* Harner,* Koelliker,* Murphy, Powell, Rogers, Schrock,* Slocombe,* Spillman,* and Steichen;* Associate Professors Maghirang,* Taylor, and Zhang;* Assistant Professors Barnes, Mankin,* and Wolf; Adjunct Professor Steele;* Adjunct Associate Professors Dowell and Hagen;* Adjunct Assistant Professors Martin and Wagner;* Emeriti: Professors S. Clark, Fairbanks, Holmes, Jepsen, Larson, Manges, and Wendling; Associate Professors Baugher, Stevenson, TenEyck, and Thierstein.
E-mail: koellik@bae.ksu.edu
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Objectives
The biological and agricultural engineering program prepares students for professional engineering careers relating to the production and processing of agricultural and biomass materials for food, non-food, and fiber products while conserving natural resources and protecting our environment. It is our goal to give students the best possible education toward that end within the Accreditation Board for Engineering and Technology (ABET) program criteria for biological and agricultural engineering.

Biological and agricultural engineers provide an essential link between the biological sciences and engineering, which uses physical science to solve practical problems. Engineering fundamentals are applied to achieve the goal of a safe and stable food supply while considering human and environmental factors. Three curriculum options are available.

General option with area of specialization

Balancing the conflicting needs of society will require engineers trained to apply engineering science in the control and management of biological processes. The first two years of study in the general option concentrate on mathematics, physical sciences, and biological sciences. The third and fourth years contain additional engineering science courses as well as technical electives that allow the student to pursue his or her specific interests. These areas are machinery systems, grain and feed processing, natural resources and environment, and structures and environment.

Environmental option
Biological and agricultural engineers work at the interface between biology and engineering. They must be knowledgeable in both disciplines. Applications in the environmental option include water quality studies of lakes, rivers, and groundwater, soil and water conservation, irrigation and drainage, system design and management, waste treatment, management of air quality inside buildings and outside, remediation of land damaged by construction, mining, and other uses.

The environmental option focuses on the design and management of systems that use or impact natural resources. Non-point pollution issues have long been a component of agricultural engineering programs. Soil conservation programs began in the 1930s, long before the environmental movement began. Non-point pollution sources still impact the environment, requiring biological and agricultural engineering expertise to develop solutions to those problems. This option is distinct from but interfaces with the environmental option in civil engineering.

Secondary major in natural resources and environmental sciences
Students enrolled in biological and agricultural engineering, regardless of option, may participate in the natural resources and environmental sciences secondary major. Courses used for the secondary major may also be used for completing regular graduation requirements. Details are found in the Natural Resources and Environmental Sciences section of this catalog.

Food engineering option
Students pursuing the food engineering option can fulfill the requirements for a B.S. in agricultural engineering by following the food engineering option outline. Inherent in this program is the basic background of biological and agricultural engineering with emphasis in food processing, packaging, and handling.

Agricultural technology management
Description and curriculum outline are listed in the College of Agriculture section of this catalog.
Bachelor of science in biological and agricultural engineering (BAE)

135 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

General option

Freshman

Fall semester

BAE 200 Engineering Methods ............................ 1
ECON 110 Principles of Macroeconomics ......... 3
ENGL 100 Expository Writing I ........................ 3
CHM 210 Chemistry I .................................. 4
MATH 221 Analytic Geometry and Calculus I .... 4
BAE 020 Engineering Assembly ....................... 0

Spring semester

BIOL 198 Principles of Biology ......................... 4
SPCH 105 Public Speaking IA .......................... 2
MATH 222 Analytic Geometry and Calculus II ..... 4
CHM 230 Chemistry II .................................. 4
Elective .................................................. 1
BAE 020 Engineering Assembly ....................... 0

Sophomore

Fall semester

MATH 223 Analytic Geometry and Calculus III ... 4
PHYS 213 Engineering Physics I ....................... 5
CHM 350 General Organic Chemistry ............... 3
NE 385 Engineering Computational Techniques ... 2
ENGL 200 Expository Writing II* ...................... 3
or
Elective .................................................. 3
BAE 020 Engineering Assembly ....................... 0

Spring semester

BAE 500 Properties of Biological Materials ....... 2
MATH 240 Elementary Differential Equations ..... 4
PHYS 214 Engineering Physics II ....................... 5
ME 212 Engineering Graphics I ......................... 2
Biology elective ....................................... 3
BAE 020 Engineering Assembly ....................... 0

Junior

Fall semester

BAE 510 Environmental Design of Agricultural Buildings .................. 3
ME 513 Thermodynamics I ............................. 3
AGRON 305 Soils ....................................... 4
CE 530 Statics and Dynamics .......................... 4
Humanities or social science elective ............... 4
BAE 020 Engineering Assembly ....................... 0

Spring semester

BAE 512 Functional Analysis of Agricultural Machinery .................. 3
BAE 521 Energy in Biological Systems ............... 3
ME 571 Fluid Mechanics ................................ 3
ENGL 415 Written Communications for Engineers* 3
CE 533 Mechanics of Materials ....................... 3
Humanities or social science elective ............... 3
BAE 020 Engineering Assembly ....................... 0

Senior

Fall semester

BAE 536 Agricultural Engineering Design I .......... 3
BAE 575 Fundamentals of Agricultural Process Engineering .................. 3
EECE 519 Electric Circuits and Controls ............ 4
BAE 530 Natural Resources Engineering .......... 3
Technical elective ................................. 2

Design technical elective .............................. 3
BAE 020 Engineering Assembly ....................... 0

Spring semester

Humanities or social science electives ............. 6
Technical elective .................................... 3
Design technical elective ............................ 3
Biology elective ..................................... 3
BAE 640 Instrumentation and Control for Biological Systems .................. 3
BAE 020 Engineering Assembly ....................... 0

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I. Elective is restricted to only a technical elective.

Environmental option

Freshman

Fall semester

ENGL 100 Expository Writing I ........................ 3
CHM 210 Chemistry I .................................. 4
MATH 220 Analytic Geometry and Calculus I .... 4
SPCH 105 Public Speaking IA ........................ 2
BAE 200 Engineering Methods ......................... 1
Humanities or social science elective ............... 3
BAE 020 Engineering Assembly ....................... 0

Spring semester

MATH 221 Analytic Geometry and Calculus II .... 4
ECON 110 Principles of Macroeconomics .......... 3
CHM 230 Chemistry II .................................. 4
ME 212 Engineering Graphics ......................... 2
Elective .................................................. 1
BAE 020 Engineering Assembly ....................... 0

Sophomore

Fall semester

MATH 222 Analytic Geometry and Calculus III .... 4
PHYS 213 Engineering Physics I ....................... 5
BIOL 198 Principles of Biology ....................... 4
AGRON 305 Soils ....................................... 4
BAE 020 Engineering Assembly ....................... 0

Spring semester

MATH 240 Elementary Differential Equations ..... 4
BAE 500 Properties of Biological Materials ....... 2
CE 530 Statics and Dynamics .......................... 4
BAE 020 Engineering Assembly ....................... 0

Junior

Fall semester

CE 563 Environmental Engineering .................. 3
ME 513 Thermodynamics I ............................. 3
CHM 350 General Organic Chemistry ............... 3
CE 551 Hydrology ...................................... 2
ENGL 120 Expository Writing II ....................... 3
Technical electives ................................... 3
BAE 020 Engineering Assembly ....................... 0

Spring semester

BIOL 455 General Microbiology ..................... 4
EECE 519 Electric Circuits and Control ............ 4
BAE 521 Energy in Biological Systems ............... 3

ME 571 Fluid Mechanics ................................ 3
Humanities or social science elective ............... 3
BAE 020 Engineering Assembly ....................... 0

Senior

Fall semester

BAE 690 Non-Pollution Engineering ................ 3
BAE 575 Fundamentals of Agricultural Process Engineering .................. 3
BAE 536 Agricultural Engineering Design I ........ 3
ENGL 415 Written Communications for Engineers* 3
Technical elective .................................... 3
BAE 020 Engineering Assembly ....................... 0

Spring semester

BAE 530 Natural Resources Engineering .......... 3
BAE 651 Air Pollution Engineering ................ 3
Humanities or social science electives ............. 4
BAE 640 Instrumentation and Control for Bio Systems .................. 3
Design technical elective ............................ 3
BAE 020 Engineering Assembly ....................... 0

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I. Elective is restricted to only a technical elective, humanities or social science elective, or ROTC.

Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum (two courses must be 300 level or above).

Technological electives are to be chosen with the advice and approval of the faculty advisor and department head.

Food engineering option

Freshman

Fall semester

ENGL 100 Expository Writing I ........................ 3
CHM 210 Chemistry I .................................. 4
MATH 220 Analytic Geometry and Calculus I .... 4
BAE 200 Engineering Methods ......................... 1
SPCH 105 Public Speaking IA ........................ 2
Humanities or social science elective ............... 3
BAE 020 Engineering Assembly ....................... 0

Spring semester

CHM 230 Chemistry II .................................. 4
MATH 221 Analytic Geometry and Calculus II .... 4
ECON 110 Principles of Macroeconomics .......... 3
NE 385 Engineering Computational Techniques ... 2
Technical elective .................................... 2
Elective .................................................. 1
BAE 020 Engineering Assembly ....................... 0

Sophomore

Fall semester

MATH 222 Analytic Geometry and Calculus III .... 4
PHYS 213 Engineering Physics I ....................... 5
BIOL 198 Principles of Biology ....................... 4
AGRON 305 Soils ....................................... 4
BAE 020 Engineering Assembly ....................... 0

Spring semester

MATH 240 Elementary Differential Equations ..... 4
BAE 500 Properties of Biological Materials ....... 2
CE 530 Statics and Dynamics .......................... 4
BAE 020 Engineering Assembly ....................... 0

Junior

Fall semester

CE 563 Environmental Engineering .................. 3
ME 513 Thermodynamics I ............................. 3
CHM 350 General Organic Chemistry ............... 3
BAE 020 Engineering Assembly ....................... 0

Spring semester

MATH 240 Elementary Differential Equations ..... 4
PHYS 214 Engineering Physics II ....................... 5
BIOL 198 Principles of Biology ....................... 4
CHM 350 General Organic Chemistry ............... 3
BAE 020 Engineering Assembly ....................... 0

Junior

Fall semester

CHE 529 Chemical Engineering ..................... 3
BIOL 455 General Microbiology ..................... 4
CHM 585 Physical Chemistry ......................... 3
### Biological and agricultural engineering courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BAE 020.1</td>
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<tr>
<td>BAE 020.2</td>
<td>Expository Writing II</td>
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</tr>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
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### Spring semester

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<tbody>
<tr>
<td>CHE 521</td>
<td>Chemical Engineering</td>
<td>3</td>
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<tr>
<td>EECE 415</td>
<td>Written Communication for Engineers*</td>
<td>3</td>
</tr>
<tr>
<td>CHE 550</td>
<td>Chemical Reaction Engineering</td>
<td>3</td>
</tr>
<tr>
<td>BAE 510</td>
<td>Environmental Design of Agricultural Buildings</td>
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</tr>
<tr>
<td>BAE 512</td>
<td>Functional Analysis of Agricultural Machinery</td>
<td>3</td>
</tr>
<tr>
<td>BAE 500</td>
<td>Properties of Biological Materials</td>
<td>2</td>
</tr>
<tr>
<td>BAE 625</td>
<td>Thermal Processing Operations in Food Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ASI 301</td>
<td>Introduction to Food Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>BAE 020</td>
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**Total credits for Spring semester: 18**

### Fall semester

<table>
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<th>Course Code</th>
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<tr>
<td>BAE 523</td>
<td>Energy in Biological Systems</td>
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<tr>
<td>BAE 635</td>
<td>Food Plant Design</td>
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<tr>
<td>CHE 626</td>
<td>Bioseparation</td>
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<td>Humanities or social science elective</td>
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<tr>
<td>BAE 020</td>
<td>Engineering Assembly</td>
<td>0</td>
</tr>
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</table>

**Total credits for Fall semester: 17**

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I. Elective is restricted to technical elective, humanities or social science elective, or ROTC.

### Senior Fall semester

<table>
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<td>EECE 510</td>
<td>Circuit Theory I</td>
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<td>CHE 540</td>
<td>Written Communication for Engineers*</td>
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</tr>
<tr>
<td>CHE 550</td>
<td>Chemical Reaction Engineering</td>
<td>3</td>
</tr>
<tr>
<td>BAE 510</td>
<td>Environmental Design of Agricultural Buildings</td>
<td>3</td>
</tr>
<tr>
<td>BAE 536</td>
<td>Agricultural Engineering Design I</td>
<td>3</td>
</tr>
<tr>
<td>BAE 540</td>
<td>Agricultural Engineering Design II</td>
<td>3</td>
</tr>
<tr>
<td>BAE 566</td>
<td>Design of Agricultural Structures</td>
<td>3</td>
</tr>
<tr>
<td>BAE 575</td>
<td>Fundamentals of Agricultural Process Engineering</td>
<td>3</td>
</tr>
<tr>
<td>BAE 620</td>
<td>Problems in Agricultural Engineering</td>
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<tr>
<td>BAE 625</td>
<td>Thermal Processing Operations in Food Engineering</td>
<td>3</td>
</tr>
<tr>
<td>BAE 635</td>
<td>Food Plant Design</td>
<td>3</td>
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<tr>
<td>BAE 636</td>
<td>Agricultural Engineering Design II</td>
<td>3</td>
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<td>BAE 640</td>
<td>Instrumentation and Control for Biological Systems</td>
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<tr>
<td>BAE 651</td>
<td>Air Pollution Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total credits for Senior Fall semester: 18**

### Chemical Engineering

**S. Gehlke, Head**

Professors Akins, Erickson, Edgar, Gehlke, Fan, Glasgow, Schlup, and Walawender; Assistant Professor Hohn; Emeriti: Professors Kyle and Matthews.

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www.engg.ksu.edu/CHIEDEPT/home.html

Chemical engineers contribute to society by providing an essential link between the basic chemical sciences and commercial production. Chemical engineers find employment in the chemical and allied industries including energy, petrochemical, biotechnology, agricultural chemical, food, pharmaceutical, environmental, and semiconductor.

### Educational objectives

The primary educational objective of the chemical engineering program is to prepare students for diverse professional careers in chemical engineering or for advanced professional study. The curriculum is best suited to highly motivated students with superior abilities in chemistry, physics, and mathematics. Graduates are given a solid foundation in mathematics and the basic sciences over the first half of their academic program, and then focus on the chemical engineering discipline over the second half. They learn how to account for the matter and energy flowing

Design and economics of particulate pollution control systems including cyclones, fabric filters, wet scrubbers, and electrostatic precipitators. Abatement of gas and vapor pollution using VOC incineration, gas adsorption, and gas absorption. Meteorology and atmospheric dispersion modeling. Three hours rec. a week. Pr.: ME 513, 571.

BAE 690. Non-Point Pollution Engineering. (3) I. Management of diffuse sources of pollution generally resulting from storm water and runoff. Use of models and Geographic Information Systems (GIS) to evaluate the extent and magnitude of non-point pollution, legislation and programs affecting non-point pollution, and design of treatment and management systems. Non-point pollutants addressed include: nutrients, pesticides, sediment, and hazardous wastes. Three hours lec. a week. Pr.: BAE 531 or CE 551.

BAE 700. Agricultural Process Engineering. (3) II. Theory, equipment, and design techniques in processing agricultural products. Two hours rec. and three hours lab a week. Pr.: BAE 575.

BAE 705. Irrigation Engineering. (3) II. Design and operative problems on the fundamentals of irrigation system design and management. Soil, plant, and water relationships; pipeline and system hydraulic design; design of irrigation systems; filtration systems and chemigation; sources of water and water quality. Two hours rec. and three hours lab a week. Pr.: BAE 551 and AGRON 305. Pr. or conc.: ME 571.

BAE 712. Analysis and Design of Off-Highway Vehicles. (3) II. Analysis and design of off-highway vehicles. Analysis of design, testing, construction, and operating characteristics of off-highway vehicles and machinery. Includes human factors, mobility, and precision agriculture. Two hours rec. and three hours lab a week. Pr.: BAE 536 or ME 574.

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* *Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I. Elective is restricted to technical elective, humanities or social science elective, or ROTC.

### Technical electives are to be chosen with the advice and approval of the faculty advisor and department head.

The engineering science requirements will be satisfied by the required courses in this curriculum.

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* *Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I. Elective is restricted to technical elective, humanities or social science elective, or ROTC.

### Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum (usually two courses must be 300 level or above).

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* *Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I. Elective is restricted to technical elective, humanities or social science elective, or ROTC.

Humanities and social science electives are to be selected from the approved list and need not be taken in the order listed in the curriculum (usually two courses must be 300 level or above).

Technical electives are to be chosen with the advice and approval of the faculty advisor and department head.

The engineering science requirements will be satisfied by the required courses in this curriculum.
through a chemical process (CHE 320); analyze flows of fluids, heat, and mass (CHE 530, 531); use thermodynamics to understand physical and chemical equilibria (CHE 520, 521); design chemical reactors to create valuable products from raw materials (CHE 550) and the continuous and stagewise separation units that purify these products (CHE 560); and ultimately to tie these different operations together to operate as a whole in a manner that is safe, effective, profitable, and environmentally sound (CHE 561, 570, 571). These principles are further developed and demonstrated using modern computational methods (CHE 316, 516) and in laboratory courses (CHE 522, 532, 542).

Professional skills such as communication, teamwork, and ethics are developed throughout the program. Electives in other disciplines enable graduates to work effectively in multidisciplinary teams and meet the challenges of rapidly increasing technological complexity with an awareness of the impact of this technology on society. Graduates will be motivated to make worthwhile contributions to the profession and society and to appreciate the value of life-long learning.

Dual degree program

The Department of Chemical Engineering offers a five-year dual degree program in chemistry/chemical engineering. The program may be pursued entirely at K-State, requiring a minimum of 150 credit hours, or a portion of the requirements may be completed at other colleges. In particular, a formal cooperative program exists between K-State and Pittsburg State University in which students spend the first three years at PSU and the last two at K-State. Other dual degree programs are also available.

Areas of concentration

If a student desires to emphasize a particular area such as biochemical, food, computer and control systems, energy, materials, or environmental engineering, there are three possibilities: areas of emphasis, minors, and secondary majors.

For an area of emphasis the student selects appropriate technical electives. Lists of recommended technical electives for some of the areas for emphasis commonly chosen are available in the department office.

A student may also acquire a minor in an area of concentration or complete requirements for admission to medical or law school. Students interested in the latter should consult the Pre-Professional Programs section of this catalog. A student may also complete requirements for a secondary major in an area such as natural resources and environmental sciences. Other opportunities are described in the Secondary Majors section of this catalog.

Selection of technical electives and choices for areas of concentration should be made in consultation with the student’s academic advisor.

Curriculum in chemical engineering (CHE)

Bachelor of science in chemical engineering 134 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Freshman

Fall semester

ENGL 100 Expository Writing I* ........................................... 3
CHEM 220 Chemical Principles II* ...................................... 5
MATH 220 Analytic Geometry and Calculus I* ..................... 4
Elective ............................................................................. 4
SPCH 105 Public Speaking IA ........................................... 2
CHE 015 Engineering Assembly ........................................... 0

Spring semester

CHEM 250 Chemical Principles III* .................................... 5
CHEM 221 Analytic Geometry and Calculus II* .................... 4
ECON 110 Principles of Macroeconomics I* ......................... 3
Elective ............................................................................. 3
CHE 015 Engineering Assembly ........................................... 0

Sophomore

Fall semester

MATH 222 Analytic Geometry and Calculus III .................... 4
PHYS 213 Engineering Physics I ......................................... 5
CHEM 331 Chemical Engineering Computational Techniques I* .................................................. 1
Elective ............................................................................. 3
CHE 015 Engineering Assembly ........................................... 0

Spring semester

MATH 240 Elementary Differential Equations ....................... 4
PHYS 214 Engineering Physics II ........................................ 5
CHEM 550 Organic Chemistry II ........................................ 3
CHEM 320 Introduction to Process Analysis ......................... 3
CHEM 532 Organic Chemistry Lab ..................................... 2
CHE 015 Engineering Assembly ........................................... 0

Junior

Fall semester

CHEM 585 Physical Chemistry I ......................................... 3
CHEM 586 Physical Chemistry I Lab ................................... 2
CHEM 520 Chemical Engineering Thermodynamics I* ........ 2
CHEM 530 Transport Phenomena I ..................................... 3
Elective ............................................................................. 6
CHE 015 Engineering Assembly ........................................... 0

Spring semester

CHEM 585 Physical Chemistry II ........................................ 3
ENGL 415 Written Communication for Engineers* ................ 3
CHEM 522 Chemical Engineering Lab I* ............................. 2
CHEM 521 Chemical Engineering Thermodynamics II* ........ 3
CHEM 531 Transport Phenomena II .................................... 3
Elective ............................................................................. 3
CHE 015 Engineering Assembly ........................................... 0

Senior

Fall semester

CHEM 516 Chemical Engineering Computational Techniques II* .................................................. 1
CHEM 532 Chemical Engineering Lab II* ............................ 2
CHEM 560 Separational Process Design ................................ 3
CHEM 550 Chemical Reaction Engineering ......................... 3
CHEM 570 Chemical Engineering Systems Design I ................. 2
Elective ............................................................................. 6
CHE 015 Engineering Assembly ........................................... 0

Spring semester

CHEM 542 Chemical Engineering Lab III ............................... 3
CHEM 561 Chemical Process Dynamics and Control ............ 3
CHEM 571 Chemical Engineering Systems Design II ................ 4
Elective ............................................................................. 6
CHE 015 Engineering Assembly ........................................... 0

*The prerequisite for ENGL 415 is satisfied with an A or B in ENGL 100. Otherwise students must take ENGL 200, which may be substituted for 3 credit hours of technical electives.

†Students may elect to meet freshman chemistry requirements through the following course sequence: Chemistry I (CHEM 210), Chemistry II (CHEM 230), and Chemical Analysis (CHEM 371).

Thirty-three hours of electives are required and they are to be selected in consultation with the student’s advisor. Fifteen of these hours are to be selected from the approved list of humanities and social sciences (two courses must be 400 level or above). Nine hours must satisfy the engineering science requirements, and the remaining nine hours are selected to enhance the student’s professional development. All electives must have the approval of the department head and technical electives must meet the engineering science requirements.

Chemical engineering courses

CHE 015. Engineering Assembly, (0) I, II.

CHE 316. Chemical Engineering Computational Techniques I* (1) I, II. Application of computational methods including programming to chemical engineering problems. Three hours lab a week. Pr. or conc.: MATH 221.

CHE 320. Introduction to Process Analysis. (3) I, II. An introduction to chemical engineering with emphasis on material and energy balances. Three hours rec. a week. Pr. or conc.: MATH 240 and CHE 316.


CHE 352. Engineering Materials I. (3) I, II. Structure of metals, ceramics, glasses, polymers, semiconductors, and composites. Mechanical, electrical, and magnetic properties. Multiphase equilibrium and modification of properties through change in microstructure. Two hours rec. a week and three hours lab a week. Pr.: CHM 230. Pr. or conc.: PHYS 213.


CHE 499. Honors Research in Chemical Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.

CHE 516. Chemical Engineering Computational Techniques II* (1) I. Application of computational methods with emphasis on simulation to chemical engineering problems. Three hours of lab a week. Pr.: CHEM 316 and conc.: CHEM 550 and 560.

CHE 520. Ch.E. Thermodynamics I. (2) I. A study of the first and second laws of thermodynamics, real gases, heat of solution and reaction. Two hours rec. a week. Pr.: CHE 320. Pr. or conc.: CHEM 585.

CHE 521. Ch.E. Thermodynamics II. (3) I. A continuation of the study of the second law, thermodynamic analysis of processes, phase equilibrium, chemical reaction equilibrium. Three hours rec. a week. Pr.: CHE 520.
CHE 522. Chemical Engineering Laboratory I. (2) II. Laboratory experiments on momentum and heat transfer. Five hours lab a week. Pr.: CHE 520 and 530.

CHE 530. Transport Phenomena I. (3) I. A unified treatment of the basic principles of momentum, energy, and mass transport. Three hours rec. a week. Pr.: CHE 320 and MATH 240.

CHE 531. Transport Phenomena II. (3) II. Continuation of Transport Phenomena I with special emphasis on mass transfer. Three hours rec. a week. Pr.: CHE 530.

CHE 532. Chemical Engineering Laboratory II. (2) I. Laboratory experiments on heat and mass transfer. Five hours lab a week. Pr.: CHE 521 and 531.

CHE 542. Chemical Engineering Laboratory III. (3) II. Laboratory experiments on classical unit operations, e.g., distillation, absorption, extraction, and on chemical kinetics and process dynamics. Eight hours lab a week. Pr.: CHE 516, 550, and 560. Pr. or conc.: CHE 561.

CHE 550. Chemical Reaction Engineering. (3) I. Applied chemical kinetics and catalysis including the analysis and design of tubular, packed bed, stirred tank, and fluidized bed chemical reactors. Three hours rec. a week. Pr.: CHE 521 and 531. Conc.: CHE 516.

CHE 560. Separational Process Design. (5) I. Development of the basic theory and design of separational processes such as distillation, gas absorption, liquid extraction, adsorption, and ion exchange. Three hours rec. a week. Pr.: CHE 521 and 531. Conc.: CHE 516.

CHE 561. Chemical Process Dynamics and Control. (3) II. A study of the unsteady state behavior and control of chemical processes. Three hours rec. a week. Pr.: CHE 550 and 516.

CHE 570. Chemical Engineering Systems Design I. (2) I. Basic concepts of process economics with application to the design of chemical processes. Two hours rec. a week. Pr. or conc.: CHE 550 and 560.

CHE 571. Chemical Engineering Systems Design II. (4) II. Basic concepts of process optimization with application to the synthesis and design of chemical processing systems. Emphasis will be on the solution of comprehensive systems design problems. Two hours rec. and six hours lab a week. Pr.: CHE 516, 550, 560, and 570. Pr. or conc.: CHE 561.

CHE 580. Problems in Chemical Engineering or Materials Science. (Var.) I, II. A. An introduction to chemical engineering research. Pr.: Approval of department head.

CHE 626. Bioseparations. (2) II, in even years. Study of separations important in food and biochemical engineering such as leaching, extraction, expression, absorption, ion exchange, filtration, centrifugation, membrane separation, and chromatographic separations. Two hours rec. a week. Pr.: CHE 531 or AGE 575.

CHE 648. Processing of Composite Materials. (3) I, II. Principles of composite materials, including ceramic, metal, and polymer matrix composites; properties and processing of fibers; role of interfaces in composites; basic concepts in mechanics, failure, and testing of composite materials. Three hours rec. a week. Pr.: CHE 350 or 352.


CHE 653. Ceramic Materials. (3) I, II. Structure and bonding in glasses and ceramics; phase equilibria and transformation kinetics; defects and microstructure within ceramic materials; mechanical, thermal, optical, electrical, and magnetic properties of ceramics and glasses. Three hours rec. a week. Pr.: CHM 230.


CHE 664. Electrochemical Engineering. (3) I, II. Thermodynamics, electrode kinetics, and transport phenomena of electrochemical systems. Three hours rec. a week. Pr.: CHE 521 and 531.

CHE 681. Engineering Materials II. (3) II, I. The structure and bonding in crystalline and amorphous materials; crystallography; thermodynamic stability in materials; equilibrium diagrams and the phase rule; rate theory and kinetics of solid-state transformations; mechanical behavior of engineering materials; dislocations; failure mechanisms. Three hours rec. a week. Pr.: CHE 350 or 352.

CHE 682. Surface Phenomena. (2) I, II. Principles and applications of interfacial phenomena, including capillarity, colloids, porosity, adsorption, and catalysis. Two hours rec. a week. Pr.: CHE 520.

CHE 715. Biochemical Engineering. (3) I. The analysis and design of biochemical processing systems with emphasis on fermentation kinetics, continuous fermentations, aeration, agitation, scale up, sterilization, and control. Three hours rec. a week. Pr. or conc.: CHE 550.


CHE 735. Chemical Engineering Analysis I. (3) I, II. The mathematical formulation of problems in chemical engineering using partial differential equations, vector and tensor notation. Solution of these problems by analytical and numerical methods. Three hours rec. a week. Pr.: CHE 530.


CHE 750. Air Quality Seminar. (1) I. Topics in air quality including health effects, toxicology, measurement, characterization, modeling, management, and control. One hour rec. a week. Pr.: CHE 230.

Civil Engineering

Stuart E. Swartz, * Head


www.engg.ksu.edu/CEDEPT/home.html

Civil engineering is the engineering of constructed facilities and systems. Because civil engineering is broad in scope, many civil engineers develop specialties within the broad field. The civil engineering department offers three options within the B.S. in civil engineering degree.

Educational objectives

The objective of the civil engineering program is to prepare graduates for professional careers in civil engineering. A major goal is to provide civil engineering students with the best possible education toward that end within the guidelines provided by the Accreditation Board for Engineering and Technology (ABET) General Criteria and the ABET Program Criteria for Civil Engineering. Within this framework, further goals are to instill in the students a sensitivity to the social and humanistic implications of technology, and to motivate them to make worthwhile contributions to the profession and to society.

The civil engineering program educational objectives enable graduates to: demonstrate an understanding of basic sciences, engineering sciences, and mathematics; demonstrate an understanding of the basic principles associated with the five engineering areas included in our program: environmental, geotechnical, structural, transportation/materials, and water resources/hydraulic engineering; be able to apply the methodologies of current design practice; demonstrate proficiency in technical communication; demonstrate an ability to work in a team environment; demonstrate an understanding of professional practice issues; be prepared to engage in life-long learning; understand the impact of engineering practice in the social, economic, and political arenas.

General option

The general option allows the student to pursue a B.S. in civil engineering degree in a broader general program or, if a specific career objective has been identified, to concentrate on one or more areas within the general option. The following areas of concentration are available:

Water resources—design and construction of reservoirs, canal systems, and dams for flood control, irrigation, power, and water supply.

Geotechnical—foundations for structures, earth embankments, retaining walls and bulkheads, and pavements for highways and airports.

Environmental—protection of public health and environmental quality through planning and designing facilities for water treatment and distribution; wastewater, solid and hazardous wastes collection, treatment, and disposal; and air pollution control.

Transportation—planning, design, and construction of highways, railways, airports, and urban mass transit systems.

Structures—design and construction of a variety of buildings and bridges, as well as the structural framing of aircraft, ships, and space vehicles.

Students choosing the general option can fulfill the requirements for a B.S. in civil engineering by following the course curriculum as well as the following selection of courses:

CE 411  Route Location and Design ..................... 4
Option elective ............................................. 12–15
C.E. electives ............................................. 12
CE electives must be chosen from those listed below, and must include at least one course in four of the five areas:

Environmental
CE 565 Water and Wastewater Engineering

Geotechnical
CE 528 Foundation Engineering

Structural
CE 542 Structural Engineering in Steel
CE 544 Structural Engineering in Concrete

Transportation
CE 572 Highway Engineering and Management

Water resources
CE 552 Hydraulic Engineering
Construction engineering option
This option allows students to obtain a B.S. in civil engineering while preparing more specifically for employment in the construction industry.

Students choosing the construction engineering option can fulfill the requirements for a B.S. in civil engineering by following the course curriculum listed for civil engineering as well as the following selection of courses:

ACCTG 231 Accounting for Business Operations .......... 3
ACCTG 241 Accounting for Investing and Financing .......... 3
DEN 550 Engineering Law ...................................... 3
CE 411 Route Location and Design ............................... 4
CE 528 Foundation Engineering .................................. 3
CE 542 Structural Engineering in Steel ....................... 3
CE 544 Structural Engineering in Concrete ............... 3
CE 641 Civil Engineering Materials ............................ 3
CE 680 Economics of Design and Construction ............... 3
Option elective .................................................. 0–3

Environmental option
This option allows students to obtain a B.S. in civil engineering while preparing more specifically for career opportunities with firms and governmental agencies actively engaged in environmental engineering practice.

Students choosing the environmental option can fulfill the requirements for a B.S. in civil engineering by following the course curriculum listed for civil engineering as well as the following selection of courses:

BIOL 198 Principles of Biology .................................. 4
CHM 531 Organic Chemistry I .................................... 3
CHE 352 Engineering Materials I ............................... 3
CE 528 Foundation Engineering .................................. 3
CE 544 Structural Engineering in Concrete ............... 3
CE 552 Hydraulic Engineering ................................... 3
CE 565 Water and Wastewater Engineering .................... 3
Option elective .................................................. 6–9

Curriculum in civil engineering (CE)
Bachelor of science in civil engineering
134 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

Freshman
Fall semester
MATH 220 Analytic Geometry and Calculus I .................. 4
CHM 210 Chemistry I .............................................. 3
ENGL 100 Expository Writing I* .................................. 4
ECON 110 Principles of Macroeconomics ....................... 3
ME 212. Engineering Graphics I .................................. 2
DEN 015 New Student Orientation Seminar ................. 0

Spring semester
MATH 221 Analytic Geometry and Calculus II ............... 4
CHM 230 Chemistry II ............................................. 3
Option elective .................................................. 4
NE 385 Engineering Computer Techniques .................. 2
GEOL 100 Earth in Action ....................................... 3
CE 015 Engineering Assembly .................................... 0

Sophomore
Fall semester
MATH 222 Analytic Geometry and Calculus III .............. 4
PHYS 213 Engineering Physics I .................................. 5
ENGL 200 Expository Writing II* or
Option elective .................................................. 2
SPCH 105 Public Speaking IA .................................... 2
CE 212 Elementary Surveying Engineering .................... 3
CE 015 Engineering Assembly .................................... 0

Spring semester
MATH 240 Elementary Differential Equations ............... 4
PHYS 214 Engineering Physics II ............................... 5
STAT 490 Statistics for Engineers ............................. 3
CE 333 Statics ..................................................... 3
Option elective .................................................. 2
CE 380 Computer Applications in Civil Engineering ........ 1
DEN 275 Introduction to Personal/Professional Development .................................................. 1
CE 015 Engineering Assembly .................................... 0

Junior
Fall semester
ME 512 Dynamics .................................................. 3
ME 513 Thermodynamics I ....................................... 3
CE 551 Hydrology .................................................. 2
CE 553 Hydrologic Methods Lab ................................ 1
CE 533 Mechanics of Materials .................................. 3
CE 534 Mechanics of Materials Lab ............................ 1
Option elective .................................................. 4
CE 015 Engineering Assembly .................................... 0

Spring semester
CE 537 Introduction to Structural Analysis ................. 4
ME 571 Fluid Mechanics ......................................... 3
CE 522 Soil Mechanics I ......................................... 3
CE 563 Environmental Engineering Fundamentals .......... 3
ENGL 415 Written Communication for Engineers* ............. 3
CE 015 Engineering Assembly .................................... 0

Senior
Fall semester
CE 015 Engineering Assembly .................................... 0
Civil engineering electives* ..................................... 6
Humanities or social science electives** ....................... 5

Spring semester
CE 015 Engineering Assembly .................................... 0
Civil engineering elective* ....................................... 6
Humanities or social science electives** ....................... 8
Option elective .................................................. 3

**Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENG 415) are met from Expository Writing I.

*Option electives are to be selected in consultation with the student’s faculty advisor to satisfy the requirements of the option the student has chosen. One course from either the engineering materials or circuits, fields, and electronics engineering science group is required in the general option.

***Civil engineering electives are to be selected from the list approved by the department to satisfy option requirements.

Civil engineering courses
CE 015. Engineering Assembly, (0) I, II.
CE 212. Elementary Surveying Engineering, (3) I, II.
CE 231. Statics A, (3) I, II. Composition and resolution of forces; equilibrium of force systems; application of the principles of statics to problems, including systems of forces and particle systems. Moments of inertia. Three hours rec. a week. Pr.: PHYS 113 and MATH 220 or conc.: MATH 211.
CE 322. Soil and Foundation Construction, (3) II. The origin, distribution, and predictable variation of soil: soil testing and mechanics as applied to practical problems; soil investigations; foundation types, application and construction; ground water, drainage, and dewatering; earth moving including stable embankments. Not open to engineering students. Two hours rec. and three hours lab a week. Pr. or conc.: GEO 100.
CE 331. Strength of Materials A, (3) I, II. Behavior of materials subjected to tension, compression, shear, and bending; design of beams and columns. Three hours rec. a week. Pr.: CE 231.
CE 332. Strength of Materials A Laboratory, (1) I, II. Tests to determine the physical properties of various structural materials. Analysis and interpretation of test data. Three hours lab a week. Pr.: ENGL 120 or 100 with grade of A or B, and one course in graphics. Pr. or conc.: CE 331.
CE 333. Statics, (3) I, II. Statics. (3) I, II. Composition and resolution of forces; equilibrium of force systems; application of general laws of statics to engineering problems, including use of vector algebra, friction and force analyses of simple structures, cables, and machine elements; center of gravity; moments of inertia. Three hours rec. a week. Pr.: MATH 221 and PHYS 213.
CE 380. Computer Applications in Civil Engineering, (1) I, II. Application of computer to problems in civil engineering, including programming. Use of software packages for report preparation, graphics generation, spreadsheet analysis, and data management. One hour rec. and two hours lab a week. Pr.: MATH 221 and NE 385. Conc.: STAT 490.
CE 411. Route Location and Design, (4) I, II. Transportation systems; highway location and the geometric design of streets and highways considering the driver-vehicle-roadway system characteristics; curves and earthwork; surveying pertaining to the alignment of highways and roadways. Two hours rec. and six hours lab a week. Pr.: CE 212, MATH 221, and PHYS 213.
CE 499. Honors Research in Civil Engineering, (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in writing during the last semester.
CE 522. Soil Mechanics I, (3) I, II. Identification, classification, and engineering properties of soils; theory and application of consolidation, compressibility, and strength of soils; ground water retention and movement; slope stability and lateral earth pressures; stress distribution in soil. Two hours rec. and three hours lab a week. Pr.: CE 333.
CE 528. Foundation Engineering, (3) I, II. Prediction of soil variation; soil investigations; stress distribution and bearing capacity; dewatering analysis and procedures; retaining structures and lateral earth pressures; shallow foundations, pile foundations; underpinning and grouting. Two hours rec. and three hours lab a week. Pr.: CE 522. Pr. or conc.: CE 544.
CE 530. Statics and Dynamics, (4) I, II. Shortened combined course in (1) statics, including a study of force systems, free-body diagrams, and problems in equilibrium, friction, centroids, and moments of inertia; and (2) dynamics, including a study of the kinematics and kinetics of particles and rigid bodies using the methods of force-mass acceleration, work-energy, and impulse-momentum. Four hours rec. a week. Pr.: MATH 222 and PHYS 213.
CE 533. Mechanics of Materials, (3) I, II. Elementary theories of stress and strain, behavior of materials, and applications of these theories and their generalizations to the study of stress distribution, deformation, and instability in the simple structural forms that occur most frequently in engineering practice. Three hours rec. a week. Pr.: CE 333 or 530. Pr. or conc.: MATH 222.
structures by consistent deformation, slope-deflection, and moment distribution, and matrix stiffness method; with emphasis on techniques used in water and wastewater treatment with BAE 551.

CE 551. Hydrology. (2) I. A study of the sources of supply and movement of surface and ground waters. Two hours rec. a week. Pr.: PHYS 113 or 213. Cross-listed with BAE 551. 

CE 552. Hydraulic Engineering. (3) I. Applications of the principles of fluid mechanics to control and use of water; reservoir, dam, and spillway design; enclosed conduits; and in-channel and mechanical properties of these materials; hydraulic machinery and hydro-power development; principles of fluid measurement; laboratory-flow and velocity metering, hydraulic models, pipe losses, open-channel flow. Two hours rec. and three hours lab a week. Pr.: CE 537.

CE 553. Hydrologic Methods Laboratory. (1) I, II. Application of hydrologic methods and computational techniques in design; data analysis and presentation; rainfall and flood frequency analysis; rainfall-runoff; hydrograph generation and flood routing; design of small reservoirs. Three hours lab a week. Pr.: CE 380 or BAE 200. Pr. or conc.: CE 551 or BAE 551.

CE 560. Activity Center Traffic Analysis. (3) Inter. The planning and design of any activity center (shopping mall, business center, sports stadium) must consider vehicular access and parking. If not properly planned and designed, the impact on the surrounding streets and the center can be chaotic. The course will cover techniques of determining parking needs, parking layout, internal and external circulation design, and design of access/egress and the adjacent street system to minimize the impact on the surrounding street network. A major design project will be required. Pr.: Junior standing.

CE 563. Environmental Engineering Fundamentals. (3) I, II. Basic physical, chemical, and biological concepts and their applications to the protection of the environment with emphasis on techniques used in water and wastewater treatment. Two hours rec. and three hours lab a week. Pr.: CHIM 230 and Mathematics for Engineers.

CE 565. Water and Wastewater Engineering. (3) II. Design of water supply and waste treatment control facilities, including collection, storage, and treatment systems. Two hours rec. and three hours lab a week. Pr.: CE 563, PHYS 214, and ME 571. Pr. or conc.: CE 552.

CE 570. Transportation Planning. (3) Inter. Fundamentals of transportation planning. Historical development and current status of techniques used in travel demand forecasting; trip generation, trip distribution, mode choice, and traffic assignment. Current microcomputer models and applications. Pr.: CE 380 or equivalent and junior standing.

CE 572. Highway Engineering and Management. (3) I. Applications of the principles of highway planning, design, and capacity analysis techniques to analyze, design, and maintain street and highway systems. Assessment of the impact of activity center development or redevelopment on the surrounding surface transportation system. Two hours rec. and three hours lab a week. Pr.: CE 411 and 522.

CE 580. AI Applications in Civil Engineering. (2) Inter. A review of the available techniques in artificial intelligence and a survey of applications in the intelligent areas of civil engineering (structures, transportation/matériaux, geotechnical, hydraulic/water resources, and environmental engineering). Knowledge representation, inference mechanisms, system development and evaluation; object-oriented programming. Use of expert system shells, neural networks, and fuzzy logic. Hands-on applications on microcomputers in the MS-Windows environment. Three hours recitation for 10 days. Afternoon lab hours additional in computer laboratory. Pr.: CE 380.

CE 585. Civil Engineering Project. (3) I, II. A comprehensive civil engineering project to be taken in the last semester of the B.S. program. Requires integration of skills acquired in civil engineering elective courses. Students must prepare and present written and oral design reports. One hour rec. and two-three hours lab a week. Pr.: ENGL 415 and 6 hours of CE electives. Pr. or conc.: Six additional credit hours of CE electives.

Undergraduate and graduate credit CE 641. Civil Engineering Materials I. (3) I. Properties and behavior of structural construction concrete and of its characteristics as a construction material; design of reinforced concrete structures. Two hours rec. and three hours lab a week. Pr.: CE 537.

CE 651. Hydrology. (2) I. A study of the sources of supply and movement of surface and ground waters. Two hours rec. a week. Pr.: PHYS 113 or 213. Cross-listed with BAE 551.

CE 652. Hydraulic Engineering. (3) I. Applications of the principles of fluid mechanics to control and use of water; reservoir, dam, and spillway design; enclosed conduits and mechanical properties of these materials; hydraulic machinery and hydro-power development; principles of fluid measurement; laboratory-flow and velocity metering, hydraulic models, pipe losses, open-channel flow. Two hours rec. and three hours lab a week. Pr.: CE 537 or 542 or 544.

CE 663. Unit Operations and Processes in Environmental Engineering. (2) I, II. A laboratory study of various physical, chemical, and biological operations and processes used in the professional practice of environmental engineering. Topics covered will be selected from reactor hydrodynamics, oxidation-reduction, coagulation-floculation, chemical precipitation, ion exchange, adsorption processes, biological oxidation, anaerobic digestion, and the activated-sludge process. Six hours lab per week. Pr. or conc.: CE 655 and CE 552.

CE 680. Economics of Design and Construction. (3) I. Selection of alternative engineering design and construction solutions through study of unit cost determination, cost estimating, and financing procedures. Introduction to construction scheduling. Three hours rec. a week. Pr.: Senior standing in engineering or graduate standing for nonengineering majors.

CE 686. Regional Planning Engineering. (3) I. The study of the use of space and allocation of the various functions of regional planning; the design and location of streets and highways, water supply and sanitary facilities, drainage and public utilities; rights-of-way and easement. Two hours rec. and three hours lab a week. Pr.: Senior standing in engineering, and graduate standing in regional and community planning.

CE 718. Engineering Photo Interpretation. (3) II. Photo interpretation techniques, types of aerial photographic film and their uses; application in land use studies, land surveying, site selection, rainfall runoff and stream flow, location of construction materials, and in the determination of soil properties; other applications. Two hours rec. and three hours lab a week. Pr.: Senior standing and consent of instructor.

CE 723. Designing with Geosynthetics. (3) II. In alternate years. History of geosynthetics; overview of geosynthetic functions, applications, and properties; relationship between testing and applications. Designing with geotextiles, geogrids, geomesures, geosynthetic clay liners, and geomembranes. Three hours rec. a week. Pr.: CE 522.

CE 725. Seepage in Permeable Materials. (3) I. In alternate years. Analysis of seepage; groundwater movement in slopes, embankments, dams, and earth-supporting structures; construction of flow nets; dewatering systems; filter and drain design. Three hours rec. a week. Pr.: CE 522 and CE 552.

CE 728. Advanced Geotechnical Design. (3) II. Advanced studies of soil investigations; design of retaining structures and reinforced earth walls, sheet piles, anchored bulkheads, underground conduits and tunnels; analysis and repair of failed structures. Two hours rec. and three hours lab a week. Pr.: CE 528.

CE 732. Advanced Structural Analysis I. (3) I. Classical methods of analysis of statically indeterminate structures; deflections and influence lines for indeterminate structures; and stress and strain tensors and stresses. Three hours rec. a week. Pr.: CE 537.

CE 741. Civil Engineering Materials II. (3) I. Advanced study of civil engineering materials including concrete, steel, and bituminous concrete. Two hours rec. and three hours lab a week. Pr.: CE 641 and CHE 350.

CE 742. Advanced Steel Design. (3) II. Plastic design of steel structures; stability problems in plastic design; design of complex steel structures. Three hours rec. a week. Pr.: CE 542.

CE 743. Advanced Reinforced Concrete Theory. (3) II. Advanced theories and methods of design and analysis of reinforced concrete structures. Three hours rec. a week. Pr.: CE 544.

CE 751. Hydraulics of Open Channels. (3) I. Properties of open-channel flow; types of open channels; conservation of mass, momentum, and energy; critical, uniform, and gradually varied flow; design of erodible channels; rapidly and slowly varied flow. Three hours rec. a week. Pr.: CE 542 and ENGL 415. Pr. or conc.: either CE 528 or 542 or 544.

CE 766. Wastewater Engineering: Biological Processes. (3) I. Biological process principles and their application to the design of wastewater treatment plants. Three hours rec. a week. Pr.: CE 565.

CE 771. Urban Transportation Analysis. (3) II. Origin-destination surveys, land-use inventories, parking and transit systems; arterial street standards and operating characteristics, coordination of city planning. Two hours rec. and three hours lab a week. Pr.: CE 572 or consent of instructor.

CE 774. Pavement Design. (3) I. On sufficient demand. Methods of evaluating the load-carrying capacity of soil subgrades, subbase, and base courses; critical analysis of the design of flexible pavement, and methods of increasing the load-carrying capacity of highway and airport pavements. Two hours rec. and three hours lab a week. Pr.: CE 552.

CE 775. Traffic Engineering I. (3) II. Traffic operations of roads, streets, and highways; traffic engineering studies; use of signs, signals, and pavement markings as traffic control devices; highway and intersection capacity, design, and operation of traffic signals; current microcomputer models and applications. Two hours rec. and three hours lab a week. Pr.: CE 572.

CE 776. Pavement Performance and Management Systems. (3) I. In alternate years. Pavement management systems including pavement condition and structural evaluation, analysis, and optimization. Economic analysis and rehabilitation planning in the urban applications. Three hours rec. a week. Pr.: CE 572.

CE 790. Problems in Civil Engineering. (Var. 1-5) I, II. Pr.: Approval of instructor.
A person seeking a bachelor of science degree in computer science must fulfill the following requirements:

Bachelor of science in computer science 120 hours required for graduation

Accredited by the Computer Sciences Accreditation Board (CSAB)

**Freshman year**

**Fall semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CIS 015</td>
<td>Undergraduate Seminar</td>
<td>0</td>
</tr>
<tr>
<td>CIS 200</td>
<td>Fundamentals of Software Design and Implementation</td>
<td>4</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 100</td>
<td>Expository Writing</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 105</td>
<td>Public Speaking IA</td>
<td>2</td>
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<tr>
<td>or</td>
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</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking I</td>
<td>3</td>
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**Spring semester**

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<tbody>
<tr>
<td>CIS 300</td>
<td>Data and Program Structures</td>
<td>3</td>
</tr>
<tr>
<td>CIS 301</td>
<td>Logical Foundations of Programming</td>
<td>3</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Analytic Geometry and Calculus II</td>
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<tr>
<td>Humanities/social science elective (first of five)</td>
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<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
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**Sophomore year**

**Fall semester**

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<tr>
<td>CIS 501</td>
<td>Software Architecture and Design</td>
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<tr>
<td>EEEC 241</td>
<td>Introduction to Computer Engineering</td>
<td>3</td>
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<tr>
<td>MATH 551</td>
<td>Applied Matrix Theory</td>
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</tr>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
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</tr>
<tr>
<td>Natural science elective with laboratory (first of four)</td>
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**Spring semester**

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<tr>
<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CIS 450</td>
<td>Computer Architecture and Organization</td>
<td>3</td>
</tr>
<tr>
<td>CIS 605</td>
<td>Programming Languages</td>
<td>3</td>
</tr>
<tr>
<td>MATH 510</td>
<td>Discrete Mathematics</td>
<td>3</td>
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<tr>
<td>Humanities/social science elective (second of four)</td>
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<tr>
<td>Natural science elective with laboratory (second of four)</td>
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**Junior year**

**Fall semester**

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<tbody>
<tr>
<td>CIS 520</td>
<td>Operating Systems I</td>
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<tr>
<td>CIS 575</td>
<td>Introduction to Algorithm Analysis</td>
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<tr>
<td>MATH 655</td>
<td>Elementary Numerical Analysis</td>
<td>3</td>
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<td>or</td>
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<tr>
<td>CIS 580</td>
<td>Numerical Computing</td>
<td>3</td>
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<tr>
<td>Humanities/social science elective (third of five)</td>
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<tr>
<td>Natural science elective with laboratory (third of five)</td>
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**Spring semester**

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<th>Course</th>
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<th>Credits</th>
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<td>CIS 560</td>
<td>Database System Concepts</td>
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<td>ENGL 516</td>
<td>Written Communications for the Sciences</td>
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<td>Technical elective (first of three)</td>
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<tr>
<td>Humanities/social science elective (fourth of five)</td>
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<td>Free elective</td>
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**Senior year**

**Fall semester**

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<th>Credits</th>
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<tbody>
<tr>
<td>CIS 540</td>
<td>Software Engineering Project I</td>
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<tr>
<td>CIS 570</td>
<td>Introduction to Formal Language Theory</td>
<td>3</td>
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<tr>
<td>Technical elective (second of three)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Humanities/social science elective (fifth of five)</td>
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</tr>
<tr>
<td>Natural science elective (fourth of four)</td>
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**Spring semester**

<table>
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<tr>
<th>Course</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CIS 541</td>
<td>Software Engineering Project II</td>
<td>3</td>
</tr>
<tr>
<td>CIS/PHIL 492</td>
<td>Computers and Society</td>
<td>3</td>
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<tr>
<td>Technical elective (third of three)</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Information systems curriculum**

The information systems curriculum emphasizes the use of computers to solve problems arising in the operations of business and commerce. The curriculum closely follows programs designed by the Association for Computing Machinery and the Data Processing Management Association.

Five specializations are available, each designed to develop additional skills supportive of the needs of the industry. These specializations are database manager (designs, uses, maintains, and manages database systems), management information systems specialist (defines organization requirements, acts as a management-technical communication channel, evaluates information systems, manages analyst/programmers), application programmer (designs detail logic, codes, verifies, documents programs and systems), and communications analyst (designs and implements distributed information systems, specifies and designs interface to the communication system.)

A person seeking a bachelor of science degree in information systems must fulfill the following requirements:

Required courses may not be taken under the A/Pass/F option.

Bachelor of science in information systems 120 hours required for graduation

**Freshman year**

**Fall semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 015</td>
<td>Undergraduate Seminar</td>
<td>0</td>
</tr>
<tr>
<td>CIS 200</td>
<td>Fundamentals of Software Design and Implementation</td>
<td>4</td>
</tr>
<tr>
<td>MATH 205</td>
<td>General Calculus and Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 105</td>
<td>Public Speaking IA</td>
<td>2</td>
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<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking I</td>
<td>3</td>
</tr>
<tr>
<td>Humanities/social science elective (first of six)</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Spring semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 301</td>
<td>Logical Foundations of Programming</td>
<td>3</td>
</tr>
<tr>
<td>CIS 300</td>
<td>Data and Program Structures</td>
<td>3</td>
</tr>
<tr>
<td>MATH 312</td>
<td>Finite Applications of Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>Humanities/social science elective (second of six)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>
Sophomore year
Fall semester
CIS 501 Software Architecture and Design ............ 3
EECE 241 Introduction to Computer Engineering ....... 3
ENG 200 Expository Writing II ................................. 3
Natural science elective with laboratory (first of four) ... 4
Humanities/social science elective (third of six) ......... 3

Spring semester
CIS 450 Computer Architecture and Organization ....... 3
CIS 605 Programming Languages ............................... 3
STAT 320 Elements of Statistics ............................... 3
Technical elective .................................................... 3
Natural science elective with laboratory (second of four) 4

Junior year
Fall semester
CIS 362 Introduction to Business Programming ........ 3
CIS 520 Operating Systems I ..................................... 3
ENGL 516 Written Communications for the Scientists ... 3
Natural science elective (third of four) ..................... 3
Free elective .................................................................. 3

Spring semester
CIS 462 Information Systems in Organizations ............ 3
CIS 560 Introduction to Data Management Systems .... 3
Technical elective ....................................................... 3
Humanities/social science elective (fourth of six) ......... 3
Free elective ............................................................... 3

Senior year
Fall semester
CIS 525 Telecommunications and Data Communications Systems 3
CIS 540 Software Engineering Project I ................... 3
Technical elective ....................................................... 3
Humanities/social science elective (fourth of six) ......... 3
Humanities/social science elective (fifth of six) ........... 3

Spring semester
CIS 541 Software Engineering Project II ................... 3
Humanities/social science elective (six of six) ............. 3
Technical elective ....................................................... 3
Free electives ........................................................... 3

CIS 015. Undergraduate Seminar, (0–1). I, II. Presentation of professional problems and practices by students, faculty, and industry professionals associated with computing and information sciences. Required of all undergraduate students new to the CIS department must complete CIS 015. A free elective is any 100- or higher-level course, excluding courses listed as a prerequisite to a required course. Required courses may not be taken under the A/Pass/F option. Humanities/social science electives must satisfy the College of Engineering requirements and must include 9 hours from at least two of the following departments: English (literature only); history, modern languages (except English or the student’s native language), and philosophy (except 110, 220, and 510).

Minor in computer science
CIS 200 .............................................................. 3
CIS 300 .............................................................. 3
CIS 501 .............................................................. 3
Any two 500- or 600-level CIS courses ..................... 6

Equipment fee
The engineering equipment fee is in addition to the normal university fees. Beginning in fall 2001 students enrolling in any CIS course will be assessed $14 per credit hour plus a $1 per credit hour university technology fee.

Computer science courses
Undergraduate credit
CIS 015. Undergraduate Seminar, (0–1). I, II. Presentation of professional problems and practices by students, faculty, and industry professionals associated with computing and information sciences. Required of all undergraduate students new to the CIS department must complete CIS 015. A free elective is any 100- or higher-level course, excluding courses listed as a prerequisite to a required course. Required courses may not be taken under the A/Pass/F option. Humanities/social science electives must satisfy the College of Engineering requirements and must include 9 hours from at least two of the following departments: English (literature only); history, modern languages (except English or the student’s native language), and philosophy (except 110, 220, and 510).

CIS 101. Introduction to Information Technology, (1–3). I, II. Introduction to the CIS area: core courses, concepts, and systems. Required of all undergraduate students new to the CIS department must complete CIS 015. A free elective is any 100- or higher-level course, excluding courses listed as a prerequisite to a required course. Required courses may not be taken under the A/Pass/F option. Humanities/social science electives must satisfy the College of Engineering requirements and must include 9 hours from at least two of the following departments: English (literature only); history, modern languages (except English or the student’s native language), and philosophy (except 110, 220, and 510).

CIS 102. Introduction to Microcomputer Spreadsheet Applications, (1, I). I, II. S. Designing, building, and modifying spreadsheets. Addressing techniques and formatting. Use of formulas and functions. Spreadsheets as management and decision tools. Charting of data. One hour lecture, two hours scheduled laboratory, and two hours unscheduled open laboratory each week. Course meets in one contiguous block of four weeks.

CIS 103. Introduction to Microcomputer Database Applications, (1, I). I, II. S. Design, create, modify and maintain relational databases. Create relationships. Add and modify data. Search and query database. Design and create screen forms and reports. One hour lecture, two hours scheduled laboratory, and two hours unscheduled open lab each week. Course meets in one contiguous block of four weeks.


CIS 112. Advanced Personal Computing, (3) I. I. S. Advanced features of application software for personal computers, including batch files, configuration and maintenance of hardware and software, macros for application software, and sharing of data and programs. Individualized programs. Two hours lecture and four hours lab each week. Pr.: B or better in CIS 101 or permission of instructor.

CIS 190. Undergraduate Seminar in Computing and Information Sciences, (1) I, II. S. Upper-level topics of special interest in computing and information sciences.

CIS 200. Fundamentals of Software Design and Implementation, (4, I). I. Introduction to elementary software architectures and object-based program design. Library reuse, especially for implementing graphical user interfaces. Principles and applications of programming’s fundamental elements: state, control, data structures, methods, objects, and packages. Programming projects. Four hours lecture, one hour per lab week. Pr.: MATH 100.

CIS 208. C Language Laboratory, (1, I, II. Fundamentals of programming in C. Applications. Three hours lab each week. Pr.: CIS 200.

CIS 209. C/C++ Programming for Engineers, (3, I). I, II. S. Application of computers to engineering problems. Abstract and solve problems; algorithms; control structures; input/output, functions; arrays and array processing. Two hours lecture, two hours lab each week. Pr.: MATH 220.

CIS 300. Data and Program Structures, (3, I). I. A study of common data and program structures together with associated algorithms. Topics include interfaces, design patterns, arrays, stacks, queues, lists, trees, hash tables, recursion, binary search, and tree traversals. Experience with both use and implementation of these structures and algorithms using a modern programming language. Discussion of tradeoffs involving performance and software maintainability. Pr.: CIS 200.


CIS 520. Operating Systems I, (3, I). I. Basic operating systems concepts and services: interrupt processing, process concurrency, deadlock, resource scheduling and system structure; resource management: real and virtual storage, input/output systems, disk scheduling and file systems; design and construction of concurrent programs. Pr.: CIS 450 or EECE 431; and CIS 501.


CIS 525. Telecommunications and Data Communications Systems, (3). S. Basic concepts including OSI 7 layer model, data transmission methods, medium access, link control, connections management, network applications
CIS 640. Software Testing Techniques. (3) II. In alternate years. Survey of software testing methodologies; evaluation of software testing strategies; experience in a variety of software testing practices. Pr.: CIS 540.

CIS 644. Object Oriented Design and Development. (3) Object model covering, of class, object, object-oriented programming, and object-oriented development. Pr.: CIS 570 (which must be taken in the preceding semester).


CIS 541. Software Engineering Project II. (3) II. Final implementation, integration, and testing of a software system. Introduction to configuration management, project management, and software maintenance. Pr.: CIS 540.

CIS 560. Database System Concepts. (3) I. II. Concepts, approaches, and techniques in database management. Representation of information as data, data storage technologies, foundations of logical data models, data retrieval, database design, transaction management, integrity and security. Pr.: CIS 501; CIS 301 or MATH 510.

CIS 570. Introduction to Formal Language Theory. (3) I. Formal languages, automata, regular expressions, grammars, introduction to computability theory. Reading and writing informal mathematical proofs pertaining to these topics. Pr.: MATH 510, CIS 300, and CIS 301.

CIS 574. Operating System Experiments. (3) I. Study and application of techniques and procedures used in the analysis of algorithms including the worst and average cases of both time and space. Study of the P and NP classes. Pr.: CIS 575.


CIS 720. Advanced Operating Systems. (3) Process synchronization and communication, distributed programming primitives, transactions and concurrency control, distributed scheduling, distributed storage, deadlock, security. Pr.: CIS 520.

CIS 721. Real Time Systems. (3) The design of hard real-time embedded systems, including language and operating system support, scheduling, schedulability analysis, fault-tolerance, and design tools. Pr.: CIS 520.

CIS 722. Operating System Practices. (3) II. Structure and functions of modern operating systems. Emphasis on reading and modifying the source code of a working operating system. This includes memory management, input/output, process management, file systems, and network interconnection software construction. Pr.: CIS 520.

CIS 725. Advanced Computer Networks. (3) Network algorithms; routing and congestion control; protocol engineering; protocol design, composition, specification and verification, synthesis; protocols for high speed networks; parallel implementations, lightweight protocols. Pr.: CIS 520 and 525.

CIS 726. Advanced Worldwide Web Technologies. (3) II. An advanced course on the technologies that make up the Worldwide Web. WWW site designs and analysis, WWW software architecture, server-side technologies, dynamic executable scheduling, digital libraries, WWW security. Pr.: CIS 520 or ECE 525.


CIS 775. Analysis of Algorithms. (3) I. Study and application of techniques and procedures used in the analysis of algorithms including the worst and average cases of both time and space. Study of the P and NP classes. Pr.: CIS 575.

CIS 798. Topics in Computer Science. (Var.) I, II, S. Prerequisite varies with the announced topic.

Electrical and Computer Engineering

David L. Soldan, Head

Professors Carpenter,* DeVault,* Devore,* Dillman,* R. Dyer,* S. Dyer,* Gallagher,* Hummels,* Lehnhert,* McCorriston,* Palwo,* Rys,* and Soldan; Associate Professors Chandia,* Dhy,* and Sterrett,* Assistant Professors Gruenbacher,* Kuhn,* Meier,* Miller,* and Warren; Emeriti: Professors Fowler, Haft, Johnson, Kirmser, Koepsel, Lucas, Rathbone, and Ward; Associate Professor Dollar; Assistant Professor Cottom; Instructor: Wakabayashi.

E-mail: undergrad@eece.ksu.edu
www.ece.ksu.edu

Electrical and computer engineers are involved in the design of electrically oriented systems for a range of applications in modern society. These systems or circuits range from miniature
microworld computers through energy conversion systems to giant communication networks and supercomputers. Electrical or computer engineers are involved in every phase of the transmission, conversion, and processing of energy and information for useful purposes both in industry and in our homes.

Opportunities exist for baccalaureate degree holders to continue education at advanced degree levels or to enter such fields as medicine, law, or management.

Educational objectives
The electrical and computer engineering curricula provide course work in the basic sciences, mathematics, and communications skills. They also provide an understanding of the ethical, social, safety, and economic factors required for professional engineering practice. A sequence of general education courses provides depth and breadth to the student’s education.

The electrical engineering curriculum establishes a theoretical basis in circuits, electronics, electromagnetics, energy conversion, and controls. It develops advanced problem solving skills in the student’s area of specialization and includes a strong laboratory experience stressing system design and implementation.

The computer engineering curriculum establishes a theoretical basis for computer components in circuits, electronics, electromagnetics, digital systems, and microprocessors and for software in programming languages, algorithms, data structures, and operating systems. It develops advanced problem solving skills in an environment where hardware and software tradeoffs are necessary. A strong laboratory experience stressing digital and microprocessor system design and implementation is included.

Through the four years, students are individually advised and counseled by the faculty. At various times during the year, engineers from industry are invited to speak to students on topics of current interest to the profession.

Curriculum in electrical engineering (EE)
Bachelors of science in electrical engineering 135 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology

Freshman
Fall semester
ENGL 100 Expository Writing I* 3
SPCH 105 Public Speaking IA 2
ECON 110 Principles of Microeconomics 3
CHM 210 Chemistry I 4
MATH 220 Analytic Geometry and Calculus I 5
DEN 015 New Student Orientation 0

Spring semester
CIS 201 C Programming for Engineers 3
MATH 230 Analytic Geometry and Calculus II 4
CHM 230 Chemistry II 4
Humaneities or social science elective 3

Sophomore
Fall semester
EECE 241 Introduction to Computer Engineering 3
PHYS 211 Engineering Physics I 5
MATH 222 Analytic Geometry and Calculus III 4
CHE 350 Engineering Materials 2
Humaneities or social science elective 3

Spring semester
EECE 510 Circuit Theory I 3
PHYS 214 Engineering Physics II 5
MATH 240 Elementary Differential Equations 4
DEN 275 Introduction to Personal and Professional Development 1
STAT 510 Introductory Probability and Statistics I 3

Junior
Fall semester
EECE 501 Electrical Engineering Laboratory I 2
EECE 511 Circuit Theory II 3
EECE 525 Electronics I 3
EECE 431 Microcontrollers 3
EEC 530 Statics and Dynamics 4
Humaneities or social science elective 3

Spring semester
EECE 502 Electrical Engineering Lab II 2
EECE 512 Linear Systems 3
EECE 526 Electronics II 3
EEC 557 Electromagnetic Theory I 4
EECE 581 Energy Conversion I 3
ENGL 415 Written Communication for Engineers* 3

Senior
Fall semester
EECE 530 Control Systems Design 3
ME 513 Thermodynamics I 3
Complementary electives 9
Humaneities or social science elective 3

Spring semester
EECE 590 Seminar 1
Complementary electives 14
Humaneities or social science elective 3

*The prerequisite for ENGL 415 is satisfied with an A or B in ENGL 100. Otherwise students must take ENGL 200, which, if necessary, may be substituted for 3 credit hours of complementary electives.

Electrical engineering options
General
In the general option a set of specializations is possible. Students are expected to select a set of interrelated courses that fulfills an engineering design experience and allows for concentration in one area. Examples of such areas are communication systems and signal processing, digital systems, electronic systems and devices, and power systems.

Bioengineering
Bioengineering is the application of engineering principles to measurement, analysis, and design issues faced by the medical and life science communities. The healthcare industry is one of the fastest growing business sectors in the United States. Through the bioengineering option, undergraduate students can obtain a B.S. degree in electrical engineering while acquiring a highly marketable biotechnology skill set. Areas of emphasis within this option are medical instrumentation (biosensors and data acquisition tools), biosignal analysis, and biomedical product design.

Candidates for this option include undergraduate electrical engineering and pre-medical students who seek a multidisciplinary environment focused upon using technology to increase quality of life. Instructors from various colleges at K-State contribute to this curriculum.

The curriculum accommodates pre-medical students through the acceptance of core pre-medical courses as complementary electives. Students pursuing a pre-medical program should contact the dean’s office at the College of Arts and Sciences for additional information.

Computer engineering (CMPEN)
Bachelor of science in computer engineering
135 hours required for graduation
Accredited by Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology.

Freshman
Fall semester
ENGL 100 Expository Writing* 3
SPCH 105 Public Speaking IA 2
CHM 210 Chemistry I 4
MATH 220 Analytic Geometry and Calculus I 4
CIS 200 Fundamentals of Software Design and Implementation 4
DEN 015 New Student Orientation 0

Spring semester
CIS 300 Data and Program Structures 3
ECON 110 Principles of Macroeconomics 3
MATH 221 Analytic Geometry and Calculus II 4
EECE 241 Introduction to Computer Engineering 3
CIS 208 C Language Laboratory 1
Humaneities or social science elective 1

Sophomore
Fall semester
PHYS 213 Engineering Physics I 5
MATH 222 Analytic Geometry and Calculus III 4
EECE 431 Microcontrollers 3
DEN 275 Introduction to Personal and Professional Development 1
Humaneities or social science elective 3

Spring semester
PHYS 214 Engineering Physics II 5
MATH 240 Elementary Differential Equations 4
MATH 510 Discrete Mathematics 3
EECE 510 Circuit Theory I 3
Humaneities or social science elective 3

Professional Development 1
One hour lec. and three hours lab a week. Pr.: EECE 501, 511, and 525. Pr. or conc.: EECE 526.


EECE 512. Linear Systems. (3) I, II. An introduction to linear system fundamental concepts and analytical methods. Analytical concepts and physical systems are presented and classified, statistical parameters, convolution, Fourier analysis signal sampling, and discrete transforms. Three hours rec. a week. Pr.: EECE 511, and CIS 208 or 209.


EECE 526. Electronics II. (3) I, II. Continuation of Electronics I. Three hours rec. a week. Pr.: EECE 511 and 525.

EECE 530. Control Systems Design. (3) I, II. Modeling, analysis, and design of control systems. Three hours rec. a week. Pr.: EECE 512.

EECE 535. Control Systems Laboratory. (3) I, II. The design and testing of feedback control systems. Two hours rec. and three hours lab a week. Pr.: EECE 431 and 510 or EECE 431 and PHYS 214.

EECE 543. Computer System Interfacing Lab. (3) I, II. An introduction to the hardware and software aspects of interfacing digital components. Three hours rec. a week. Pr.: PHYS 214; high-level programming language.

EECE 544. Engineering Applications of Microcomputers. (3) On sufficient demand. Elements of digital building blocks and number systems. Computer systems organization, memories, microcomputer fundamentals. Applications of microcomputer systems. Not available for students with credit for EECE 241. Two hours rec. and three hours lab a week. Pr.: PHYS 214; high-level programming language.

EECE 557. Electromagnetic Theory I. (4) I, II. Vector analysis, electrostatics, magnetostatics, Faraday’s Law, Maxwell’s Equations, transmission lines, and applications. Four hours rec. a week. Pr.: EECE 431 and 510 or EECE 431 and PHYS 214.

EECE 563. Advanced Electrical Engineering Laboratory. (2) On sufficient demand. A project-oriented laboratory in which a small group of students works with a faculty member in a special area of interest. Projects usually involve design, measurement methods, or experimental work. May be repeated once. Pr.: EECE 502.

EECE 564. Power Electronics. (3) I. Theory and application of semiconductor devices to the control and conversion of electric power, control of DC and AC machines, design of electronic power circuits such as controlled rectifiers, converters and inverters, using diodes, diacs, thyristors, triacs, and power transistors. Three hours rec. a week. Pr.: EECE 581, 511, and 525.

EECE 628. Electronic Instrumentation. (3) I, II. Applications of electronics in the design of analog and digital systems for the measurement of physical variables and in the transduction of these variables into a useful form for both recording and control. Two hours rec. and three hours lab a week. Pr.: EECE 502 and 526.

EECE 631. Microcomputer Systems Design. (3) I, II. Design and engineering applications of 16 and 32 bit microcomputers to instrumentation and control. Timing and other interfacing problems will be covered. Two hours rec. and three hours lab a week. Pr.: CIS 208 or 209; EECE 525, EECE 431, and EECE 501 or ME 535.


EECE 636. Introduction to Computer Graphics. (3) I, II. An introduction to the hardware and software aspects of computer graphics. Programming assignments will provide practical experience in implementing and using standard graphics primitives and user interfaces. Three hours rec. a week. Pr.: CIS 208 or 209, and 300.

EECE 643. Computer Engineering Design Lab. (2, 1). I, II. The design and construction of small computer systems covering the necessary practical skills and techniques such as signal propagation and timing. Three hours lab a week. Pr. or conc.: EECE 543 and 649.

EECE 645. Digital Electronics. (3) I, II. The characteristics and performance of the major contemporary digital logic families. Three hours rec. a week. Pr.: EECE 525, 557, and 541.


EECE 649. Computer Design I. (3) I. Concepts of computer design. Information representation, instruction sets, and addressing modes. Arithmetic and logic unit design for fixed and floating point operations. Hardwired and microprogrammed control, microinstruction and pipelining, CISC and RISC architecture. Memory system design including virtual memory, caches, and interleaved memories. I/O design methods, interrupt mechanisms, DMA and system integration. Three hours rec. a week. Pr.: EECE 541.

EECE 659. Wave Guides, Antennas, and Propagation. (3) I. In even years. Applications of Maxwell’s equations to boundary value problems, guided transmission, cavities, radiation, and propagation. Three hours rec. a week. Pr.: EECE 557.

EECE 660. Communication Systems I. (3) I. Introduction to the analysis and design of analog and digital communication systems. Topics include analog and digital modulation schemes, digital encoding of messages, mathematical modeling of communication systems, noise in communication links, and calculation of performance measures for practical links. Three hours rec. a week. Pr. or conc.: EECE 612.

EECE 661. Communications Systems II. (3) I. Analysis and design of digital communication systems. Topics include signal spaces, the derivation of optimum receivers for the white noise channel, modeling of bandpass systems, determination of the power spectrum of a random digital signal, multiple access methods, fading channels, error correction codes, and simulation of practical digital transmission systems. Three hours rec. a week. Pr.: EECE 660.

EECE 662. Design of Communication Circuits. (3) I, II. The design and performance testing of common communication circuits. Topics include tuned amplifiers, impedance matching, oscillators, filters, analog-to-digital converters, and phase locked loops. Two hours rec. and three hours lab a week. Pr.: EECE 526 and 502.
ECEE 501, 525, and 581.

ECEE 605. Power Systems Design. (3) I. A comprehensive study of modeling of the electric power system components and computer simulation of interconnected power systems in steady state. Matrix descriptions are emphasized. Three hours rec. a week. Pr.: ECEE 501, 525, and 581.

ECEE 606. Power Systems Protection. (3) II. Analysis of symmetrical and unsymmetrical faults on power systems using symmetrical components technique. Study of protective relaying for protection of power systems against faults. Matrix-vector descriptions and computer solutions are emphasized. Three hours rec. a week. Pr.: ECEE 581.

ECEE 610. Problems in Electrical and Computer Engineering, (Var.) I, II. S.

ECEE 616. Optoelectronics. (3) I. Applied geometric and physical optics, optical radiation, and the interaction of light and matter. The theory and application of photodetectors, lasers, and other photomultipliers. Introduction to fiber optical waveguides, sensors, and systems. Three hours rec. a week. Pr.: ECEE 525, 557, and CHE 350.

ECEE 619. Integrated Circuit Design. (3) I. Study of silicon integrated circuits with emphasis on CMOS analog and digital applications. Course covers basic device structure and modeling, circuit analysis, system design, IC design methodology and economics, plus IC fabrication processes. Computer-aided design tools are used to simulate and layout circuits designed by student groups. The circuits are fabricated by an external service (MOSIS). Three hours rec. a week. Pr.: ECEE 421 and 525.

ECEE 725. Integrated Circuit Devices and Processes. (3) II. An introduction to integrated circuit fabrication processes including oxidation, diffusion, masking, etching, process monitoring and device characterization. Design of bipolar and MOS circuits through laboratory experiments and computer simulations. Two hours rec. and three hours lab a week. Pr.: ECEE 606 and CHE 350.

ECEE 728. Mixed Signal Measurements. (3) II. Signal classification, noise, and uncertainty. TRMS conversion, quantization and ADCs, repetitive sampling and signal recovery techniques, vector voltmeters, basic network analyzers. Three hours rec. a week. Pr.: ECEE 512 or graduate standing.

ECEE 730. Control Systems Analysis and Design. (3) On sufficient demand. Use of classical analysis techniques for control system compensation. State space control theory fundamentals are presented in addition to an introductory treatment of several major systems areas. Three hours rec. a week. Pr.: ECEE 530 or ME 640. Same as ME 730.

ECEE 731. Advanced Microcomputer System Design. (3) II, in even years. Design and engineering applications of 16 and 32 bit microprocessors. Utilization of peripheral and co-processor chips. Two hours rec. and three hours lab a week. Pr.: ECEE 631.


ECEE 742. Data Communications. (3) I. The design and testing of popular local area networks for computers. Topics include topologies, media, signaling and modulation, testing, system design and installation. Emphasis on physical and data link layers of the Open System Interface (OSI) model. Three hours rec. a week. Pr.: ECEE 512 or CIS 501.

ECEE 746. Fault Diagnosis in Digital Systems. (3) II, in odd years. Hazards, fault detection in combinational circuits, and sequential machines using path sensitizing and fault-matrix methods, state table analysis, etc.; system reliability through logical redundancy. Three hours rec. a week. Pr. or conc.: ECEE 541 or 631.

ECEE 747. Digital Signal Processing Laboratory. (3) II. Study of alternate computer hardware structures. Investigation of engineering tradeoffs in implementation of alternative instruction sets and computing structures. Emphasis will be placed on a quantitative approach to performance evaluations, including simulation of hardware structures. Three hours rec. a week. Pr.: ECEE 649.

ECEE 758. Electromagnetic Theory II. (3) I, in odd years. Continuation of ECEE 557. Three hours rec. a week. Pr.: ECEE 557.

ECEE 771. Control Theory Applied to Bioengineering. (3) II. Development of mathematical models used in the study and analysis of physiological control systems providing techniques for varying pertinent biological parameters. Three hours rec. a week. Pr. or conc.: ECEE 530 or ME 640, and a basic physics course.

ECEE 772. Theory and Techniques of Bioinstrumentation. (2) I. Theoretical aspects of biological signals, transducers, transducers, digital imaging, and computer-based data acquisition directed toward ECEE and other science department majors. Two hours rec. a week. Pr.: Conc. enrollment in ECEE 773 (EECEminor's only) and AP773.

ECEE 773. Bioinstrumentation Design Laboratory. (1) I. Design and testing of hardware and software for acquiring and analyzing biological signals. Three hours lab a week. Pr.: ECEE 502; conc. enrollment in ECEE 772 and AP773.

ECEE 780. Power Seminar. (1) I, II. Speakers from industry, academia, and government present topics related to power systems engineering. May be repeated with instructor permission. One hour lec. a week. Pr.: Junior standing.

Industrial and Manufacturing Systems Engineering

Bradley A. Kramer,* Head
Professors Azadivar,* Harnett,* Hwang,* Konz,* E.S. Lee,* and Tillman;* Associate Professors Ben–Arieh,* Chang,* Kramer,* Rys,* and Wilson; Assistant Professors Lavelle,* Ordoobadi, and Wu;* Emeriti: Professor D. Gross; Associate Professors L. Grosh, Hansen, and Willems; Adjunct Professors Amos and Galitzer.*

cheetah.imse.ksu.edu/home.html

Degrees
The department of industrial and manufactur- ing systems engineering offers two accredited degree programs: industrial engineering and manufacturing systems engineering.

Educational objectives
Industrial and manufacturing systems engineers enhance the productivity of the organizations that employ them. Our graduates design, analyze, and improve production processes and systems in manufacturing, service, and information organizations.

IMSE graduates can use modern engineering and management tools to improve the productivity of processes and organizations that manufacture goods and provide services.

Technical performance goals: Graduates of our programs can identify engineering problems related to the production of goods and services; characterize, assess, control, and improve production processes and systems; develop and analyze models of production processes and systems; and design efficient production processes and systems to produce goods and services.

Professional performance goals: Graduates of our programs can participate and function effectively in team environments; communicate effectively in a professional role with specific capability to write technical reports; and present results effectively; recognize their ethical and social responsibility; and recognize the individual's responsibility for their professional development and career path.

Industrial engineering
Industrial engineers design, analyze, and improve integrated systems of people, equipment, and material to produce goods and services. They are concerned with the effective utilization of all organizational resources to maximize system productivity. The industrial engineer is equipped to influence product design, develop efficient production systems, and to integrate these activities with the financial, marketing, and other functions of an organization. The goal of the industrial engineering curricula is to integrate mathematics, the basic sciences, the engineering sciences, and engineering design projects into a meaningful educational experience so that our graduates have the ability to apply this knowledge to the identification and solution of practical engineering problems. Our graduates are equally prepared to begin exciting careers in engineering or to continue their education in graduate programs of engineering, business, or law.

The curriculum provides an education in each of the basic functional areas of industrial engineering: engineering management, ergonomics, manufacturing systems engineering, and operations research. Students are individually advised and counseled by the faculty to choose electives to broaden their education and to emphasize subjects of interest.
Courses are available in computer simulation, operations research, industrial management, ergonomics, safety, manufacturing information systems, quality engineering, project evaluation, automated factory concepts, product and process engineering, computer control of manufacturing equipment, robotics, and the design and analysis of manufacturing systems. The curriculum is augmented by an industrial engineering assembly held once each month in which engineers from industry are invited to speak about topics of current interest to the profession.

**Manufacturing systems engineering**

The manufacturing systems engineering program is of particular interest to students interested in a career in designing, analyzing, and improving modern manufacturing systems. This program provides a basic background in modern manufacturing engineering, manufacturing systems engineering, and industrial engineering principles.

Graduates of this program will have a strong background in the use of computers in integrating all phases of a manufacturing enterprise. Manufacturing subjects covered in the curriculum include: computer aided manufacturing, engineering materials, ergonomics, facilities layout and design, industrial simulation, manufacturing processes, manufacturing information systems, product and process engineering, and statistical quality control.

The program culminates with a team project to design and implement a working manufacturing system to mass produce a product.

**Industrial engineering (IE)**

Bachelor of science in industrial engineering 134 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

**Freshman**

**Fall semester**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>MATH 240</td>
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<td>PHYS 214</td>
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<td>IMSE 251</td>
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**Spring semester**

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<td>IMSE 530</td>
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<tr>
<td>IMSE 560</td>
<td>Introduction to Operations Research I</td>
<td>3</td>
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<tr>
<td>IMSE 623</td>
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<td>EEE 519</td>
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**Junior**

**Fall semester**

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<td>Introduction to Operations Research II</td>
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<td>CE 530</td>
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<td>ENGL 415</td>
<td>Written Communication for Engineers*</td>
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<td>IMSE 050</td>
<td>Industrial Plant Studies</td>
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**Spring semester**

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<td>IMSE 541</td>
<td>Statistical Quality Control</td>
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<td>IMSE 591</td>
<td>Senior Design Project I*</td>
<td>2</td>
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<td>IMSE 633</td>
<td>Production Planning and Inventory Control</td>
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<td>IMSE 643</td>
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**Senior**

**Fall semester**

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<td>IMSE 555</td>
<td>Industrial Facility Layout Design</td>
<td>3</td>
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<tr>
<td>IMSE 592</td>
<td>Senior Design Project II</td>
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**Manufacturing systems engineering (MFSE)**

Bachelor of science in manufacturing systems engineering. 134 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology

**Freshman**

**Fall semester**

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<td>Chemistry I</td>
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<td>ENGL 100</td>
<td>Expository Writing I*</td>
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<td>SPCH 105</td>
<td>Public Speaking IA</td>
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**Spring semester**

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<td>CHM 230</td>
<td>Chemistry II</td>
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<td>C Programming for Engineers</td>
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<td>ME 212</td>
<td>Engineering Graphics I</td>
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**Sophomore**

**Fall semester**

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<td>PHYS 213</td>
<td>Engineering Physics I</td>
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<td>ACCTG 231</td>
<td>Accounting for Business Operations</td>
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<tr>
<td>SPCH 105</td>
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<tr>
<td>ENGL 120</td>
<td>Principles of Microeconomics</td>
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**Senior**

**Fall semester**

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<tr>
<td>IMSE 541</td>
<td>Statistical Quality Control</td>
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<tr>
<td>IMSE 564</td>
<td>Product and Process Engineering</td>
<td>3</td>
</tr>
<tr>
<td>IMSE 662</td>
<td>Computer Aided Manufacturing</td>
<td>3</td>
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<td>IMSE 633</td>
<td>Production Planning and Inventory Control</td>
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<td>IMSE 643</td>
<td>Industrial Simulation</td>
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Industrial and manufacturing systems engineering courses

IMSE 015. Engineering Assembly. (0) I, II. Assemblies are held once a month for practicing industrial engineers to make presentations to the students. Students are given an opportunity to interact with the visitors. The purpose is to provide an opportunity to learn about various companies and their products and operations. Offered every semester.

IMSE 050. Industrial Plant Studies. (0) I. Trip to industrial centers for study of facilities of special interest to industrial engineering students. Pr.: Junior standing in industrial engineering.

IMSE 201. Introduction to Industrial Engineering. (3) I. Introduction to the major functions of industrial engineers with emphasis on the analysis, design and control of production systems. Two hours lec. and two hours lab week.

IMSE 250. Introduction to Manufacturing Processes and Systems. (3) II. This course provides an introduction to manufacturing processes and systems. The history and impact of manufacturing on society will be explored. A review of manufacturing processes and the products to which they are best suited will be emphasized. The impact of product design on manufacturability will be introduced. The role of engineers in designing good manufacturing processes and systems will be discussed. Two hours lec. a week. Pr.: Sophomore standing.

IMSE 251. Manufacturing Processes Laboratory. (1) I, II. General introduction to welding, machining, and testing. Includes fundamental manufacturing processes, metrology, and hands-on experience in welding, machining, and testing operations. Three hours lab a week. Pr. or conc.: IMSE 250, ME 212.

IMSE 252. Welding Laboratory. (1) I. Introduction to welding. Includes safe welding practices and lab experiments in gas, flux, and arc welding. Three hours lab a week. Pr. or conc.: IMSE 250, ME 212.

IMSE 253. Net Shape Manufacturing Laboratory. (1) I. Includes safe manufacturing practices and experiments in casting and injection molding. Three hours lab a week. Pr. or conc.: IMSE 250, ME 212.

IMSE 254. Machining Laboratory. (1) I. Production of machined parts. Includes metrology, safe machining practices, reading shop drawings, and good machining practices. Three hours lab a week. Pr. or conc.: IMSE 250, ME 212.

IMSE 255. Computer Numerical Control Laboratory. (1) I. Introduction to computer numerical control. Part programming for CNC lathes and mills will be accomplished. Three hours lab a week. Pr.: IMSE 253 or 254.

IMSE 499. Honors Research in Industrial Engineering. (Var.) I, II. Individual research project selected with approval of faculty advisor. Open to students in the College of Engineering honors program. A report is presented orally and in written form.

IMSE 501. Industrial Management. (3) I, II. Basic functions in an industrial organization and their interrelationships: management considerations involving product, process, plant, and personnel. Three hours rec. a week.

IMSE 530. Industrial Project Evaluation. (3) I, II. The evaluation of the economic aspects of industrial projects. Focus on decision making among alternatives. Concepts of time-value of money, effects of taxation, depreciation, and inflation. Methods of comparing alternatives are developed, including: equivalent worth, rate of return, payback period, and benefit-cost ratio. Risk/uncertainty, sensitivity, break-even, and replacement analysis, as well as estimating methods and cost concepts. Three hours rec. per week. Pr.: MATH 222.

IMSE 541. Statistical Quality Control. (3) I, II. Normal, binomial, and Poisson distributions. Control charts on means and variances for variables and attributes. Design of experiments for process and product design. Acceptance sampling plans. Two hours rec. and two hours lab a week. Pr.: CJS209, Pr. or conc.: STAT 51.

IMSE 555. Industrial Facilities Layout and Design. (3) I, II. Design of industrial facilities with emphasis on manufacturing engineering and material handling. Two hours rec. and two hours lab a week. Pr.: IMSE 250 and IMSE 530.

IMSE 560. Introduction to Operations Research I. (3) I, II. A study of the methods of operations research including model formulation and optimization. Topics include: assignment/transshipment problems, linear programming, network flows. Three hours lec. a week. Pr.: CJS209 and MATH 222.

IMSE 563. Product and Process Engineering. (4) I. The effects of operating variables on manufacturing processes such as machining, metal forming, casting, welding, plastics, etc. Emphasis is on manufacturing process theory, process variables measurement, and the technical inference of collected data. Strength of materials, manufacturing process theory, instrumentation, computer data acquisition, and data analysis concepts are included. Laboratory testing of manufacturing processes and the engineering design of experiments for process variable measurements are used to develop efficient manufacturing processes. Three hours rec. and three hours lab a week. Pr.: IMSE 250 and IMSE 251, CHE 152, CE 530 or statics elective.

IMSE 564. Product and Process Engineering. (3) I. A study of the interrelationships between product design and production process selection. Emphasis is on the development of economic production systems for discrete products in a competitive environment. Concepts of design for manufacture and assembly, tool engineering, and manufacturing systems design are included. Two hours lec. Three hours lab per week. Pr.: IMSE 250 and IMSE 530.

IMSE 580. Manufacturing Systems Design and Analysis. (4) I. Comprehensive design and analysis of a manufacturing system; integration of the undergraduate industrial engineering and manufacturing engineering option courses. Two hours rec. and four hours lab a week. Pr.: Senior standing in IMSE and within 35 credit hours of graduation.

IMSE 591. Senior Design Project I. (2) I, II. Students organize themselves in teams, not exceeding five students in each team. The teams select a general subject, formulate a specific design project, gather data and resources needed to support the project. Two hours rec. a week. Pr.: Senior standing in IMSE and within 35 credit hours of graduation.

IMSE 592. Senior Design Project II. (2) I, II. Continuation of IMSE 591 in which student teams complete engineering design projects formulated and approved in IMSE 591. Two hours rec. a week. Pr. or conc.: IMSE 591.

IMSE 602. Topics in Industrial Engineering. (Var.) I, II. S. Lectures on recent topics in industrial engineering.

IMSE 604. Independent Study of Industrial Engineering. (Var.) I, II. This course involves independent study of recent topics in industrial engineering.

IMSE 685. Advanced Industrial Management. (3) I. Managing groups of employees in engineering settings, theory of organization design, designing engineering and technological organizations; professionalism and ethical considerations in engineering. Three hours lec. a week. Pr.: IMSE 501.

IMSE 610. Occupational Safety Engineering. (3) I. An overview of factors affecting safety in organizations, emphasis on analysis techniques and computer-aided process planning. Topics include occupational safety, accidents, fire prevention, industrial hygiene, hazardous waste, toxicology, radiation safety, product liability, and federal standards. A project involving a hazard analysis and the design of solutions for a field location is required. Three hours lec. a week. Pr.: IMSE 250 and IMSE 251.

IMSE 612. Hazardous Materials Management. (2) I. All aspects from generation to final disposal will be studied, including: identifying hazardous materials, chemical safety, storing and shipping chemicals, and treatment and disposal of hazardous wastes. Two hours lec. a week. Pr.: CJS 200.

IMSE 623. Industrial Ergonomics. (3) I, II. Process analysis and charting; principles of motion economy and ergonomics; work stations and environments; micromotion analysis and an introduction to standard data systems. Two hours rec. and three hours lab a week. Pr. or conc.: STAT 51.

IMSE 625. Work Environments. (3) I, II. Principles, techniques, and applications of productivity planning and inventory control. Design of control systems. Three hours rec. Pr.: IMSE 242. Pr. or conc.: IMSE 560.

IMSE 641. Statistical Process Control in Manufacturing. (3) I, II. An introduction to the modern practice of quality engineering concepts, systems, strategies, and tools. Topics include advanced techniques related to statistical process control, international quality standards, quality data management, and automatic inspection. Three hours lec. a week. Pr.: STAT 51.

IMSE 643. Industrial Simulation. (3) I, II. Basic concepts of computer simulation modeling of manufacturing, production, service, and other systems. Use of a commercial simulation software environment to simulate, analyze, verify, and validate models. Use of models as a system design tool. Three hours rec. per week. Pr.: IMSE 560. Pr. or conc.: STAT 51.

IMSE 660. Introduction to Operations Research II. (3) I, II. Continuation of IMSE 560. Topics are decision theory, nonlinear dynamic programming, Markovian decision processes, and queuing theory. Three hours lec. a week. Pr.: IMSE 530, IMSE 560, STAT 51.

IMSE 662. Computer Aided Manufacturing. (3) I. Concepts in CAM, integrated control of machine tools and transport devices with production control. Concepts of CAM and automated assembly in small lot production environment. Two hours lec. and three hours lab a week. Pr.: IMSE 250 and IMSE 251 and CJS 209 or equiv.

IMSE 671. Topics in Automated Factory Concepts. (3) I, II. Introduction to concepts of automation, automated assembly, automatic transfer lines, and CADCAM. Emphasis on robots and their role in automated factories. Concepts of group technology, computer-aided process planning, automated material-handling equipment for automated factories. Three hours lec. a week. Pr.: IMSE 633.

IMSE 672. Robotic Applications. (3) I, II. History, development of the work environment for robots, their application, and implementation. Concepts of control and sensory feedback in robots are covered. Three hours lec. a week. Pr.: IMSE 250 and IMSE 251 and CJS 209.
Mechanical and Nuclear Engineering

J. Garth Thompson,* Head
Professors Eckhoff,* Fenton,* Hosni,* Jones,* Shullis,* Simons,* Swenson,* Thompson,* and Walker;* Associate Professors Beck,* Chapman,* Eckels,* Jaberi,* Kelkar,* Krishnaswami,* Lease,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and 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Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightower,* Madanshetty,* Pacey,* and White;* Assistant Professors Bajorek,* Freeman,* Hightow
ME 535
Measurement and Instrumentation Laboratory .................. 3
ME 571
Fluid Mechanics ........................................... 3
ENGL 415
Written Communication for Engineers ...................... 3
ME 015
Mechanical Engineering Seminar .......................... 0

Spring semester

MATH 240
Elementary Differential Equations .......................... 4
PHYS 214
Engineering Physics II ...................................... 5
ME 300
Introduction to ME Design .................................. 2
CE 333
Statics .................................................. 3
ME 400
Computer Application in Mechanical Engineering ............. 2
HUM 678
Humanities and social science elective ...................... 2
ME 015
Mechanical Engineering Seminar .......................... 0

Junior

Fall semester

ME 523
Thermodynamics II ......................................... 3
ME 573
Heat Transfer ............................................. 3
ME 650
Engineering Economics ................................... 2
Technical electives ........................................ 3
ME 640
Automatic Controls ........................................ 2
ME 574
Interdisciplinary Industrial Design Projects I .............. 3
ME 015
Mechanical Engineering Seminar .......................... 0

Spring semester

ME 575
Machine Design II ......................................... 3
ME 575
Interdisciplinary Industrial Design Projects II ............... 3
Technical electives ........................................ 6
HUM 678
Humanities or social science elective ...................... 5
ME 015
Mechanical Engineering Seminar .......................... 0

Senior

Fall semester

ME 570, ME 535, ME 571, or instructor approval.

Spring semester

ME 570
Mechanical System Dynamics ................................ 4
ME 512
Principles of Radiation and Detection ..................... 3
ME 535
Measurement and Instrumentation Laboratory .................... 3
ME 571
Fluid Mechanics ............................................ 3
ME 533
Machine Design I* ....................................... 3
ME 550
Radiation Protection Engineering ........................... 2
ME 015
Mechanical Engineering Seminar .......................... 0

Nuclear engineering option (NE)
Bachelor of science in mechanical engineering

Freshman

Fall semester

CHM 210
Chemistry I .................................................. 4
ENGL 100
Expository Writing I* ..................................... 4
MATH 220
Analytic Geometry and Calculus I ......................... 4
SPCH 105
Public Speaking IA ....................................... 2
HUM 678
Humanities or social science elective ...................... 5
ME 015
Mechanical Engineering Seminar .......................... 0

Spring semester

CHM 230
Chemistry II ................................................ 4
HUM 678
Humanities or social science elective ...................... 5
MATH 221
Analytic Geometry and Calculus II ......................... 4
ME 212
Engineering Graphic ........................................ 2
ECON 110
Principles of Macroeconomics ............................. 3
ME 015
Mechanical Engineering Seminar .......................... 0

Sophomore

Fall semester

MATH 222
Analytic Geometry and Calculus III ..................... 4
PHYS 213
Engineering Physics I ..................................... 4
IMSE 241
Production Processes ...................................... 3
C Programming Language Requirement ...................... 2
CHE 350
Engineering Materials ................................... 2
ME 015
Mechanical Engineering Seminar .......................... 0

Spring semester

MATH 240
Elementary Differential Equations .......................... 4
PHYS 214
Engineering Physics II ...................................... 5
ME 300
Introduction to ME Design .................................. 2
CE 333
Statics .................................................. 3
ME 400
Computer Application in Mechanical Engineering ............. 2
HUM 678
Humanities and social science elective ...................... 2
ME 015
Mechanical Engineering Seminar .......................... 0

ME 300
Introduction to ME Design. (2) I, II.

Introductions to the design process, dimensioning and tolerancing,
fasteners, welds, gears, belts, chains, bearings, springs; and
detail and assembly drawings; interdisciplinary nature of design;
design methodology; interdisciplinary design projects.
Six hours lab a week. Pr.: ME 212, PHYS 213 and
IMSE 241.

ME 390
Topics in Mechanical Engineering. (Var.) I, II.
Topics selected in consultation with instructor.

ME 400
Computer Applications in Mechanical Engineering. (2) I, II.
The development and application of computer techniques to
the problems of design and analysis in mechanical engineering,
including computer programming.
Two hours rec. a week. Pr.: MATH 221 and ME 535.

ME 499
Honor's Research in Mechanical Engineering. (Var.) I.
Individual research problem selected with approval of faculty advisor.
Open to students in the College of Engineering honors program.
A report is presented orally and in writing during the last semester.

ME 512
Dynamics. (3) I, II. Vector treatment of kinematics,
Newton's Laws, work and energy, impulse and momentum,
with applications to problems of particle and rigid body motion.
Three hours rec. a week. Pr.: CE 335 and MATH 222.

ME 513, ME 514
Thermodynamics I, II. I, II. Properties of the pure substance.
The first and second laws of thermodynamics.
Three hours rec. a week. Pr.: PHYS 213, MATH 222.

ME 523, ME 524
Thermodynamics II, III. I, II. Continuation of Thermodynamics I.
Gas mixtures, psychrometry, generalized thermodynamic relations and reactive systems.
Three hours rec. a week. Pr.: ME 513.

ME 533
Machine Design I. (3) I, II. Displacement, velocity,
and acceleration analysis of machine elements—shafts,
gears, and other mechanisms. A brief introduction to dynamics of machines.
Three hours rec. a week. Pr.: ME 512.

ME 555
Measurement and Instrumentation Laboratory.
(2) I. II. Theory and application of mechanical engineering
measurements, instrumentation, and computer-based data acquisition.
One hour rec. and six hours lab a week. Pr.: ME 400, 513, and EECE 519, and STAT 491.

ME 560
Engineering Economics. (2) I, II. Economic analysis of problems as applied in engineering.
Two hours rec. a week. Pr.: ECON 110, junior standing in engineering.

ME 563
Machine Design II. (3) I, II. Design and analysis of mechanical elements, such as shafting, springs, screws,
belts, brakes, clutches, gears, and bearings, with emphasis on strength, rigidity, and wear qualities.
Three hours rec. a week. Pr.: ME 533 and ME 513.

ME 570
Mechanical System Dynamics. (4) I, II. Basic linear systems modeling and equation formulation techniques.
Time response of low-order linear systems. Modeling of engineering systems including hydraulic, mechanical,
electronic, and thermal systems. State equations and system response analysis.
Three hours lec. and three hours lab per week. Pr.: MATH 240. Pr. or conc.: ME 535 and ME 571.

ME 571, ME 572
Fluid Mechanics. (3) I, II. Properties of fluid media;
fluid statics; dynamics of ideal and real fluids (for incompressible and compressible flow); impulse and momentum;
laws of similitude; dimensional analysis; flow in pipes; flow in open channels; flow through immersed objects.
Three hours rec. a week. Pr.: ME 512. Pr. or conc.: ME 513.

ME 573
Heat Transfer. (3) I. II. Fundamentals of conduction,
convection, and radiation; principles of heat exchanger design and dimension analysis.
Three hours rec. a week. Pr.: ME 571, MATH 240.

ME 574
Interdisciplinary Industrial Design Projects I.
(3) I, II. Introduction to design theory, project management,
team dynamics, and socio-economic context of design, etc.;
application of design principles, engineering analysis, and
experimental methods to an industrial interdisciplinary design project involving design, analysis, fabrication, and testing.
One hour rec. and six hours lab per week. Pr.: ME 300, ME 535, ME 571, or instructor approval.
ME 575. Interdisciplinary Industrial Design Projects II. Continuation of ME 574 with emphasis on in-depth project experience. Six hours lab a week. Pr.: ME 574 or instructor approval.

ME 610. Finite Element and Finite Difference Applications in Mechanical Engineering. The application of finite element and finite difference methods to the solution of engineering problems. Topics include introductions to the methods, linear elastic stress analysis, thermal analysis, flow analysis, and modeling limitations and errors. Commercial computer codes are used in the applications. Pr.: CE 533, ME 571, ME 523, ME 400. Co-req: ME 573.

ME 620. Internal Combustion Engines. Analysis of cycles, design, and performance characteristics. Three hours rec. a week. Pr.: ME 523.

ME 622. Environmental Engineering I. The application of chemical, mechanical, and thermal processes to the treatment of effluents. Three hours rec. a week. Pr.: ME 571 and MATH 240.

ME 628. Aerodynamics. A general introduction to aerodynamics including the analysis of lift, drag, thrust, and aircraft performance for subsonic aircraft. Three hours rec. a week. Pr.: ME 571 and MATH 240.

ME 631. Aircraft and Missile Propulsion. Mechanics and thermodynamics of aircraft and missile propulsion systems; combustion; air-breathing jet engines; rockets; applied compressible flow; propellants; performance and design of propulsion systems. Three hours rec. a week. Pr.: ME 523, MATH 240.

ME 633. Thermodynamics of Modern Power Cycles. The first and second law analysis of modern steam cycles for both fossil-fuel and nuclear-fuel installations. Cycle efficiency and factors affecting performance, such as cycle design, load factor, and auxiliaries. Thermal pollution resulting from steam cycles. Three hours rec. a week. Pr.: ME 513.


ME 650. Introduction to Computer-Aided Design. Scope of computer-aided design, computer-aided design workstation software, computer-aided design techniques, computer graphics, CAD/CAM systems, introduction to design problems, introduction to important elements, and optimal design. Pr.: ME 400 and senior standing in engineering.

ME 651. Introduction to Composites. Design, fabrication, and testing of various composite materials. Analysis of mechanical properties of laminated composites. Two hours rec. and three hours lab a week. Pr.: CE 533 and senior standing in engineering.

ME 656. Machine Vibrations I. General consideration of free and forced vibration in machines for various degrees of freedom; critical speed; vibration isolation. Three hours rec. a week. Pr.: ME 512 and MATH 240.

ME 670. Computer Control of Mechanical Systems. Computer control of mechanical systems, including thermal and fluid as well as electro-mechanical, discrete modeling, and analysis of dynamic physical systems. Sampling and data reconstruction and reconstruction and stability and performance specifications. Real time implementation. Digital control design and implementation. Laboratory exercises in control applications and design. Two hours rec. and three hours lab per week. Pr.: ME 640.

ME 699. Problems in Mechanical Engineering. (Var.) Approval of department head.

ME 716. Intermediate Dynamics. General vector principles of the dynamics of particles and rigid bodies; applications to orbital calculations, gyro dynamics, and robotics. Two hours rec. a week. Pr.: ME 512 and MATH 240.

ME 720. Intermediate Fluid Mechanics. Continuation of ME 571 in the study of general topics in fluid mechanics including viscous flow, compressible flow, turbulence, and boundary layer theory. Numerous applications utilizing computational fluid dynamics. Three hours rec. a week. Pr.: ME 571, MATH 240.


ME 722. Environmental Engineering II. Characteristics of air conditioning compressors, condensers, evaporators; system characteristics; air conditioning systems; refrigeration systems; acoustics. Three hours rec. a week. Pr.: ME 622.

ME 730. Control Systems Analysis and Design. Use of classical analysis techniques for control system compensation. State-space control-theory fundamentals are presented in addition to an introductory treatment of several major systems areas. Pr.: EECE 530 or ME 640. Same as EECE 730.


ME 735. Geometric Modeling. Geometric aspects of computer graphics. Two- and three-dimensional homogeneous transformations; hidden line and surface removal; space curves and surfaces, including Bezier and B-spline methods; solid modeling; applications and current topics. Same as CIS 735. Pr.: ME 650 or CIS 636 or EECE 636.

ME 736. Applied Elasticity. Analysis of stress and strain in a material in an elastic medium; two-dimensional problems in rectangular and polar coordinates; torsion of bars; energy methods. Three numerical methods. Three hours rec. a week. Pr.: CE 533.

ME 738. Experimental Stress Analysis. Analysis of stress and strain at a point in an elastic medium; stress concentration in various phases of nuclear engineering. Three hours rec. a week. Pr.: ME 512 or conc.: ME 640.

ME 753. Kinematics. Geometry of constrained motion applied to point paths, specific input-output relations, function generators, kinematic synthesis. Three hours rec. a week. Pr.: ME 533.

ME 756. Machine Vibrations II. On demand. Advanced consideration of systems having free and forced vibrations, with particular reference to several degrees of freedom, distributed mass, generalized coordinates, and non-linear forms. Three hours rec. a week. Pr.: CE 533.

ME 757. Kinematics. Geometry of constrained motion applied to point paths, specific input-output relations, function generators, kinematic synthesis. Three hours rec. a week. Pr.: ME 533.

ME 760. Engineering Analysis I. Methods of analysis employed in the solution of problems selected from various branches of engineering. Emphasis is on discrete systems. Three hours rec. a week. Pr.: MATH 240 and senior standing.

ME 773. Intermediate Heat Transfer. Convection, and radiation; heat transfer; mass transfer; phase change, heat exchangers, introductory numerical methods. Three hours rec. a week. Pr.: ME 573.

ME 775. Optimal Mechanical Design. Application of optimal design; unconstrained minimization for single variable and multivariable cases; linear and quadratic programming; constrained nonlinear optimization; applications to design of structures, mechanisms, and systems, components, control systems, etc. Pr.: ME 400, MATH 240, and senior standing in engineering.

Nuclear engineering courses


NE 495. Elements of Nuclear Engineering. Survey of nuclear engineering concepts and applications. Three hours rec. and three hours lab a week. Pr.: NE 495.

NE 550. Radiation Protection Engineering. Basic principles and concepts of radiation protection. Three hours rec. and three hours lab a week. Pr.: NE 495.

NE 620. Problems in Nuclear Engineering. Three hours rec. and three hours lab a week. Pr.: NE 495.

NE 630. Nuclear Reactor Theory. Three hours rec. and three hours lab a week. Pr.: NE 630.

NE 648. Nuclear Reactor Laboratory. Licensing, nuclear safety, and reactor operations. Measurement of neutron, thermal-thermal, and health physics parameters. Three hours rec. and three hours lab per week. Pr.: NE 495, ME 513. Pr. or conc.: ME 573.

NE 693. Radiation Shielding Design. Sources of radiation, kernel concepts, and application of diffusion and ray theory to shielding calculations and design, with applications principally in stationary nuclear reactor shielding. Three hours rec. a week. Pr.: NE 550. Pr. or conc.: NE 630.

NE 694. Nuclear Reactor Thermal Design. Application of thermal-hydraulic principles to the design and analysis of nuclear power plants, with special emphasis on safety systems. Three hours rec. a week. Pr.: NE 630 and ME 573.


NE 799. Special Topics in Nuclear Engineering. (Var.) On demand. Topical material of importance in nuclear engineering, such as controlled thermonuclear reactions, numerical analysis, Monte Carlo methods in radiation transport, effects of nuclear explosions, etc. Pr.: Consent of head of department.
Human Ecology

Carol E. Kellett, Dean
Virginia M. Moxley, Associate Dean for Academic Affairs
Karen Pence, Assistant Dean for Advising and New Student Programs

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www.ksu.edu/humec/

The mission of the College of Human Ecology is to discover, disseminate, and apply knowledge to meet basic human needs and to improve the human condition. This knowledge advances professions, public policy, human services, business, and industry. In a world focused on things, this college focuses first on people.

Professional programs are offered through General Human Ecology, the School of Family Studies and Human Services, and the Departments of Apparel, Textiles and Interior Design; Hotel, Restaurant, Institution Management and Dietetics; and Human Nutrition.

Degree Programs

All undergraduate programs of study lead to a bachelor of science degree. The programs are listed in the table and described on the following pages.

Entering students who are undecided and non-degree seeking students should seek admission in human ecology, undeclared (HEUN).

General Requirements

Bachelor of science degree

Each degree offered by the College of Human Ecology provides graduates with a foundation for professional practice and life long learning. Graduates from all degree programs in the college will be able to:

- Understand the interaction of people with their environments.
- Understand roles and dynamics within family and other human systems.
- Recognize and value diversity throughout the human experience.
- Access, analyze, and interpret data to make informed decisions.
- Articulate informed points of view on issues that affect individuals, families, and professional practice.

- Apply professional knowledge to improve the lives of people.
- Demonstrate standards of ethical conduct.
- Assume the responsibilities of citizenship.

Basic curriculum requirements are listed below. See specific program descriptions for details.

<table>
<thead>
<tr>
<th>General studies (39 hours minimum)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Communications (6-9)</td>
<td></td>
</tr>
<tr>
<td>ENGL 100 Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 200 Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 105 Public Speaking I</td>
<td>2</td>
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<tr>
<td>or</td>
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</tr>
<tr>
<td>SPCH 106 Public Speaking I</td>
<td>3</td>
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<tr>
<td>Quantitative studies (6)</td>
<td></td>
</tr>
<tr>
<td>MATH 100 College Algebra</td>
<td>3</td>
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<tr>
<td>or</td>
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<tr>
<td>A college-level calculus course</td>
<td>3</td>
</tr>
<tr>
<td>Statistics course</td>
<td>3</td>
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<tr>
<td>Social science (6)</td>
<td></td>
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<tr>
<td>(To include course work in economic systems and human behavior.)</td>
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<tr>
<td>Humanities (6)</td>
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<tr>
<td>(Electives)</td>
<td></td>
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<tr>
<td>(To include course work in life science; one course with a laboratory.)</td>
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<tr>
<td>Natural sciences (7)</td>
<td></td>
</tr>
<tr>
<td>(To include course work in life science and physical science; one course with a laboratory.)</td>
<td></td>
</tr>
</tbody>
</table>

Additional integrative studies courses 6

| GNIE 310 Human Needs               | 3 |
| or                                 |
| FSHS 350 Family Relationships and Gender Roles | 3 |
| University general education elective | 3 |

Professional studies (36 or more hours)

A minimum of 30 hours must be in human ecology or equivalent courses. (See specific option/program.)

Unrestricted electives (See specific option/program.)

* A listing of categories of courses applicable toward the general studies requirements for human ecology programs is available from the college dean’s office.

University general education requirements

Kansas State University has established requirements for a university general education program. See “University general education requirements” in the Degrees section of this catalog. Transfer students and students who have completed course credits through advanced placement examinations should see the “General education requirements for transfer students” in the Transfer Admission section of this catalog.

As required by the university, students must meet university general education requirements of 18 credits in approved general education courses, at least 6 credit hours of which must be at the 300 level or above. Only courses completed at Kansas State University and approved for university general education can be used to meet these requirements.

For more information about university general education requirements, see the Degrees section of this catalog. For a current list of approved university general education courses: www.ksu.edu/registrar/enroll/geden.html

To ensure breadth in the general education experience, each College of Human Ecology student must complete at least one approved university general education course in four of the following areas:

- Quantitative studies
- Economics
- Social sciences
- Humanities
- Life sciences
- Physical sciences
- Courses from professional colleges

For transfer students who are required to complete only 9 credits in university general education courses, three of these areas must be represented. For transfer students required to complete only 6 credits, two of these areas must be represented.

Grade requirement

Grades of C or higher are required in all professional studies and supporting courses in College of Human Ecology degree programs.

Transfer programs

Careful planning enables students to transfer courses from another college or university that will apply toward specific degree requirements at K-State. Students who plan to transfer should contact the College of Human Ecology Dean’s Office as soon as possible to verify the transferability of courses and plan their transfer programs. Two-plus-two articulated programs are available for selected programs at some Kansas community colleges.

Information about the transferability to Kansas State University of specific courses offered by most Kansas higher education institutions is available on the World Wide Web under the heading Kansas State University Transfer Equivalency Information. This information can be accessed at www.ksu.edu/admit/transfer.html on the World Wide Web.

Program Options

Honors program

Students with outstanding academic records are invited to participate in the human ecology honors program. High school students are selected according to their scores on the American College Test. Transfer and continu-
ing K-State students with a 3.5 cumulative grade point average also are eligible. Advisors help honors students plan individual programs of study, which include honors courses and independent study.

In the junior or senior year, students complete honors projects on topics of their choice. They develop these projects with human ecology faculty advisors and with the approval of the human ecology honors program coordinator. This independent study may involve extensive reading in a selected area, field study, experience with a research project, or participation in an academic activity that will significantly increase the student’s knowledge in an area of interest.

**Dual degree programs**

**Kansas State University**

Students interested in combining two degree programs must satisfy the requirements for both degrees. Students may earn dual degrees within the College of Human Ecology, or they may combine their degree in human ecology with a degree from a different college. Contact the dean’s office for more information.

**Secondary majors**

The College of Human Ecology participates in the interdisciplinary programs in American ethnic studies, international studies, Latin American studies, women’s studies, and gerontology, described in the Secondary Majors section of this catalog.

Students in public health nutrition are required to complete a secondary major. See the Human Nutrition section of this catalog for program requirements.

**Minors**

The College of Human Ecology offers the following minors:

- Apparel and textiles
- Communication sciences and disorders
- Family financial planning
- Family studies and human services
- Human ecology and mass communications
- Interior design
- Nutrition and exercise sciences†
- Nutritional sciences (pre-medical, pre-dental, and medically related fields)
- Public health nutrition
- Textiles
- Nutrition

For more information, see the minors section of this catalog and consult an academic advisor and the director of the specific minor program.

Students can complete the academic requirements for a business minor concurrently with completion of the apparel marketing and hotel and restaurant management programs offered through the College of Human Ecology.

**Manhattan Christian College**

The College of Human Ecology cooperates with Manhattan Christian College to provide dual degrees. Those interested in dual degrees should contact the College of Human Ecology Dean’s Office and Manhattan Christian College, Office of the Vice President for Academic Affairs. Joint advising is arranged for dual degree students. With careful planning during the first semester, most students

<table>
<thead>
<tr>
<th>Programs</th>
<th>Degrees</th>
<th>School/departments/areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparel marketing and design</td>
<td>Bachelor of science in apparel and textiles</td>
<td>Apparel, textiles, and interior design management and dietetics</td>
</tr>
<tr>
<td>Apparel marketing</td>
<td></td>
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<tr>
<td>Apparel design and production</td>
<td></td>
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</tr>
<tr>
<td>Communication sciences and disorders</td>
<td>Bachelor of science in family studies and human services</td>
<td>Family studies and human services</td>
</tr>
<tr>
<td>Dietetics</td>
<td>Bachelor of science in dietetics</td>
<td>Hotel, restaurant, institution management and dietetics</td>
</tr>
<tr>
<td>Coordinated program in dietetics</td>
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<td></td>
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<tr>
<td>Didactic program in dietetics</td>
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</tr>
<tr>
<td>Early childhood education</td>
<td>Bachelor of science in family studies and human services</td>
<td>Family studies and human services</td>
</tr>
<tr>
<td>Family and consumer sciences education</td>
<td>Bachelor of science in human ecology</td>
<td>General human ecology</td>
</tr>
<tr>
<td>teacher certification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family studies and human services</td>
<td>Bachelor of science in family studies and human services</td>
<td>Family studies and human services</td>
</tr>
<tr>
<td>Family and consumer economics</td>
<td></td>
<td></td>
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<tr>
<td>(with family financial planning emphasis)</td>
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<td></td>
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<tr>
<td>Family life and community services</td>
<td></td>
<td></td>
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<tr>
<td>Life span human development</td>
<td></td>
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<tr>
<td>Family studies and human services and social work†</td>
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<td></td>
</tr>
<tr>
<td>General human ecology</td>
<td>Bachelor of science in human ecology</td>
<td>General human ecology</td>
</tr>
<tr>
<td>Hotel and restaurant management</td>
<td>Bachelor of science in hotel and restaurant management</td>
<td>Hotel, restaurant, institution management and dietetics</td>
</tr>
<tr>
<td>Human ecology and mass communications</td>
<td>Bachelor of science in human ecology and mass communications</td>
<td>General human ecology</td>
</tr>
<tr>
<td>Interior design</td>
<td>Bachelor of science in interior design</td>
<td>Apparel, textiles, and interior design</td>
</tr>
<tr>
<td>Nutrition and exercise sciences†</td>
<td>Bachelor of science in foods and nutrition</td>
<td>Human nutrition</td>
</tr>
<tr>
<td>Nutritional sciences (pre-medical, pre-dental, and medically related fields)</td>
<td>Bachelor of science in foods and nutrition</td>
<td>Human nutrition</td>
</tr>
<tr>
<td>Public health nutrition</td>
<td>Bachelor of science in foods and nutrition</td>
<td>Human nutrition</td>
</tr>
<tr>
<td>Textiles</td>
<td>Bachelor of science in apparel and textiles</td>
<td>Apparel, textiles, and interior design</td>
</tr>
</tbody>
</table>

†The dual degree is awarded through the College of Arts and Sciences.
can complete two degrees in five years, including study during the summers.

Placement
The College of Human Ecology cooperates with Career and Employment Services to help students locate internships, co-op education, part-time work, and professional employment in their chosen fields.

Field study and cooperative education opportunities
Each department in the college offers field study experience for interested and qualified students. Students earn university credit while gaining pre-professional experience. University faculty and professionals in the field guide and supervise these experiences.

Organizations and activities
Students participate in a wide range of professional activities sponsored by local and national organizations. Most subject areas within the college have a student organization to enhance the personal and professional development of members. Student associations include:

American Association of Textile Chemists and Colorists
American Society of Interior Designers
Apparel and Textile Marketing Association
Apparel Design Collective
Family and Consumer Sciences Association
Family Studies and Human Services Association
Future Financial Planners
Hospitality Management Society
Human Nutrition Association
International Interior Design Association
Kansas State Student Speech, Hearing, and Language Association
Student Dietetic Association

Undergraduate students may be elected to membership in the Human Ecology College Council, the official college student governing body. All students may participate in the College of Human Ecology Open House, which is held as a part of All-University Open House.

The College of Human Ecology Ambassadors are a select group of students who serve as hosts for the college and promote college programs.

Qualified students are invited to join the Phi Upsilon Omicron, Kappa Omicron Nu, and Eta Sigma Delta honor societies.

Family Center
Stephan Bollman, Director
The Family Center provides applied educational experiences for graduate and undergraduate students in the School of Family Studies and Human Services.

The center offers educational programs, consultation, and therapy for individuals and families. These services, provided by students who are supervised by School of Family Studies and Human Services faculty, are available to students and the general public.

Located north of Justin Hall on Campus Creek Road, the center is easily accessible to the students, faculty, and community.

Galichia Center on Aging
Lyn Norris-Baker, Director
The Galichia Center on Aging coordinates and provides education on aging issues at the undergraduate and graduate levels, promotes and conducts research on issues of aging, and serves as a focal point for agencies and citizens concerned with the well-being of older Kansans.

The Sensory Analysis Center
Delores Chambers, Manager
The Sensory Analysis Center has the only university-operated professional sensory panel in the United States. Sensory properties of products are analyzed for companies, government entities, and university researchers to provide information about characteristics that are important in product development. The Sensory Analysis Center helps students link theory with practical experience in the study of sensory perception and evaluation of products.

Apparel, Textiles, and Interior Design
Gwendolyn S. O’Neal, Head
Professors McCullough,* Gatewood,* O’Neal,* Ramay,* and White,* Associate Professors Huck* and Munson;* Assistant Professors Adityavarman, Bode,* Harr,* Hubbell, Kaup, Lehew,* Meyer,* and Villasi,* Emeriti: Professors Brockman,* Slinkman, Stowe, and Tucker; Associate Professors Hill,* J. Howe, and Peterson; Assistant Professors Annis, Craige* and Newby.

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www.ksu.edu/humec/atid.htm

The Department of Apparel, Textiles, and Interior Design focuses on meeting human needs through the analysis, design, production, and evaluation of components in the near environment.

Programs leading to a bachelor of science degree are: apparel marketing and design with specializations in apparel marketing and in apparel design and production; interior design; and textiles. Students are encouraged to participate in field experiences and internships to bridge the academic and the practical.

It is also possible, through the department, to earn a minor in apparel and textiles. Courses in the minor will give the student a background in textile science and knowledge of the industry and careers.

Facilities include well-equipped studios and laboratories for interior design, housing, apparel design and production, and textile analysis. An extensive historic textiles and costume collection, housed in a climate-controlled storage facility in Justin Hall, is available for study. A universal design facility provides opportunities for students to see design improvements for people with special needs.

Students in all programs participate in field trips and study tours to design, production, and retail market centers across the U.S. and internationally. Student chapters of professional organizations, such as the American Society of Interior Designers (ASID), the International Interior Design Association, the American Association of Textile Chemists and Colorists (AATCC), and Apparel and Textile Marketing Interest Group offer opportunities for leadership and involvement.

Apparel marketing and design
Bachelor of science in apparel and textiles

The apparel marketing and design program prepares graduates for professional careers in apparel design, apparel manufacturing, and the retailing industries. Apparel design students develop creative and analytical skills necessary to solve complex design problems. Students in apparel manufacturing and retailing develop the necessary competencies to become resourceful business leaders. The program provides detailed practical experience and a solid base for graduate studies.

Course work for all majors includes a foundation in liberal and general studies, including written and oral communications, mathematics, and computer science; textile and apparel evaluation; social, cultural, historical, and psychological aspects of apparel; apparel design, production, and marketing; and analysis of textile, apparel, and retailing industries.

General studies courses (45–48 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ENGL 100</td>
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<tr>
<td>ENGL 200</td>
<td>3</td>
</tr>
<tr>
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<td>2</td>
</tr>
<tr>
<td>SPCH 106</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100</td>
<td>3</td>
</tr>
<tr>
<td>MATH 220</td>
<td>4</td>
</tr>
<tr>
<td>STAT 350</td>
<td>3</td>
</tr>
<tr>
<td>CIS 101</td>
<td>1</td>
</tr>
<tr>
<td>CIS 102</td>
<td>1</td>
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<tr>
<td>CIS 104</td>
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or

Spreadsheet Applications ........................ 1
Introduction to Information Technology ................. 1
Introduction to Microcomputer Programming .......... 1
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ART 190</td>
<td>Drawing I</td>
<td>3</td>
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<tr>
<td>PSYCH 560</td>
<td>Industrial Psychology</td>
<td>3</td>
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<tr>
<td>CHM 100</td>
<td>General Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>or CHM 111</td>
<td>General Chemistry Lab</td>
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<tr>
<td>or CHM 210</td>
<td>Chemistry I</td>
<td>4</td>
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<tr>
<td>or GNHE 310</td>
<td>Human Needs</td>
<td>3</td>
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<tr>
<td>or FSHS 350</td>
<td>Family Relationships and Gender Roles</td>
<td>3</td>
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<tr>
<td>or</td>
<td>University general education elective</td>
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</table>

**Professional studies (65–69 hours)**

(Includes core and supporting courses and choice of a specialization in apparel design and production or apparel marketing)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
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<tr>
<td>AT 265</td>
<td>Textiles</td>
<td>2</td>
</tr>
<tr>
<td>AT 266</td>
<td>Textiles Lab</td>
<td>1</td>
</tr>
<tr>
<td>AT 330</td>
<td>Clothing and Society</td>
<td>3</td>
</tr>
<tr>
<td>AT 360</td>
<td>Intermediate Textiles</td>
<td>3</td>
</tr>
<tr>
<td>AT 440</td>
<td>Fundamentals of Apparel Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>AT 545</td>
<td>Textile and Apparel Industry</td>
<td>3</td>
</tr>
<tr>
<td>AT 650</td>
<td>Clothing and Textile Study Tour</td>
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**Supporting courses (9 hours)**

<table>
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<th>Course Title</th>
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<tr>
<td>AT 200</td>
<td>Apparel Design/Production I</td>
<td>3</td>
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<tr>
<td>or AT 230</td>
<td>Apparel and Textile Marketing</td>
<td>3</td>
</tr>
<tr>
<td>or AT 630</td>
<td>History of Costume</td>
<td>3</td>
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**Specialization in apparel design and production (24–25 hours)**

<table>
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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>AT 300</td>
<td>Apparel Design/Production II</td>
<td>4</td>
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<tr>
<td>AT 400</td>
<td>Apparel Design/Production III</td>
<td>4</td>
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<tr>
<td>AT 610</td>
<td>Computer-Aided Design of Apparel</td>
<td>3</td>
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<tr>
<td>AT 660</td>
<td>Apparel Design/Production IV</td>
<td>4</td>
</tr>
<tr>
<td>AT 690</td>
<td>Apparel Design/Production V</td>
<td>4</td>
</tr>
<tr>
<td>AT 550</td>
<td>Apparel Design/Production Field Experience</td>
<td>5</td>
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<tr>
<td>or AT electives</td>
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<td>6</td>
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**Supporting emphasis in apparel design or production (13–15 hours)**

<table>
<thead>
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<th>Course Title</th>
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<tbody>
<tr>
<td>ART 100</td>
<td>Design I</td>
<td>3</td>
</tr>
<tr>
<td>ART 190</td>
<td>Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>ART 195</td>
<td>Survey of Art History I</td>
<td>3</td>
</tr>
<tr>
<td>ART 200</td>
<td>Design II</td>
<td>3</td>
</tr>
<tr>
<td>or AT 715</td>
<td>Advanced Apparel Design</td>
<td>3</td>
</tr>
<tr>
<td>or AT 720</td>
<td>Functional Apparel Design</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>Apparel production:</td>
<td></td>
</tr>
<tr>
<td>AT 620</td>
<td>Yarns and Fabrics</td>
<td>3</td>
</tr>
<tr>
<td>AT 680</td>
<td>Physical Analysis of Textiles</td>
<td>4</td>
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<tr>
<td>MANGT 300</td>
<td>Introduction to Total Quality Management</td>
<td>3</td>
</tr>
<tr>
<td>or PSYCH 560</td>
<td>Industrial Psychology</td>
<td>3</td>
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</table>

**Specialization in apparel marketing (22–23 hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>AT 435</td>
<td>Apparel and Textile Promotion</td>
<td>3</td>
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<tr>
<td>AT 450</td>
<td>Apparel and Textile Marketing Field Experience</td>
<td>5</td>
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<tr>
<td>or MKTG 541</td>
<td>Retailing</td>
<td>3</td>
</tr>
<tr>
<td>or MKTG 542</td>
<td>Sales Management</td>
<td>3</td>
</tr>
<tr>
<td>AT 520</td>
<td>Apparel and Textile Merchandising</td>
<td>2</td>
</tr>
<tr>
<td>AT 521</td>
<td>Apparel and Textile Merchandising Lab</td>
<td>1</td>
</tr>
<tr>
<td>AT 536</td>
<td>Apparel and Textile Store Operations</td>
<td>3</td>
</tr>
<tr>
<td>AT 635</td>
<td>Issues and Ethics in Apparel and Textile Marketing</td>
<td>2</td>
</tr>
<tr>
<td>MANGT 531</td>
<td>Personnel and Human Resources Management</td>
<td>3</td>
</tr>
<tr>
<td>or PSYCH 560</td>
<td>Industrial Psychology</td>
<td>3</td>
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**MC 320** Principles of Advertising | 3  
**MC 325** Fundamentals of Public Relations | 3  
**Supporting courses in business (12 hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ACCNT 231</td>
<td>Accounting for Business Operations</td>
<td>3</td>
</tr>
<tr>
<td>or ECON 120</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>or MANGT 420</td>
<td>Management Concepts</td>
<td>3</td>
</tr>
<tr>
<td>or MKTG 400</td>
<td>Marketing</td>
<td>3</td>
</tr>
</tbody>
</table>

**Unrestricted electives** | 9–18

**Total for graduation** | 125

**Interior design**

Bachelor of science in interior design

The interior design program is a four-year, professional curriculum accredited by the Foundation for Interior Design Education Research (FIDER) and the National Association of Schools of Art and Design (NASAD). It provides the competencies required to meet the qualifications for the professional title of interior designer.

Interior designers identify, research, and creatively solve problems related to the function of interior environments in order to enhance quality of life and protect public health, safety, and welfare. Interior designers perform services such as programming, design analysis, space planning, preparing drawings and documents, and job site inspection using specialized knowledge of aesthetics, furnishings, interior construction, building systems and components, building regulations, equipment, and materials.

The interior design program emphasizes the interaction between humans and their near environment, that is, the design of interior spaces that enhance user satisfaction, productivity, and safety at all stages of the life cycle. Specializations within the program include design for special needs, interior finishes and furnishings, contract documents, interior design history, and preservation and restoration.

Entering students participate in joint first-year courses with students in the College of Architecture, Planning, and Design.

Students are provided with the creative, aesthetic, and technical skills necessary to translate a design concept into three-dimensional reality. Students develop competencies in problem-solving, interior space planning, selection and specification of interior furnishings and finishes, effective graphic and verbal presentation skills, and execution of contract documents.

Students are required to successfully complete a portfolio review of their accumulated design work. The review normally occurs prior to March 1 of the second year of study and must be passed prior to enrollment in IDHI 425, Space and Activity Planning II.

Supervised internships and study tours in the United States and abroad, and participation in the student chapter of the American Society of Interior Designers, enhance the program.

**General studies (42–43 hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>or SPCH 105</td>
<td>Public Speaking I</td>
<td>2</td>
</tr>
<tr>
<td>or SPCH 106</td>
<td>Public Speaking II</td>
<td>3</td>
</tr>
<tr>
<td>or ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>or PSYCH 110</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>or SOCIO 211</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>or ART 196</td>
<td>Survey of Art History II</td>
<td>3</td>
</tr>
<tr>
<td>or HIST 101</td>
<td>Western Civilization: Rise of Europe</td>
<td>3</td>
</tr>
<tr>
<td>or Life science elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>or PHYS 101</td>
<td>The Physical World I</td>
<td>3</td>
</tr>
<tr>
<td>or PHYS 103</td>
<td>The Physical World II Lab</td>
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<td>or PHYS 115</td>
<td>Descriptive Physics</td>
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<tr>
<td>or MATH 100</td>
<td>College Algebra</td>
<td>3</td>
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</tbody>
</table>

**A college-level calculus course** | 3  
**A statistics course** | 3  
**Additional integrative studies courses (6 hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>or GNHE 310</td>
<td>Human Needs</td>
<td>3</td>
</tr>
<tr>
<td>or FSHS 350</td>
<td>Family Relationships and Gender Roles</td>
<td>3</td>
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<tr>
<td>or University general education elective (300 or above)</td>
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**Professional studies (58–60 hours)**

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<th>Hours</th>
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<tr>
<td>AT 260</td>
<td>Textiles for Interiors</td>
<td>3</td>
</tr>
<tr>
<td>DSFN 201</td>
<td>Environmental Design Studio I</td>
<td>4</td>
</tr>
<tr>
<td>or DSFN 202</td>
<td>Environmental Design Studio II</td>
<td>4</td>
</tr>
<tr>
<td>or DSFN 203</td>
<td>Survey of the Design Professions</td>
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</tr>
<tr>
<td>IDHI 210</td>
<td>Design and Behavior in the Interior Environment</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 310</td>
<td>Construction Methods and Materials for Interior Design</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 315</td>
<td>Advanced Interior Design Graphics</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 320</td>
<td>History of Interior Design I</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 345</td>
<td>Space and Activity Planning</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 360</td>
<td>History of Interior Design II</td>
<td>3</td>
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<tr>
<td>IDHI 410</td>
<td>Housing and Its Environment</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 415</td>
<td>Computer-Aided Design and Drafting for Interior Design</td>
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<tr>
<td>or PLAN 630</td>
<td>Computer Applications in Planning and Design</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 425</td>
<td>Space and Activity Planning II</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 435</td>
<td>Interior Design and Housing Systems</td>
<td>3</td>
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<td>IDHI 445</td>
<td>Interior Design Contract Documents</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 530</td>
<td>Interior Design Practices and Procedures</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 545</td>
<td>Senior Interior Design Studio I</td>
<td>3</td>
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<td>IDHI 645</td>
<td>Senior Interior Design Studio II</td>
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<tr>
<td>IDHI 650</td>
<td>Advanced Design and Behavior in the Interior Environment</td>
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<tr>
<td>IDHI 651</td>
<td>Designing Supportive Environments</td>
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**Professional electives (18 hours)**

Select from lists below

**Studio arts** | 6  
**Professional applications** | 6  
**Business** | 6  

**Studio arts (6 hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>AR 205</td>
<td>Graphic Design Techniques</td>
<td>3</td>
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<tr>
<td>AR 220</td>
<td>Watercolor I</td>
<td>3</td>
</tr>
<tr>
<td>AR 230</td>
<td>Sculpture I</td>
<td>3</td>
</tr>
<tr>
<td>AR 245</td>
<td>Painting I</td>
<td>3</td>
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<tr>
<td>AR 265</td>
<td>Ceramics I</td>
<td>3</td>
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<tr>
<td>AR 270</td>
<td>Metalsmithing and Jewelry</td>
<td>3</td>
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**Professional applications (6 hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>IDHI 599</td>
<td>Interior Design and Housing</td>
<td>3</td>
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<tr>
<td>IDHI 660</td>
<td>Kitchen and Utility Area Planning</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 680</td>
<td>Historic Fabric Design</td>
<td>3</td>
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<tr>
<td>IDHI 710</td>
<td>Housing and Facilities Management Processes/Applications</td>
<td>3</td>
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<tr>
<td>IDHI 725</td>
<td>Community Housing Needs Assessment</td>
<td>3</td>
</tr>
<tr>
<td>IDHI 760</td>
<td>Historic Preservation and Restoration of Interiors</td>
<td>3</td>
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<tr>
<td>ARCH 301</td>
<td>Appreciation of Architecture</td>
<td>3</td>
</tr>
</tbody>
</table>

**Human Ecology □ 211**
### Textiles

Bachelor of science in apparel and textiles

Students in the textiles program emphasize either textile science or textile chemistry by choosing the appropriate professional and supporting courses. The textile science emphasis is for students interested in the consumer aspects of the textile industry and includes quality control, fiber and fabric development, and textile testing. The textile chemistry emphasis incorporates course requirements for traditional chemistry majors, while providing students with a specialization in an applied field. Textile chemistry leads to careers in research and development with the textile industry.

**General studies courses (46–50 hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
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<td>ENGL 200</td>
<td>Expository Writing II</td>
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<td>SPCM 106</td>
<td>Public Speaking I</td>
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<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
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<td>PSYCH 110</td>
<td>General Psychology</td>
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<td>Introduction to Sociology</td>
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<tr>
<td>Life science elective</td>
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<td>CHM 210</td>
<td>Chemistry I*</td>
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<td>CHM 220</td>
<td>Chemical Principles I</td>
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<td>MATH 100</td>
<td>College Algebra</td>
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<td>MATH 220</td>
<td>Analytical Geometry and Calculus I**</td>
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<td>STAT 320</td>
<td>Elements of Statistics</td>
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<td>CIS 101</td>
<td>Introduction to Information Technology</td>
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<tr>
<td>CIS 102</td>
<td>Information Technology: Spreadsheet Applications</td>
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<td>CIS 103</td>
<td>Information Technology: Database Applications</td>
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</tr>
<tr>
<td>CIS 104</td>
<td>Information Technology: Word Processing Applications</td>
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<tr>
<td>Additional integrative studies course (6 hours)</td>
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<tr>
<td>GNHE 310</td>
<td>Human Needs</td>
<td>3</td>
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<td>FSHS 350</td>
<td>Family Relationships and Gender Roles</td>
<td>3</td>
</tr>
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<td>University general education elective</td>
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*Required for textile science option
**Required for supporting courses in textile chemistry

### Professional and supporting courses (56–64 hours)

#### Apparel and textiles core courses (14–16 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>AT 150</td>
<td>Introduction to Professions in Apparel and Textile Industry</td>
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</tr>
<tr>
<td>AT 265</td>
<td>Textiles</td>
<td>2</td>
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<tr>
<td>AT 266</td>
<td>Textiles Lab</td>
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<tr>
<td>AT 330</td>
<td>Textiles</td>
<td>3</td>
</tr>
<tr>
<td>AT 440</td>
<td>Apparel and Textile Product</td>
<td>3</td>
</tr>
<tr>
<td>AT 454</td>
<td>Textile and Apparel Industry</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Apparel and textiles courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT 650</td>
<td>Clothing and Textile Study Tour</td>
<td>1–2</td>
</tr>
<tr>
<td>AT 580</td>
<td>Internship in Textiles</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Specialization courses in textiles (20 hours)

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>AT 620</td>
<td>Textile Yarns and Fabrics</td>
<td>3</td>
</tr>
<tr>
<td>AT 642</td>
<td>Textile Physics</td>
<td>3</td>
</tr>
<tr>
<td>AT 680</td>
<td>Physical Analysis of Textiles</td>
<td>4</td>
</tr>
<tr>
<td>AT 746</td>
<td>Textile Dyeing and Printing</td>
<td>4</td>
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<tr>
<td>AT 747</td>
<td>Textile Finishes</td>
<td>3</td>
</tr>
<tr>
<td>AT 765</td>
<td>Chemical and Optical Analysis of Textiles</td>
<td>3</td>
</tr>
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</table>

#### Supporting courses (22–28 hours)

Select Option I or II

**Option I: textile science (22 hours)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>CHM 350</td>
<td>General Organic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHM 351</td>
<td>General Organic Chemistry Lab</td>
<td>2</td>
</tr>
<tr>
<td>ECON 120</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 115</td>
<td>Descriptive Physics</td>
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</table>

Two courses from the College of Business Administration

<table>
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<tr>
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<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
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</tr>
<tr>
<td>CHM 371</td>
<td>Chemical Analysis</td>
<td>4</td>
</tr>
<tr>
<td>CHM 250</td>
<td>Chemical Principles II</td>
<td>5</td>
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<tr>
<td>CHM 531</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHM 532</td>
<td>Organic Chemistry Lab</td>
<td>2</td>
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<tr>
<td>CHM 550</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHM 566</td>
<td>Instrumental Methods of Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CHM 567</td>
<td>Instrumental Methods of Analysis</td>
<td>1</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Analytical Geometry and Calculus II</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 115</td>
<td>Descriptive Physics</td>
<td>4</td>
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**Option II: textile chemistry (25–28 hours)**

<table>
<thead>
<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>CHM 500</td>
<td>General Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHM 511</td>
<td>General Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHM 562</td>
<td>Instrumental Methods of Analysis</td>
<td>3</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Analytical Geometry and Calculus II</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
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</table>

**Unrestricted electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT 650</td>
<td>Clothing and Textile Study Tour</td>
<td>1–2</td>
</tr>
<tr>
<td>AT 580</td>
<td>Internship in Textiles</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Textiles (2). I. Fundamentals of textiles as related to the production, sale, and use of apparel and other products. Conc. enrollment in AT 266.

#### Textiles Lab. (1). I Laboratory experiences related to the identification of fibers, yarns, and fabrics and the care and performance of textile products. Conc. enrollment in AT 265.

#### Apparel Design and Production I. (4). I. Fundamentals of apparel production; garment sizing and fit; introduction to pattern drafting, pattern manipulation, and draping. Two hours lec. and six hours of lab a week. Pr.: AT 265 and AT 266 or conc. enrollment in AT 265.

#### Apparel Design and Production II. (4). I. Advanced apparel production; intermediate pattern drafting, pattern manipulation, and draping; introduction to grading of apparel; apparel line development and merchandising. Two hours lec. and six hours of lab per week. Pr.: AT 300.

#### Apparel and Textile Promotion. (3). II. Promotion of apparel and textile products including advertising, display, special events, and public relations. Pr.: AT 230 and MC 320 or 325.


#### Apparel and Textile Marketing Field Experience. (5). I. Supervised work experience in the apparel and textile industry. Pr.: AT 230; ACATG 231; junior or senior in AT option. 2.5 cumulative GPA, and 2.5 GPA in professional courses.

#### Apparel and Textile Store Operations. (3). I. Analysis of the elements, processes, and controls involved in operating an apparel and textile business. Pr.: AT 230 and junior or senior standing.

#### Apparel and Textile Industry. (3). I. Analysis of fiber, textile, and apparel production; industry structure; impact of government regulations on production. Pr.: ECON 110.

#### Apparel Design Field Experience. (5). II. S. Pre-planned and supervised off-campus work experience in the apparel industry. Pr.: AT 660; junior or senior standing in apparel design; 2.5 cumulative GPA; 3.0 GPA in professional course work; consent of instructor.

#### Internships in Textiles. (Var.) I. II. S. Professional work experience in the fiber-textile-apparel industry, related government agencies, test/consulting companies, museums, Cooperative Extension Service under faculty supervision. May be repeated for up to 12 credits. Pr.: AT 680, 2.5 GPA.

#### Computer-Aided Design of Apparel. (3). I. Overview of computer-aided design as it relates to the apparel industry; introduction and application of computer hardware and software to apparel design, including apparel
Design fundamentals courses

Design fundamentals courses have been jointly developed by the Colleges of Human Ecology and Architecture and Design. All first-year interior design students take DSFN 201 in the fall and its sequel 202 in the spring. DSFN 203 is also only offered in the fall and should be taken concurrently with DSFN 201.

AT 240. Textile Finishes. (3) II. Alternate years. Theory, application, evaluation, and identification of finishes and auxiliary products which are applied to textile fibers, yarns, and fabrics. Two hours lec. and three hours lab per week. Pr.: AT 642.

AT 265. Chemical and Optical Analysis of Textiles. (3) I. Alternate years. Application of chemical, optical, spectroscopic, and chromatographic analysis of fibers, dyes, and finishes. Two hours lec. and three hours lab per week. Pr.: AT 642.


Interior design and housing courses

IDH 210. Design and Behavior in the Interior Environment. (3) I. Developing awareness of aesthetic and behavioral relationships fundamental to interior design. Three hours lec. per week. Pr.: Senior standing; 2.2 cumulative GPA and 2.5 GPA in professional area; IDH 445.

IDH 215. Interior Design Graphics. (3) II. Development of graphic communication skills used by interior design professionals. Six hours studio per week.

IDH 310. Construction Methods and Materials for Interior Design. (3) I. Introduction to concepts, selection, and application of construction processes, materials, and finishes. Introduction to codes, working drawings, and model building. Two hours lec. and two hours lab per week. Pr.: IDH 215 or DSFN 201 and 202.


IDH 345. Space and Activity Planning. (3) II. Application of computer-aided design and drafting techniques used by interior design professionals. One hour lecture and two hours lab per week. Pr.: IDH 310, and consent of instructor.

IDH 425. Space and Activity Planning II. (3) I. This course will build upon and extend the knowledge and skill base gained by students through integration of space and activity planning, advanced interior design graphics, and computer-aided drafting and design. Components will include advanced programming, space planning, and application of universal design based on social, cultural, behavioral, and physical requirements of the interior environment. Six hours studio per week. Pr.: IDH 345, IDH 415, and admitted to upper division of interior design program.

IDH 435. Interior Design and Housing Systems. (3) II. Introduction to lighting, heating, ventilating, air conditioning, and acoustical systems; products and components related to function, behavior, and aesthetics. Three hours lec. per week. Pr.: IDH 310 or PHY 115; IDH 310.

IDH 440. Home Appliance Design and Evaluation. (3) II. Principles of design, operation, and care of appliances used in the home; methods of evaluating appliance performance; laboratory demonstrates application of principles. Two hours lec. and three hours lab per week.


IDH 499. Problems in Interior Design and Housing. (Var.) I, II. Independent study. Pr.: Consent of instructor.

IDH 500. Intermediate Interior Design Studio. (3) I. Problem-solving in interior design. May substitute for Interior Design Studio IDH 445, IDH 545, or IDH 645. Students should plan to substitute this course for the next level studio in sequence. Pr.: IDH 315, 345, 435, and admitted to the interior design major.

IDH 530. Interior Design Practices and Procedures. (3) II. Ethics, business procedures, and professional development: contract services and agreements. One hour of preparation for job market entry as applied to the practice of interior design. Three hours lec. per week. Pr.: IDH 445 or conc. enrollment.

IDH 545. Senior Interior Design Studio I. (3) I. Advanced design problems dealing with human activities in the living environment. Study and application of patterns based on social, cultural, and behavioral functions. Aesthetic coordination and selection of furnishings, finishes, art, and accessories. Six hours studio per week. Pr.: IDH 530.

IDH 599. Interior Design and Housing Internship. (3–4) I, II. Supervised off-campus professional experience in appropriate-design-related firms, government agencies, or the housing industry. Pr.: Senior standing; 2.2 cumulative GPA and 2.5 GPA in professional area.

IDH 600. International Studies: British Cultural Survey. (3) Intersession. A study tour to acquaintance the student with the rich artistic and cultural locations in London and other examples of architecture and town planning such as Georgian Bath. Lectures and tours target important design and furniture collections. England’s varied examples of religious buildings compete for attention in this great center of art and architecture.

IDH 630. Household Equipment Technology. (3) I. Analytical study of appliance design, performance, and evaluation concepts and application in consumer decision-making. Not open to students with credit in IDH 440. Six hours rec. and lab per week. Pr.: Four hours lab science course.

IDH 645. Senior Interior Design Studio II. (3) II. Advanced design solutions to environmental and behavioral problems related to non-residential interiors. Planning,
Family Studies and Human Services

Bill Meredith,* Director
Professors Bergen,* Bollman,* Jurich,* Kellett, Meredith,* Moxley,* J. Murray,* Russell,* Scheidt,* Schumm,* Smith, and Walker; Associate Professors Bradshaw, De Luccie,* Hoag,* Jones,* A. Murray,* Poresky,* Smit,* Webb,* and White; Assistant Professors Altus, Crowe,* Fees,* J. Garcia, Grable,* Meyers–Bowman,* Nelson,* and Olsen; Instructors Cantrell, R. Garcia, Hoover, Meier, Meyer, Molineux, O’Conner, Schraeder–Neidenthal, and West; Emeriti: Professors Flanagan,* Hoeflin,* Huyck,* Kennedy,* Long,* Morse,* and Stith; Associate Professors McNeil* and Rainbolt;* Assistant Professor Larson.

space analysis, and coordination of furnishings, fixtures, and materials, and equipment. Six hours studio per week. Pr.: IDH 530.


IDH 651. Designing Supportive Environments. (3) II. Analysis of the age and ability related needs and challenges faced by children, older adults, and persons with disabilities. Team approaches to providing living and work environments that accommodate both universal and special human needs. Two hours lec., two hours studio/rec. per week. Pr.: IDH 410 and 445, or consent of instructor.

IDH 660. Kitchen and Utility Area Planning. (3) II. Functional and research basis for planning and arranging based on activity analysis, equipment, materials, lighting, and ventilation. Two hours lec. and two hours lab per week. Pr.: IDH 345 or ARCH 261.

IDH 680. Historic Fabric Design. (3) I. Interrelationships of fabric design and social, cultural, political, economic, and geographical environments from prehistoric times to present. Pr.: HIST 101; and AT 260 or 265 and 266.

IDH 710. Housing and Facilities Management Processes/Applications. (3) II. Application of theories, principles, and practices used in managing physical facilities and the residents or workers they house. Issues and problems encountered by professional managers in providing quality living or working environments within cost-effective operations. Three hours lec. per week. Pr.: IDH 410 and MANGT 420 or 720.

IDH 725. Community Housing Assessment. (3) I. Developing local and regional housing needs assessments and strategies to meet the challenges faced by lower income people and racial and ethnic minorities. Analysis of current housing and community development programs and public-private partnerships for affordable housing. Three hour seminar. Pr.: IDH 410 or instructor consent.

IDH 740. Advance Household Equipment. (3) II. Application of basic electrical, optical, refrigeration, heat transfer, psychometric, and detergent chemistry principles to the study of household equipment, with emphasis on techniques and instrumentation for consumer testing. Six hours rec. and lab a week. Pr.: IDH 440, PHYS 115, and senior or graduate standing.

IDH 760. Historic Preservation and Restoration of Interiors. (3) I. Principles, guidelines, and qualities of preservation and restoration of interiors. Research and application. Pr.: IDH 320 and 360; or AT 630; or ENVD 250 and 251.

785-532-5510 Fax: 785-532-5505 E-mail: fshs@ksu.edu www.ksu.edu/humec/fshs/fshs.htm

The School of Family Studies and Human Services is focused on the study of individuals and families from a multidisciplinary perspective. Programs emphasize developmental processes throughout the life cycle, interpersonal relationships, family financial planning, intervention for speech, language, and hearing problems, and educational programming for children and families.

Undergraduate programs include communication sciences and disorders, early childhood education, family and consumer economics, family life and community services, and life span human development, a dual degree program in family studies and human services and social work, and minors in family financial planning and communication sciences and disorders. In addition, students often combine degree programs in early childhood education and elementary education.

The school places great importance on laboratory and field experiences, along with classroom experiences. On-campus field experiences for undergraduate students are available in the Early Childhood Laboratory, Family Center, Galichia Center on Aging, the Hoeflin Stone House Child Care Center, and the Speech and Hearing Center.

For students pursuing early childhood education, the Early Childhood Laboratory and the Hoeflin Stone House Child Care Center provide on-campus observation and teaching. Both facilities are licensed by the state of Kansas and accredited by the National Academy of Early Childhood Programs.

Students in the family life and community services program complete a field experience in a public or private agency that serves individuals and/or families. Agency staff and school faculty guide students in the planning, direction, and evaluation of these supervised experiences. On-campus opportunities for gaining experience are available through the Family Center, the Galichia Center on Aging, and various organizations and offices that address student needs. Students in communication sciences and disorders obtain practical experience in the Speech and Hearing Center.

Communication sciences and disorders

Bachelor of science in family studies and human services

The goal of the program in communication sciences and disorders is to educate professionals who are competent to help children and adults with communicative problems of speech, hearing, and language. The undergraduate program provides the foundation for the M.S. program in communication sciences

and disorders, which is accredited by the Council on Academic Accreditation and meets the current requirements in speech-language pathology for the Certificate of Clinical Competence of the American Speech–Language and Hearing Association and for certification by the State of Kansas Department of Education. Determination of the student’s program of study and the completion of all requirements for certification are the responsibility of the student and the advisor.

Students participate in observations of a variety of disorders and age groups in the Kansas State University Speech and Hearing Center. Students may, on invitation of the faculty, participate in supervised direct clinical experience in the Speech and Hearing Center.

General requirements (33–34 hours)

<table>
<thead>
<tr>
<th>Course Area</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Communications</td>
<td>ENG 100 Expository Writing I</td>
<td>3</td>
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<tr>
<td></td>
<td>ENG 200 Expository Writing II</td>
<td>3</td>
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<tr>
<td></td>
<td>SPCH 105 Public Speaking IA</td>
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<td>SPCH 106 Public Speaking I</td>
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<tr>
<td>Social sciences</td>
<td>ECON 110 Principles of Macroeconomics</td>
<td>3</td>
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<tr>
<td></td>
<td>PSYCH 110 General Psychology</td>
<td>3</td>
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<tr>
<td>Humanities electives</td>
<td>MATH 100 College Algebra</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td>A college-level calculus course</td>
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<td></td>
<td>STAT 330 Elementary Statistics for Social Sciences</td>
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<tr>
<td>Professional studies (37 hours)</td>
<td>LING 601 General Phonetics</td>
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<tr>
<td></td>
<td>FSHS 110 Introduction to Human Development</td>
<td>3</td>
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<td>FSHS 310 Early Childhood</td>
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<tr>
<td></td>
<td>FSHS 301 Helping Relationship</td>
<td>3</td>
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<td>or</td>
<td>Intervention I</td>
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<tr>
<td></td>
<td>FSHS 420 Interaction Techniques With Young Children</td>
<td>3</td>
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<td>FSHS 360 Anatomy of Speech Mechanism</td>
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<td>FSHS 361 Fundamentals of Hearing and Acoustic Phonetics</td>
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<td>FSHS 442 Developmental Psycholinguistics</td>
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<td>FSHS 443 Language Assessment and Intervention I</td>
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<td>FSHS 446 Disorders of Articulation and Phonology</td>
<td>3</td>
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<td>FSHS 449 Clinical Procedures in Communication Disorders</td>
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<td>FSHS 560 Clinical Research in Communication Sciences and Disorders</td>
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<td>FSHS 563 Speech Physiology</td>
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<td>Integrative studies (6 hours)</td>
<td>GNHE 310 Human Needs</td>
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<td></td>
<td>or</td>
<td>FSHS 350 Family Relationships and Gender Roles</td>
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<td></td>
<td>University general education elective</td>
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<tr>
<td>Professional electives (8 hours)</td>
<td>Choose 8 hours from the following:</td>
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<td></td>
<td>FSHS 343 Communication Sciences and Disorders</td>
<td>3</td>
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<tr>
<td></td>
<td>(Optional introductory course)</td>
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FSHS 415 Manual Communication .......................................................... 3
FSHS 520 Augmentative and Alternative Communication .......................................................... 2
FSHS 521 Communication Disorders in Cerebral Palsy .......................................................... 1
FSHS 591 Undergraduate Topics in Communication Sciences and Disorders .............................. 1–3
FSHS 605 Communication Disorders and Aging .......................................................... 3
FSHS 615 Manual Communication Lab .......................................................... 3
Course that deals with non-disordered aspects of language .......................................................... 3
coursebooks that deal with world cultures .......................................................... 3
Course in gerontology ........................................................................................... 3

Other supporting courses (6–23 hours)
Students must complete either Option I or Option II:

Option I
Students planning to obtain educational certification must take:

FSHS 510 Human Development and Aging .......................................................... 3
FSHS 591 Undergraduate Topics in Communication Sciences and Disorders .............................. 3
FSHS 615 Manual Communication II .......................................................... 3
Course that deals with non-disordered aspects of language .......................................................... 3
coursebooks that deal with world cultures .......................................................... 3
Course in gerontology ........................................................................................... 3

Total for graduation ........................................................................................... 120

Expository Composition I ........................................................................................... 3
Expository Composition II ........................................................................................... 3
Public Speaking IA ........................................................................................... 2
or Public Speaking I ........................................................................................... 3

Social sciences (9)
ECON 110 Principles of Macroeconomics ........................................................................................... 3
PSYCH 110 General Psychology ........................................................................................... 3
SOCIO 211 Introduction to Sociology ........................................................................................... 3
Humanities electives (6)

European History I ........................................................................................... 3
European History II ........................................................................................... 3

Natural sciences (7)
Biological sciences and physical sciences electives (One course must be taken from each area; one course must include a laboratory.)
Quantitative studies (6)
MATH 100 College Algebra ........................................................................................... 3
or
A college-level calculus course ........................................................................................... 3
Any 3-unit introductory statistics course ........................................................................................... 3

Introductory courses in communication sciences and disorders (minimum of 6 credit hours)
LING 601 General Phonetics ........................................................................................... 3
FSHS 343 Communication Sciences ........................................................................................... 3
FSHS 360 Anatomy of Speech Mechanism ........................................................................................... 3
FSHS 361 Fundamentals of Hearing and Acoustic Phonetics .......................................................... 4
FSHS 415 Manual Communication ........................................................................................... 3
FSHS 442 Developmental Psycholinguistics ........................................................................................... 3

Advanced courses in communication sciences and disorders (minimum of 6 credit hours)
Students may select other courses from the above list, or they may choose from the following list. Students must meet the prerequisites for each course chosen.

FSHS 443 Language Assessment and Intervention I ........................................................................................... 3
FSHS 446 Disorders of Articulation and Phonology ........................................................................................... 3
FSHS 449 Clinical Procedures in Communication Disorders ........................................................................................... 3
FSHS 520 Augmentative and Alternative Communication ........................................................................................... 3
FSHS 521 Communication Disorders and Cerebral Palsy .......................................................... 1
FSHS 560 Clinical Research in Communication Sciences and Disorders ........................................................................................... 3
FSHS 563 Speech Physiology ........................................................................................... 3
FSHS 591 Undergraduate Topics in Communication Sciences and Disorders .............................. 1–3
FSHS 605 Communication Disorders and Aging .......................................................... 3
FSHS 615 Manual Communication II .......................................................... 3
FSHS 720 Audiology I ........................................................................................... 3
FSHS 721 Audiology I Lab ........................................................................................... 3
FSHS 741 Fluency Disorders ........................................................................................... 3
FSHS 742 Language Assessment and Intervention II ........................................................................................... 3
FSHS 744 Aural Rehabilitation ........................................................................................... 3
FSHS 750 Voice and Resonance Disorders ........................................................................................... 4

Early childhood education
Bachelor of science in family studies and human services
This program is for students who wish to work in prekindergarten education programs in administrative or teaching positions, including work with parents and community resources as well as with young children.

The National Council for Accreditation of Teacher Education has approved K-State’s early childhood education program. Students completing the early childhood education program in family studies and human services are eligible for certification by the Kansas State Department of Education in Early Childhood Education. Early childhood special education certification is available with advanced study. To complete the ECE program, students must have full admission into the teacher education program.

Admission to teacher education
Application forms for admission to teacher education are available in the Center for Student and Professional Services, College of Education, 13 Bluemont Hall. The application should be filed two years prior to graduation. (See the College of Education section of this catalog for details.)

Students transferring 50 or more hours from another institution should apply at the time another institution should apply at the time another institution should apply at the time during the semester in which the degree will be completed. Forms are available in the Center for Student and Professional Services, College of Education, 13 Bluemont Hall.

General requirements (36–37 hours)

Communications (8–9)

Expository Writing I ........................................................................................... 3
Expository Writing II ........................................................................................... 3
Public Speaking IA ........................................................................................... 2
or Public Speaking I ........................................................................................... 3

Social sciences (9)

Principles of Macroeconomics ........................................................................................... 3
General Psychology ........................................................................................... 3
Introduction to Sociology ........................................................................................... 3

Humanities electives (6)

European History I ........................................................................................... 3
European History II ........................................................................................... 3

Natural sciences (7)

Biological sciences and physical sciences electives (One course must be taken from each area; one course must include a laboratory.)
Quantitative studies (6)

College Algebra ........................................................................................... 3
or
A college-level calculus course ........................................................................................... 3
Any 3-unit introductory statistics course ........................................................................................... 3

Laboratory courses
Before participating in laboratory courses involving contact with children, students must undergo a physical examination, including a tuberculosis test, at their own expense. Students must not have any physical or mental conditions that would interfere with the health, safety, or welfare of children.

Students will be screened by the Kansas Department of Health and Environment for criminal and child abuse histories (through the Kansas Bureau of Investigation and Social and Rehabilitative Services). Students with questionable histories, as determined by the Kansas Department of Health and Environment, will be dropped from the early childhood education program.

Directed experiences (student teaching)
Application for student teaching must be made no later than the semester in which the student is enrolled in FSHS 546 Early Childhood Program Lab 2. Application forms are available from the director of Child Care Programs, 307 Justin Hall.

Enrollment in directed experiences is by permission only. Directed experiences may not be taken until the student has obtained full admission into teacher education and has completed FSHS 420, 540, 541, 545 and 546.

Certification
To be eligible for certification in early childhood education, students must maintain grade point averages required for full admission into teacher education, complete the early childhood education option, including a grade of C or better in directed experiences, and receive recommendation from the School of Family Studies and Human Services for submission to Kansas State University’s certifying officer. Students must pass the National Teachers Examination as described in the College of Education section of this catalog.

Application for certification must be made during the semester in which the degree will be completed. Forms are available in the Center for Student and Professional Services, College of Education, 13 Bluemont Hall.
Family and consumer economics

Bachelor of science in family studies and human services

The emphasis of this program is family financial planning, which combines coursework 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 coursework which satisfy the CFP® Board’s education requirement for the CFP®/CERTIFIED FINANCIAL PLANNER® designation.

Kansas State University does not award the CFP® and Certified Financial Planner® designation. The right to use the marks CFP® and Certified Financial Planner® is granted by the CFP Board to those persons who have met its rigorous educational standards, passed the CFP Certification Examination, satisfied a work experience requirement, and agreed to the CFP Board Code of Ethics and Professional Responsibility. Only persons registered with the CFP Board are permitted to sit for the CFP Certification Examination. CFP certificates and licenses are issued only by the CFP Board.

General requirements (39–40 hours)

Communications (5–9 hours)
ENGL 100 Expository Writing I 3
ENGL 200 Expository Writing II 3
SPCH 105 Public Speaking IA 3
or
SPCH 106 Public Speaking IB 3

Social sciences (9 hours)
SOCIO 211 Introduction to Sociology 3
PSYCH 110 General Psychology 3

Natural sciences (7 hours)
One course must be taken from each area; one course must include a laboratory.

Quantitative studies (9 hours)
CIS 101 Introduction to Information Technology 3
CIS 102 Introduction to PC Spreadsheet 3
CIS 103 Introduction to PC Database 3
MATH 100 College Algebra 3
or
A college-level calculus course 3

Family financial planning minor

A total of 15 hours is required as specified below:
FSHS 105 Introduction to Personal and Family Finance 3
FSHS 405 Advanced Personal and Family Finance 3
FSHS 505 Families, Employment Benefits, and Retirement Planning 3
FSHS 525 Estate Planning for Families 3
FSHS 595 Professional Seminar in Family Financial Planning 3

Family life and community services

Bachelor of science in family studies and human services

The undergraduate program in family life and community services prepares students to develop and implement programs and services that strengthen and enhance individual and family well-being. The program is approved as meeting the standards and criteria required for the Provisional Certified Family Life Education (CFLE) designation by the National Council on Family Relations.

Graduates of the FLCS program work in many different areas including parent and community education, social services, and human resources.

General requirements (36 hours)

Communications (8–9)
ENGL 100 Expository Writing I 3
ENGL 200 Expository Writing II 3
SPCH 105 Public Speaking IA 2
or
SPCH 106 Public Speaking IB 3

Social sciences (9)
SOCIO 211 Introduction to Sociology 3
PSYCH 110 General Psychology 3

Natural sciences (7)
Life sciences and physical sciences electives (One course must be taken from each area; one course must include a laboratory.)
Life span human development

Bachelor of science in family studies and human services

This program combines the study of human development with a strong foundation in the arts, sciences, and humanities. Course work emphasizes the development of individuals across the life span, the processes underlying development and aging through the life cycle, and the factors that enhance, support, or impede human development. The life span human development program prepares students for graduate study in a variety of applied and academic fields.

General requirements (42–43 hours)

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

- Social sciences (9 hours)
  - ECON 105 Principles of Microeconomics 3
  - or
  - ECON 120 Principles of Microeconomics 3
  - PSYCH 110 General Psychology 3
  - SOCIO 211 Introduction to Sociology 3

- Humanities electives (9 hours)
  - Natural sciences (10 hours)
    - BIOL 198 Principles of Biology 4
    - BIOL 310 Bioethics 3
  - Physical science course 3

- Quantitative studies (6 hours)
  - MATH 100 College Algebra 3
  - or
  - A college-level calculus course 3
  - Any 3-credit introductory 300-level statistics course 3

- Professional studies (55 hours)
  - FSHS 110 Introduction to Personal and Family Finance 3
  - FSHS 301 Helping Relationship 3
  - FSHS 302 Your and Your Sexuality 3
  - FSHS 310 Early Childhood 3
  - FSHS 400 Family and Consumer Economics 3
  - FSHS 506 Middle Childhood and Adolescence 3
  - FSHS 510 Human Development and Aging 3
  - FSHS 550 The Family 3
  - FSHS 579 Pre-Directed Field Experience Orientation 1
  - FSHS 580 Directed Field Experience 8
  - FSHS 585 Professional Seminar in Family Life Education 3
  - FSHS 652 Black Families 3
  - FSHS 670 Working with Parents 3
  - FSHS elective 3
  - One lab (FSHS 312, 313, 507, or 508) 1
  - SPCH 326 Small Group Discussion Methods 3
  - ANTH 510 Kinship and Marriage 3
  - or
  - ANTH 200 Introduction to Cultural Anthropology 3

- Integrative studies (12 hours)
  - FSHS 350 Family Relationships and Gender Roles 3
  - FN 132 Basic Nutrition 3
  - or
  - GNHE 310 Human Needs 3
  - Two university general education electives (300 level or above) 6

- Unrestricted electives 16–17

Total for graduation 120

Dual degree: Family studies and human services and social work
Bachelor of science in family studies and human services
Bachelor of science, social work major

This program leads to a B.S. degree in family studies and human services through the College of Human Ecology, and to a B.S. degree with a social work major through the College of Arts and Sciences. The goal of this program is to give students skills in and knowledge of interpersonal relationships, an understanding of the developmental processes of children and families, and beginning social work skills. Upon completion of the program, students are equipped to work with families and individuals in social work settings. They are also eligible to take the social work licensure examination. The social work major, housed in the Department of Sociology, Anthropology, and Social Work, is accredited by the Council on Social Work Education.

- General education courses (55–56 hours)
  - ENGL 100 Expository Writing I 3
  - ENGL 200 Expository Writing II 3
  - SPCH 105 Public Speaking IA 2
  - or
  - SPCH 106 Public Speaking I 3
  - PSYCH 110 General Psychology 3
  - ECON 105 Principles of Microeconomics 3
  - POLSC 110 Introduction to Political Science 3
  - POLSC 301 Introduction to Political Thought 3
  - SOCIO 211 Introduction to Sociology 3
  - BIOL 198 Principles of Biology 4
  - Physical science with lab 4
  - Biological or physical science 3

- Quantitative studies (6 hours)
  - MATH 100 College Algebra 3
  - or
  - A college-level calculus course 3
  - Any 3-credit introductory 300-level statistics course 3

- Professional studies (38 hours)
  - FSHS 110 Introduction to Human Development 3
  - FSHS 301 Helping Relationship 3
  - FSHS 420 Interaction Techniques with Young Children 3
  - FSHS 506 Middle Childhood and Adolescence 3
  - FSHS 510 Human Development and Aging 3
  - FSHS 550 The Family 3
  - FN 132 Basic Nutrition 3
  - Select 2 of the 4 labs listed below.
    - FSHS 312 Infant Observation Lab 1
    - FSHS 313 Preschool Child Lab 1
    - FSHS 507 Middle Childhood Lab 1
    - FSHS 508 Adolescence Lab 1
  - FN 352 Work with Parents 3
  - FSHS 670 Elective: any course in the American ethnic studies secondary major 3

- Professional electives (18 hours)
  - FSHS or social science electives (300 level or above) 15–16

Total for graduation 120

Dual degree: Family studies and human services and social work
Bachelor of science in family studies and human services
Bachelor of science, social work major

This program leads to a B.S. degree in family studies and human services through the College of Human Ecology, and to a B.S. degree with a social work major through the College of Arts and Sciences. The goal of this program is to give students skills in and knowledge of interpersonal relationships, an understanding of the developmental processes of children and families, and beginning social work skills. Upon completion of the program, students are equipped to work with families and individuals in social work settings. They are also eligible to take the social work licensure examination. The social work major, housed in the Department of Sociology, Anthropology, and Social Work, is accredited by the Council on Social Work Education.

- General education courses (55–56 hours)
  - ENGL 100 Expository Writing I 3
  - ENGL 200 Expository Writing II 3
  - SPCH 105 Public Speaking IA 2
  - or
  - SPCH 106 Public Speaking I 3
  - PSYCH 110 General Psychology 3
  - ECON 105 Principles of Microeconomics 3
  - POLSC 110 Introduction to Political Science 3
  - POLSC 301 Introduction to Political Thought 3
  - SOCIO 211 Introduction to Sociology 3
  - BIOL 198 Principles of Biology 4
  - Physical science with lab 4
  - Biological or physical science 3

- Quantitative studies (6 hours)
  - MATH 100 College Algebra 3
  - or
  - A college-level calculus course 3
  - Any 3-credit introductory 300-level statistics course 3

- Professional studies (38 hours)
  - FSHS 110 Introduction to Human Development 3
  - FSHS 301 Helping Relationship 3
  - FSHS 420 Interaction Techniques with Young Children 3
  - FSHS 506 Middle Childhood and Adolescence 3
  - FSHS 510 Human Development and Aging 3
  - FSHS 550 The Family 3
  - FN 132 Basic Nutrition 3
  - Select 2 of the 4 labs listed below.
    - FSHS 312 Infant Observation Lab 1
    - FSHS 313 Preschool Child Lab 1
    - FSHS 507 Middle Childhood Lab 1
    - FSHS 508 Adolescence Lab 1
  - FN 352 Work with Parents 3
  - FSHS 670 Elective: any course in the American ethnic studies secondary major 3

- Professional electives (18 hours)
  - FSHS or social science electives (300 level or above) 15–16

Total for graduation 120

Human Ecology
null
FSHS 590. Proseminar in Family Studies and Human Services. (1–3) On sufficient demand. Review of specific issues or professional practices affecting children and/or families. Pr.: Junior standing and consent of instructor.

FSHS 591. Undergraduate Topics in Communication Sciences and Disorders. (1–3) Review of current topics in speech-language pathology and/or audiology. May be repeated for a maximum of 6 hours with a change in topic. Pr.: Consent of instructor.

FSHS 595. Professional Seminar in Family Financial Planning. (3) II. 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.: Consent of instructor and and consent of instructor required. Pr.: FSHS 420, 540, 541, 545, 546, and admission into teacher education.


FSHS 603. Coping with Life Crises. (3) Examination of the effects of human competencies and coping strategies on successful adaptation to anticipated life crises, developmental transitions, and sudden, unexpected life events. Pr.: FSHS 110 or PSYCH and 6 hours of social science.

FSHS 605. Communication Disorders and Aging. (3) An introduction to the most common communication disorders of older persons. Appropriate service delivery models and special needs of the elderly are discussed. Pr.: Consent of instructor.

FSHS 615. Manual Communication II. (3) Instruction in an additional 400 to 500 signs in the SEE system. Introduction to elementary ASL techniques. Discussion of other augmentative communication systems. Research will be conducted in the use of various manual communication systems with special populations, including aphasic, language disabled, mentally handicapped, and others. Pr.: FSHS 415 or basic sign language skills.

FSHS 652. Black Families. (2–3) I. Selected topics for understanding life styles of black families. Implications for professionals working with black children and families. Pr.: Nine hours in FSHS or other social science and junior standing.

FSHS 654. Death and the Family. (2–3) Exploration of contemporary attitudes toward death and dying; related influences on individual development and family life. Pr.: FSHS 550 or SOCIOL 640.

FSHS 670. Working with Parents. (3) II, S. Approaches to parenting and parent education with emphasis on programmatic implications of life-span developmental principles within a family context. Pr.: FSHS 110; and FSHS 350 or 550.

FSHS 675. Field Study in Family Economics. (1–3) I, II. Supervised experiences in financial counseling, community action, or consumer services. Pr.: Consent of instructor.


FSHS 704. Seminar in Family Studies and Human Services. (Var.) I. Interpretation and evaluation of information on varied topics relating to family members. May be taken for a maximum of nine hours. Pr.: Nine hours of FSHS or other social science.


FSHS 706. Practicum in Audiology. (1–3) I, II. Supervised practice in the use of equipment, materials, and methods of audiology. Pr.: FSHS 720 or conc. enrollment and consent of instructor.

FSHS 708. Topics in Family Studies and Human Services. (2–3) I, II. Review of recent research and theory related to exploration of methods and family and interpersonal processes. Pr.: Consent of instructor. May be taken more than one semester.

FSHS 709. Public Policy and Family Economic Well-Being. (3) I. Analysis of conceptual models for policy choices. Impact of socioeconomic and public policy factors on family economic well-being, including the special issues faced by financially disadvantaged and nontraditional households. Pr.: Nine hours in FSHS or other social sciences.

FSHS 710. Child Care: Components and Issues. (2–3) Resources and facilities of quality child care; exploration of methods and philosophies of such programs; designed for those working with paraprofessional child care personnel. Pr.: Fifteen hours of either social science and/or FSHS.

FSHS 720. Audiology I. (3) II. Fundamental topics in audiology. Included are monitoring of equipment calibration, pure tone measurements, masking, speech testing, and tympanometry. Laboratory practice is required. Pr.: FSHS 361.


FSHS 728. Assessment of Young Children. (3) I. Theory and practice of individual assessment of handicapped and normal children, infancy to age eight, including cognitive, language, fine and gross motor, social, and self-help skills. Focus on selection, administration, interpretation, and evaluation of screening and comprehensive evaluation instruments for assessment and individual program planning. Pr.: FSHS 510.

FSHS 740. Play Facilitation. (3) II. The emphasis on this course is the empirical study and practice of play as an educational, evaluative, and therapeutic intervention with young children. Pr.: FSHS 540 or consent of instructor.


FSHS 742. Language Assessment and Intervention II. (3) II. Theory and research concerning language disorders in school-aged children are presented. Specific language assessment and intervention methodologies for this population are reviewed. Dialectal and bilingual considerations for assessment and intervention are addressed. Pr.: FSHS 443.

FSHS 744. Aural Rehabilitation. (3) Study of and techniques for the habilitation or rehabilitation of speech and language problems of the hearing impaired. Pr.: FSHS 720.

FSHS 750. Voice and Resonance Disorders. (4) II. Research and theory concerning etiology, characteristics, assessment, and management of individuals with laryngeal disorders and orofacial anomalies. Pr.: FSHS 563.


General Human Ecology

Professors Kellett and Moxley; Instructor Pence.

785-532-5500 Fax: 785-532-5504
E-mail: heininfo@ksu.edu
www.ksu.edu/humec/

General human ecology programs prepare students for careers in education, extension, and communication.

Bachelor of science in human ecology

Degree programs in general human ecology allow students to integrate knowledge for an understanding of human needs, environments, and relationships. In the freshman and sophomore years, the general program allows flexibility in course selection for students who are undecided but interested in programs offered by the College of Human Ecology. Careful planning allows students to explore options while completing courses applicable to most programs.

General requirements (39–40 hours)

University general education requirements must be completed.

Communications (8–9 hours)

ENGL 100 Expository Writing I ................. 3
ENGL 200 Expository Writing II ............... 3
SPCH 105 Public Speaking IA ................. 2
or
SPCH 106 Public Speaking I .................. 3

Social sciences (6 hours)*

A course in economic systems ................. 3
A course in human behavior .................. 3

Humanities (5 hours)*

Humanities electives .............................. 6

Natural sciences (7 hours)*

(One course must include a laboratory.)
A course in life sciences ......................... 3–4
A course in physical science ................. 3–4

Quantitative studies (6 hours)*

MATH 100 College Algebra ..................... 3
or
A college-level calculus course ............... 3

Any 3-hour introductory statistics course ........ 3

Additional integrative studies (6 hours)

FSHS 350 Family Relationships and Gender Roles ........................................... 3
A university general education elective course .......... 3

Professional studies (60 hours)

Human ecology courses (45 hours)

AT 330 Clothing and Society .................... 3
or
AT 440 Apparel and Textile Product
Evaluation .......................................... 3
AT 265 Textiles ...................................... 2
and
AT 266 Textiles Lab ............................... 1

FSHS 110 Introduction to Human Development .... 3
GNHE 310 Human Needs ....................... 3
FSHS 105 Introduction to Personal and Family Finance ..................................... 3
or
FSHS 400 Family and Consumer Economics ........ 3

Human Ecology 219
FSHS 550 The Family ............................................. 3
FSHS 670 Working with Parents ................................ 3
IDH 410 Housing and Its Environment .......................... 3
HN 132 Basic Nutrition ........................................... 3
or
HN 400 Human Nutrition ......................................... 3
HN 301 Food Trends, Legislation and Regulation .............. 3
or
HN 413 Science of Food .......................................... 4

Human ecology electives (17–18 hours from at least two departments)
Students seeking certification in family and consumer sciences education may apply 1–4 hours of specified EDSEC courses.*

Supporting electives (15 hours)
In consultation with advisor.

Unrestricted electives ............................................. 20–21

Total for graduation ............................................. 120

*Students seeking certification in family and consumer sciences education must meet certification standards as well as degree requirements. See family and consumer sciences education certification requirements in this section of the catalog and the College of Education section of this catalog for more information.

Human ecology and mass communications
Bachelor of science in human ecology and mass communications

In this program students select areas of concentration in human ecology and mass communications according to their individual interests. In human ecology they may specialize in clothing, textiles, and interior design; family studies and human services; foods and nutrition; or hotel, restaurant, institution management and dietetics. In mass communications they may choose advertising, print or electronic journalism, public relations, or radio-television.

Except for the basic introductory courses of Mass Communication in Society, Principles of Advertising, Fundamentals of Public Relations, and Radio-TV and Society, which have no prerequisites, enrollment in courses in the School of Journalism and Mass Communications requires a minimum of 2.5 GPA based on completion of at least 30 hours at the 100-level or above.

General requirements (42–43 hours)
A minimum of 18 credits in approved university general education, 6 of which are upper-division (300-level or higher), must be completed.

Communications (8–9 hours)
ENGL 100 Expository Writing I .................................. 3
ENGL 200 Expository Writing II .................................. 3
SPCH 105 Public Speaking IA ................................... 2
or
SPCH 106 Public Speaking I .................................... 3

Social sciences (9 hours)*
A course in economic systems .................................. 3
A course in human behavior ..................................... 3
MC 235 Mass Communication and Society .................. 3

Humanities (6 hours)*
Humanities electives .............................................. 6

Natural sciences (7 hours)*
(One course must include a laboratory.)
A course in life sciences ........................................... 3–4
A course in physical science ...................................... 3–4

Quantitative studies (6 hours)*
MATH 100 College Algebra ...................................... 3
or
A college-level calculus course .................................... 3
Any 3-hour introductory statistics course ......................... 3

Additional integrative studies (6 hours)
GNHE 310 Human Needs ........................................ 3
or
FSHS 350 Family Relationships and Gender Roles .......... 3

A university general education elective course ................. 3

To ensure breadth in the general education experience, at least one approved university general education course must be completed in four of the following areas:

Economics
Social sciences
Humanities
Life sciences
Quantitative studies (except MATH 100)
A professional college

Professional studies (72 hours)

Human ecology courses ........................................... 36
Area of concentration in: CTID, FSHS, FN, or HRIMD
(15 hours) selected in consultation with faculty advisor. At least two courses must be advanced (500 level or above, or require completion of a prerequisite course).

Human ecology electives (21 hours)
Selected in consultation with advisor, and including courses from at least two additional areas in human ecology.

Mass communications courses (35 hours)
A 2.5 cumulative GPA in MC courses is required to graduate.

In consultation with your advisor, select one of the options listed below:

1. Print journalism
MC 400 News and Feature Writing ............................. 3
MC 440 Editing and Design ..................................... 3
MC 500 Advanced News and Feature Writing .............. 3
MC 540 Advanced Editing and Design ....................... 3
MC 565 Law of Mass Communications ........................ 3
MC 595 Mass Communication Research ..................... 3

Select one of the following:
MC 535 Photographic Journalism .............................. 3
MC 600 Public Affairs Reporting ............................. 3

Select one of the following:
MC 650 Newspaper Management ............................. 3
MC 710 History of Journalism ................................... 3
MC 720 Ethics in Mass Communications ..................... 3
MC 730 Seminar in Future of the Media ....................... 3
MC electives* ...................................................... 12–14
At least 3 hours must be at the 500 level or above.

2. Electronic journalism
MC 400 News and Feature Writing ............................. 3
MC 500 Advanced News and Feature Writing .............. 3
MC 505 Electronic News Reporting ........................... 3
MC 565 Law of Mass Communications ........................ 3
MC 585 Advanced Electronic News Reporting .............. 3
MC 595 Mass Communication Research ..................... 3

Select one of the following:
MC 550 Journalism Internship ................................. 3
MC 570 Audio Techniques ....................................... 3
MC 580 Video Techniques ....................................... 3
MC 600 Public Affairs Reporting ............................. 3

Select one of the following:
MC 685 Electronic Media Management ....................... 3
MC 715 History of Electronic Media ........................... 3
MC 720 Ethics in Mass Communications ..................... 3
MC 730 Seminar in Future of the Media ....................... 3
MC electives* ...................................................... 12–14
At least 3 hours must be at the 500 level or above.

3. Advertising
MC 320 Principles of Advertising ............................... 3
MC 420 Advertising Writing .................................... 3
MC 545 Advertising Media Planning .......................... 3
MC 555 Advertising Techniques ............................... 3
MC 565 Law of Mass Communications ........................ 3
MC 595 Mass Communication Research ..................... 3

MC 640 Advertising Campaigns ............................... 3
MC 520 Advertising Sales ....................................... 3
MC electives* ...................................................... 12–14
At least 3 hours must be at the 500 level or above.

4. Radio-televisio
MC 410 Writing for the Electronic Media ..................... 3
MC 475 Concepts of Electronic Media ......................... 3
MC 490 Junior Seminar in Electronic Media ................. 3
MC 550 Radio-TV Internship .................................... 3
MC 565 Law of Mass Communications ........................ 3
MC 595 Mass Communication Research ..................... 3

Select one of the following:
MC 570 Audio Techniques ....................................... 3
MC 575 Multimedia Techniques ............................... 3
MC 580 Video Techniques ....................................... 3

Select one of the following:
MC 520 Advertising Sales ....................................... 3
MC 655 Electronic Media Programming ..................... 3
MC 685 Electronic Media Management ....................... 3

MC electives* ...................................................... 12–14
At least 3 hours must be at the 500 level or above.

*The human ecology and mass communications degree allows application of a maximum of 39 credits in mass communications (MC) courses, including MC 235 taken as a general requirement.

Unrestricted electives ............................................. 5–6

Total for graduation ............................................. 120

Family and consumer sciences education certification requirements
Bachelor of science in human ecology

This program provides students with the skills and knowledge necessary to deliver family and consumer sciences education. Graduates of the program work in secondary schools, cooperative extension, business, and industry.

Upon successful completion of the teacher education program and the National Teacher Examination, graduates are eligible for certification to teach family and consumer sciences in Kansas schools. See the College of Education section of this catalog for more information on eligibility requirements, admission to teacher education and admission to student teaching. Inquiries should be directed to the Center for Student and Professional Services, 13 Bluemont Hall.

General requirements (51–56 hours)
Communications (8–9 hours)
ENGL 100 Expository Writing I .................................. 3
ENGL 200 Expository Writing II .................................. 3
SPCH 105 Public Speaking IA ................................... 2
or
SPCH 106 Public Speaking I .................................... 3

Social sciences (9 hours)*
A course in economic systems .................................. 3
A course in human behavior ..................................... 3
MC 235 Mass Communication and Society .................. 3

Humanities (6 hours)*
Humanities electives .............................................. 6

Natural sciences (7 hours)*
(One course must include a laboratory.)
A course in life sciences ........................................... 3–4
A course in physical science ...................................... 3–4
Natural sciences (15–17 hours)

BIOE 198 Principles of Biology .............................. 4
CHM 110 General Chemistry .................................. 3
and
BIOCH 265 Introductory Organic and Biochemistry .............. 5

and
CHM 111 General Chemistry Lab ................................ 1
CHM 210 Chemistry I .......................................... 4
and
CHM 230 Chemistry II .......................................... 4

and
CHM 350 General Organic Chemistry .......................... 3
CHM 351 General Organic Chemistry Lab ......................... 2

Quantitative studies (6 hours)

MATH 100 College Algebra ...................................... 3

or
College-level calculus course ..................................... 3

or
STAT 330 Elements of Statistics for Social Science .............. 3

or
300 or higher level statistics course ................................ 3

Additional integrative studies (6 hours)

FSHS 350 Family Relationships and Gender Roles .............. 3

and
PSYCH 110 General Psychology .................................. 3

Professional studies (78 hours)

Human ecology (38 hours)

AT 265 Textiles .................................................. 2

and
AT 266 Textiles Lab ................................................ 1
AT 440 Apparel and Textile Product Evaluation .................. 3
HN 400 Human Nutrition ....................................... 4
HN 413 Science of Food ......................................... 4
FSHS 105 Introduction to Personal and Family Finance ........... 3
FSHS 302 You and Your Sexuality ................................ 3
FSHS 310 Early Childhood ...................................... 3
FSHS 313 Preschool Child Lab .................................... 1
FSHS 400 Family and Consumer Economics ....................... 3
FSHS 670 Working with Parents .................................. 3

and
GNHE 310 Human Needs ........................................ 3
IDH 410 Housing and Its Environment ............................ 3
IDH 440 Home Appliance Design and Evaluation ................ 3

Professional education courses (40 hours)

EDED 102 Teaching as a Career* ................................ 1

and
FSHS 110 Introduction to Human Development* .................. 3
EDCEP 315 Educational Psychology** ............................ 3
EDSP 323 Exceptional Students in the Secondary School** ........... 2
EDSEC 376 Core Teaching Skills and Lab** ......................... 3
EDSEC 420 Block II Lab** .................................... 1
EDSEC 477 Middle Level/Secondary Reading** ...................... 2
EDSEC 500 Content Area Methods in the Secondary School: Family and Consumer Sciences** ...................... 2
EDSEC 621 Program Planning in Vocational Education** ............ 2
EDCIP 455 Teaching in a Multicultural Society** .................... 1

EDSEC 525 Interpersonal Relations in the School** ............... 1

EDSEC 586 Teaching Participation in the Secondary School and Professional Development Seminar** ...................... 12
EDSEC 620 Principles and Philosophy of Vocational Education .......... 3
EDETC 318 Instructional Media and Technology* .................... 2
EDSEC 710 Occupational Family and Consumer Sciences* ................ 2

*These are the only professional education courses which can be taken prior to admission to teacher education.
**These courses are blocked in three sequential semesters; courses in each block are to be taken concurrently and are prerequisites to the subsequent designated block of courses.

General human ecology courses


◆ GNHE 310. Human Needs. (3) I, II. Examination of theories of human needs from a human ecological perspective, with emphasis on the impact of human, economic, and material resources. Analysis of developmental, ethical, cultural, and public policy factors that influence need satisfaction. Pr.: Sophomore standing or consent of instructor.


GNHE 399. Honors Seminar in Human Ecology. (1) I, II. Selected topics in human ecology. May be taken more than once for credit. For students in honors program only.


Hotel, Restaurant, Institution Management and Dietetics

Judy Miller,* Head
Professors Carter,* Miller* and Shanklin;* Associate Professor Barrett, Boger,* Gould,* Hsu,* Instructors Pesci and Werning; Emerita: Professor Spears,* Associate Professors Riggs and Roach.*

875-532-5521 Fax: 785-532-5522
E-mail: hrimd@humec.ksu.edu
www.ksu.edu/humec/hrimd/hrimd.htm

The programs in the Department of Hotel, Restaurant, Institution Management and Dietetics prepares students to enter the professions of hotel and restaurant management, foodservice management, and dietetics.

The department offers a bachelor of science degree in dietetics and a bachelor of science degree in hotel and restaurant management.

Two programs, the coordinated program in dietetics and the didactic program in dietetics, lead to the bachelor of science degree in dietetics.

Coordinated program in dietetics

Program I

Students complete preprofessional study during the freshman, sophomore, and junior years, and apply for formal admission into the program during the third semester before the anticipated date of graduation. The coordinated program prepares students for the dietetics profession by integrating course work with 900 hours of supervised practice experiences.

Graduates are eligible for active membership in The American Dietetic Association and, upon passing a national qualifying examination, for registration as a dietitian (R.D.). The program is currently granted accreditation by the Commission on Accreditation/Approval for Dietetics Education of The American Dietetic Association, 216 W. Jackson Blvd., Chicago, IL 60606–6995, 312-899-4876.

Senior students who have been admitted to the supervised practice phase of the program gain management experience in Housing and Dining Services and community food service operations. Seniors also spend one semester in health care facilities where they work directly with practicing dietitians in clinical and community nutrition practice settings.

Supervised practice sites are established in numerous locations in Kansas and neighboring states.

Application for admission to the coordinated program in dietetics should occur during the third semester before the anticipated date of graduation. Applications are due by April 1 for fall semester and by October 1 for spring semester admission. Criteria for admission to the senior year are:

1. An overall minimum grade point average of 2.75 on a 4.0 scale, with no grade lower than C in the physical and biological sciences, or in professional courses (HN or HRIMD).

2. Documentation of 400 hours of dietetics-related work experience (either paid or volunteer) as follows:

   • 100 hours in community nutrition or public health settings
   • 150 hours in foodservice experience, with no more than 50 hours in a waitstaff or host/hostess-type position
   • 150 hours in a healthcare setting which allows the student to experience patient/resident interaction

   Contact the program director for guidance on work experience opportunities

3. A completed application packet.

4. A completed recommendation form from an employer or other person well acquainted with the applicant.

5. Successful completion of a math and writing assessment.
6. An interview with the dietetics admission committee, to be scheduled by the applicant on the appointed interview day.

Ongoing evaluation of the student’s didactic and performance-based learning is an important component in the coordinated program in dietetics. Evaluation is conducted by K-State faculty and preceptors in supervised practice facilities. Students not performing at acceptable levels may be counseled out of the program.

**Didactic program in dietetics**

**Program II**

The didactic program in dietetics is currently granted accreditation by the Commission on Accreditation/Approval for Dietetics Education of The American Dietetic Association, 216 W. Jackson Blvd., Chicago, IL 60606-6995, 312-899-4876. Completion of the program meets the academic requirements for membership in the American Dietetic Association.

Supervised practice experience, required for eligibility to take the national Registration Examination for Dietitians, must be obtained by the student after graduation through an accredited post-baccalaureate dietetic internship.

**Dietetics**

Bachelor of science in dietetics

Two programs are available in dietetics: Program I is the coordinated program in dietetics, and Program II is the didactic program in dietetics. See information earlier in this section.

**General studies courses (64–66 hours)**

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<tr>
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<tr>
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<td>Careers in Nutrition and Dietetics</td>
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<td>STAT 350</td>
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<td>Business and Economic Statistics I</td>
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**Distance education in dietetics**

Professional courses in both dietetics options may be taken through the Division of Continuing Education using a variety of technologies. Course development is ongoing. For further information, contact the Department of Hotel, Restaurant, Institution Management and Dietetics at 785-532-5564 (www.ksu.edu/hume/hridmd/index.htm) or the Division of Continuing Education at 785-532-5566 (www.dce.ksu.edu/).

**Hotel and restaurant management**

Bachelor of science in hotel and restaurant management

The hotel and restaurant management program has been accredited by the Accreditation Commission for Programs in Hospitality Administration.

The mission of the program is to prepare students for professional careers in hospitality management by providing theory-based instruction and practical experience.

The program provides students with a broad liberal education, an understanding of business administration (business minor), a solid foundation of professional courses in both hotel and foodservice operations, and hands-on experience in the hospitality industry. Students are required to complete 400 hours of work experience in the hotel or restaurant industry prior to a 400-hour field experience for academic credit.

Students apply concepts learned in the classroom to actual work situations. On-campus facilities include a quantity food production laboratory, Housing and Dining Services, and the K-State Student Union foodservices.

The hotel and restaurant management program prepares students for managerial careers in the hospitality industry. See information earlier in this section.

**General studies courses (49–52 hours)**

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<td>FIN 450</td>
<td>Introduction to Finance</td>
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*required for business minor
Human Nutrition

Denis M. Meideiros, Head
Professors E. Chambers,* Grunewald,* Koo,* and Setzer;* Associate Professors Holcomb and Peters; Assistant Professors Baybutt,* Caul,* Clarke, Fryer,* Newell,* Reeves, and Tinklin;* Associate Professors Atkinson, Harbers,* and Smith.*

The programs in the Department of Human Nutrition focus on the nutritional and sensory properties of food; on the metabolism of nutrients; on nutrient requirements throughout the life span; on issues related to diet and health; and consumer behavior and nutrition education.

The Department of Human Nutrition offers two programs leading to a bachelor of science degree in foods and nutrition: nutritional sciences, and public health nutrition.

A dual-degree program in nutrition and exercise sciences is offered jointly with the Department of Kinesiology. Students earn a B.S. in foods and nutrition and a B.S. in kinesiology. This is one of the largest programs of its kind in the nation. The public health nutrition program is one of the few in the nation.

Students who want to become registered dietitians must take additional courses to meet the academic requirements of the American Dietetic Association (didactic program in dietetics or DPD). They will then become eligible to apply for an accredited internship. Interested students should contact the DPD program director during the semester they are enrolled in HN 400.

Specialized laboratories for sensory analysis of food, food product development, and nutrition research are available for research and instruction. The department has an animal laboratory that is fully accredited by the Association for Accreditation of Laboratory Animal Care (AAALAC). In cooperation with the College of Veterinary Medicine, animals housed and maintained in the laboratory receive veterinary care to comply with the current NIH guidelines. A Nutritional Assessment laboratory includes facilities for physical and dietary assessments.

Nutritional sciences (pre-medicine)

Bachelor of science in foods and nutrition

The nutritional sciences program emphasizes the biological and physical sciences and provides students with the background necessary to understand the function and metabolism of nutrients. The program provides an excellent foundation for students considering careers in medicine, dentistry, and other health science professions. Academic requirements for entering medical school, dental school, or allied health professions may be met through this degree.

General studies courses (60–61 hours)

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| General courses (30 hours)
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Supporting courses (21 hours)

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Unrestricted electives

Total hours for graduation

This option is designed to meet requirements for entrance to medical school.

*If taken in high school, substitute computer science, statistics, or higher mathematics course (3–4 hours).
### Nutrition and exercise sciences
Bachelor of science in foods and nutrition
Bachelor of science in kinesiology

Nutrition and exercise sciences is a dual-degree program. Students complete a total of 148–154 credit hours and earn two degrees, one from the Department of Human Nutrition and the second from the Department of Kinesiology. Graduates of this program may pursue careers in health programs offered by hospitals, industries, wellness centers, public and private clinics, fitness camps, and athletic clubs.

**General studies and supporting courses (80–86 hours)**

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<td>ECON 110 Principles of Macroeconomics</td>
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<td>SOCIOL 211 Introduction to Sociology</td>
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<td>AMETH 160 Introduction to American Ethnic Studies</td>
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<td>ANTH 200 Introductory to Cultural Anthropology</td>
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<tr>
<td>ANTH 204 A General Education Introduction to Cultural Anthropology</td>
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### Additional courses as specified in the General Requirements section for Arts and Sciences

**Humans** 11–12
- One course each in fine arts, philosophy, Western heritage, and literary or rhetorical arts.

International studies overlay (1 course)* 0–3

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<td>BIOS 455 General Microbiology</td>
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<td>CHM 210 Chemistry I</td>
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<td>PHYS 113 General Physics</td>
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<tr>
<td>MATH 100 College Algebra</td>
<td>or</td>
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<tr>
<td>MATH 220 Analytic Geometry and Calculus I</td>
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<tr>
<td>MATH 150 Plane Trigonometry</td>
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<td>STAT 320 Elements of Statistics</td>
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<td>STAT 310 Elementary Statistics for the Social Sciences</td>
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### CIS 101 Introduction to Information Technology 1

Select two hours of the following:
- CIS 102 Introduction to Microcomputer
- Spreadsheet Applications 1
- CIS 103 Introduction to Microcomputer
- Database Applications 1
- CIS 104 Introduction to Microcomputer
- Word Processing Applications 1

### Professional courses (68–69 hours)

**Nutrition science (33 hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HN 132 Basic Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 352 Personal Wellness</td>
<td>3</td>
</tr>
<tr>
<td>HN 400 Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 413 Science of Food</td>
<td>4</td>
</tr>
<tr>
<td>HN 450 Nutritional Assessment</td>
<td>2</td>
</tr>
<tr>
<td>HN 500 Public Health Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 550 Nutrition Metabolism</td>
<td>4</td>
</tr>
<tr>
<td>HN 610 Life Span Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 610 Clinical Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 198 Principles of Biology</td>
<td>4</td>
</tr>
</tbody>
</table>

**Nutrition science or exercise science (3 hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HN 635 Nutrition and Exercise</td>
<td>or 3</td>
</tr>
<tr>
<td>KIN 635 Nutrition and Exercise</td>
<td>or 3</td>
</tr>
</tbody>
</table>

**Exercise science (32 hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIN 220 Biobehavioral Basis of Exercise</td>
<td>3</td>
</tr>
<tr>
<td>KIN 250 Measurement and Research Techniques</td>
<td>3</td>
</tr>
<tr>
<td>KIN 330 Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>KIN 335 Physiology of Exercise</td>
<td>4</td>
</tr>
<tr>
<td>KIN 336 Physiology of Exercise Laboratory</td>
<td>5</td>
</tr>
<tr>
<td>KIN 340 Physical Activity</td>
<td>3</td>
</tr>
<tr>
<td>KIN 345 Psychological Dynamics of Physical Activity</td>
<td>3</td>
</tr>
<tr>
<td>KIN 625 Exercise Testing and Prescription</td>
<td>3</td>
</tr>
<tr>
<td>KIN 655 Fitness Promotion</td>
<td>3</td>
</tr>
<tr>
<td>KIN xxx Kinesiology biological course</td>
<td>3</td>
</tr>
<tr>
<td>KIN xxx Kinesiology behavioral course</td>
<td>3</td>
</tr>
</tbody>
</table>

### Total hours for graduation 148–154

*See the College of Arts and Sciences basic requirements for the Sciences.*

### Professional and supporting courses (66 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HN 132 Basic Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 352 Personal Wellness</td>
<td>3</td>
</tr>
<tr>
<td>HN 400 Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 413 Science of Food</td>
<td>4</td>
</tr>
<tr>
<td>HN 450 Nutritional Assessment</td>
<td>2</td>
</tr>
<tr>
<td>HN 500 Public Health Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 550 Nutrition Metabolism</td>
<td>4</td>
</tr>
<tr>
<td>HN 610 Life Span Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 630 Clinical Nutrition</td>
<td>5</td>
</tr>
<tr>
<td>HN 650 Practicum in Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>GHNE 310 Human Needs</td>
<td>or 3</td>
</tr>
<tr>
<td>HN 565 Database Applications</td>
<td>1</td>
</tr>
<tr>
<td>CIS 104 Introduction to Microcomputer</td>
<td>1</td>
</tr>
</tbody>
</table>

### Secondary major* 24

*The student will select a secondary major such as the following in consultation with the faculty advisor. Requirements will fit the precedent established by each secondary major.*

- American ethnic studies
- Gerontology
- International studies
- Latin American studies
- Women’s studies

Students should see an advisor in the selected secondary major before the junior year. Requirements for each secondary major can be found in the Secondary Majors section of this catalog.

### Unrestricted electives 10

### Total hours for graduation 120

*Students may satisfy requirements for the secondary major with courses used concurrently to meet humanities, social science, and professional/supporting course requirements.

### Human nutrition courses

**HN 132. Basic Nutrition.** (3) I, II, S. Concepts of human nutrition applied to personal food choices and health.


**HN 352. Personal Wellness.** (3) I. Impact of the effect of personal actions on lifelong wellness. Practical methods of assessing, maintaining, and improving behaviors to reduce the risk of illness and disability. Emphasis on developing skills to make informed, responsible health decisions. Pr.: Sophomore standing.

**HN 400. Human Nutrition.** (3) I, II, S. Nutrients, their function, metabolism, and relation to health and disease: the digestion, absorption, transport, utilization, and storage of nutrients in humans. Pr.: CHM 110 and 111 or 210; BIOL 198; HN 132, or ASI 518, or consent of instructor.
HN 413. Science of Food. (4) I, II. Chemical, physical, sensory, and nutritional properties of food related to processes used in food preparation. Two hours lec. and six hours lab a week. Pr.: CHEM 210 and 230.

HN 450. Nutritional Assessment. (2) II. Methods of nutritional assessment in humans to evaluate dietary intake and body composition; use of biologic markers of human nutritional status. One hour lec. and two hours lab a week. Pr.: HN 400; BIOL 340. For HN and DT majors only.

HN 499. Problem in Human Nutrition. (Var.) I, II, S. Supervised individual project to study current topics or participation in research. Pr.: Six hours in HN and consent of instructor.

HN 500. Public Health Nutrition. (3) I. Public health nutrition issues for various segments of the population; nutritional components of community assessment, program planning, and evaluation; and policy issues pertaining to the nutritional status of the population. Pr.: HN 450.


HN 520. Topics in Human Nutrition. (1–3) On sufficient demand. May be taken more than once for a maximum of 6 hours. Pr.: Junior standing and consent of instructor.


HN 610. Life Span Nutrition. (3) I. Physiological and environmental influences on nutritional requirements; nutritional problems and eating patterns of age groups throughout the life cycle. Pr.: BIOCH 265, BIOL 340, and HN 400.


HN 635. Nutrition and Exercise. (3) I. The interrelationships among diet, nutrition, and exercise. Topics covered include physical fitness, weight control, nutrient metabolism during exercise, and athletic performance. Pr.: HN 132 or HN 400; KIN 250, and KIN 335. Cross-listed with KIN 635.

HN 644. Women, Aging, and Health. (3) II. Risk factors for acute and chronic diseases, health concerns and interests, barriers to obtaining health care, public policies, and future research on women's health issues. Pr.: BIOL 198 and senior standing.

HN 650. Practicum in Human Nutrition. (Var.) I, II, S. Supervised professional field experience. Pr.: HN 450 and 500 and consent of instructor.

HN 660. Nutrition and Food Behavior. (3) I, in even years. Focus on the physiological, environmental, cultural, and economic factors that influence the use of food. Identification of appropriate methodology to study these factors as well as programs to modify food behavior. Pr.: PSYCH 110 or SOCIO 211 or ANTH 200; and HN 400.

HN 701. Sensory Analysis of Foods. (2–3) I. Sensory analysis of food appearance, texture, aroma, flavor; physiology of sensory receptors; laboratory and consumer panels; and interpretation of data. One hour rec. and three to six hours lab a week. Pr.: STAT 320 or 330 or 340.

HN 702. Nutrition in Developing Countries. (3) I, in odd years. Nutritional problems in developing countries, including an analysis of factors which contribute to malnutrition, effects of undernutrition, methods for assessing nutritional status, and interventions to combat nutrition problems. Pr.: HN 503 or 610.

HN 705. Food Product Development. (3) II. Development of food products including concepts, feasibility, formulation, evaluation, and production. One hour lec. and six hours lab a week. Pr.: HN 701.

HN 718. Physical Health and Aging. (3) I. Alternate odd years. Focus is on the physiological theories of aging, the relationship between normal aging processes, and the major chronic and acute diseases of the elderly, and community health promotion/maintenance programs for older adults. Pr.: BIOL 198 or 310; FSHS 510.

HN 741. Consumer Response Evaluation. (3) II. Odd years. Evaluation of consumer attitudes and perceptions of products to provide quantitative and qualitative information for research guidance. Design and implementation of consumer questionnaires of guides for focus groups and interviews. Two hours lec. and four hours lab a week. Pr.: STAT 320 or 330 or 340.

HN 750. Nutritional Aspects of Food Processing and Preparation. (2–3) I. In alternate years. Stability of nutrients during processing, storage, and preparation of foods from raw food to products for human consumption. Pr.: HN 400, 501; and BIOCH 265 or 521.

HN 780. Problems in Human Nutrition. (Var.) I, II, S. Supervised individual project to study current issues. Pr.: Senior standing or consent of instructor.

HN 782. Topics in Human Nutrition. (1–3) On sufficient demand. May be taken more than once for a maximum of 6 hours. Pr.: Senior standing and consent of instructor.
Technology and Aviation

Dennis K. Kuhlman, Dean
Danny F. Averette, Associate Dean
Matthew Melvin, Assistant Dean/Director of College Advancement

2310 Centennial Road
Salina, KS 67401–8058
1-800-248-5782
785-826-2640
www.sal.ksu.edu

Accreditation and certification
The Technology Accreditation Commission of the Accreditation Board for Engineering and Technology accredits the following associate degree programs: civil engineering technology, computer engineering technology, electronic engineering technology, environmental engineering technology, and mechanical engineering technology, as well as the bachelor’s degree program in electronic engineering technology and mechanical engineering technology. Technology Accreditation Commission of the Accreditation Board for Engineering and Technology; 111 Market Place, Suite 1050; Baltimore, Md., 21202, 410-347-7700.

The aircraft maintenance program is certified as an “Aviation Maintenance Technician School No. BZ9T052R” by the Federal Aviation Administration.

Kansas State University is fully accredited by the Commission on Institutions of Higher Education of the North Central Accrediting Association and by various accrediting agencies. Credit earned at K-State is transferable to other institutions.

K-State at Salina Library
The library, located in the Technology Center, meets standards set for college libraries by the American Library Association and TAC of ABET.

The library contains a collection of up-to-date technical information and reference materials (paper and electronic) covering a range of technological subjects.

Continuing education
The Division of Continuing Education offers workshops, seminars, and short-term and full-term courses in the fields of technology. Special courses can be designed to meet the needs of individuals, groups, and organizations. These services can be provided on campus, in-plant, or in communities where technical services are needed but not readily available. Continuing education units may be granted in appropriate cases.

University General Education Program

The College of Technology and Aviation requires each student to complete course work that fulfills the university general education requirements. The following information describes these requirements for associate and baccalaureate degree programs in the college.

Associate degrees
Degree requirements for students pursuing an associate degree in the College of Technology and Aviation include 6 credit hours of approved university general education courses. Students may take no university general education courses from within their major field of study.

Baccalaureate degrees
Degree requirements for students pursuing a baccalaureate degree in the College of Technology and Aviation include 18 credit hours of approved university general education courses, of which at least 6 credit hours are at the 300 level or above.

Students may take no more than six credit hours of university general education course work with the same course number prefix, and they may take no university general education courses from within their major field of study.

Policy for transfer students
Students entering Kansas State University transferring credit from accredited two-year or four-year institutions are required to complete a minimum number of university general education credit hours at K-State. The minimum number of university general education credit hours required is based upon total number of completed transfer credit hours accepted at K-State on the student’s initial date of entry.

Associate degree programs

<table>
<thead>
<tr>
<th>Number of completed transfer credit hours accepted at K-State on initial date of entry</th>
<th>Minimum university general education credit hours to be taken at K-State</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–14</td>
<td>6</td>
</tr>
<tr>
<td>15 and above</td>
<td>3</td>
</tr>
</tbody>
</table>

Baccalaureate degree programs

<table>
<thead>
<tr>
<th>Number of completed transfer credit hours accepted at K-State on initial date of entry</th>
<th>Minimum university general education credit hours to be taken at K-State</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–7</td>
<td>18</td>
</tr>
<tr>
<td>8–29</td>
<td>12</td>
</tr>
<tr>
<td>30–44</td>
<td>9</td>
</tr>
<tr>
<td>45 and above</td>
<td>6</td>
</tr>
</tbody>
</table>

Each transfer student is required to complete a minimum of 6 credit hours of K-State upper-division university general education courses (300 and above) as specified in the program in which they will graduate.

Policy for curriculum changes
Students changing curricula within Kansas State University must satisfy the university general education requirements for the program in which they will graduate. Students entering a baccalaureate degree program after completing an associate degree at K-State are not considered to be transfer students, as far as the university general education requirements are concerned. These students must meet the university general education requirements for the baccalaureate curriculum that they are entering.

University general education course selection
University general education courses may overlay the degree requirements in a given curriculum, to satisfy concurrently both the accreditation criteria for that program and the university general education requirements. Refer to the latest college advising information for a complete list of approved university general education courses.

In course descriptions, university general education courses are marked with a ●. For more information about university general education requirements, see the Degrees section of this catalog. For a current list of approved university general education courses:
www.ksu.edu/registrar/enroll/gened.html

Arts, Sciences, and Business

Nancy Mosier, Department Head
Professors Ahlvers, Bingham, Heublein, and Homolka; Associate Professors Stephens and Thompson; Assistant Professors Barnes, McGee, Mosier, Oh, and Zajac.
785-826-2692
www.sal.ksu.edu/asb

Kansas State University at Salina programs are intended to provide students the opportunity to acquire sufficient specialization in the technical field of their choice and a general education background intended to enhance their common knowledge. Each curriculum requires general studies courses.

This department includes courses in business, developmental studies, English/communications, mathematics, modern language, science, social science, and humanities.
At the Salina campus, math and English placement will be determined by the ACT placement program COMPASS. COMPASS is a computerized testing program that will assess and assign the level of math and English courses for students.

Bachelors of science in technology management (TCMG)

124 hours required for graduation

Applicants for admission into the technology management program will be accepted on completion of a minimum of 45 K-State and/or transferable credit hours with an overall grade point average of 2.50 or above.

I. Area of technology concentration

39-43 hours

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

II. Arts and sciences 54-58 hours

Communications ............................................................ 14-15

Written
ENGL 100 Expository Writing I ........................................... 3
ENGL 200 Expository Writing II ........................................... 3
ENGL 202 Technical Writing .............................................. 3

Oral
SPURE 105 Public Speaking IA ............................................ 2
or
SPURE 106 Public Speaking I ............................................... 2
SPURE 311 Business and Professional Speaking ..................... 3

Quantitative ................................................................. 15-16

MATH 100 College Algebra .................................................. 3
MATH 205 General Calculus and Linear Algebra .................... 3 or
MATH 220 Analytic Geometry and Calculus ......................... 4
STAT 320 Elements of Statistics .......................................... 3
CMST 225 Commercial Software Analysis ................................ 3

Computer elective ............................................................. 3

Natural science electives ................................................... 3

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

ECON 110 Principles of Macroeconomics ............................. 3
ECON 120 Principles of Microeconomics .............................. 3
Social sciences electives ..................................................... 6

Humanities electives ......................................................... 6

Restricted electives (optional) ................................................ 4

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

III. Business and management ........................................... 27

BUS 251 Financial Accounting ............................................. 3
BUS 252 Managerial Accounting ........................................... 3
BUS 315 Supervisory Management ....................................... 3
MANGT 366 Management Information Systems .................... 3
MANGT 420 Management Concepts ...................................... 3

Choose four courses from the following:

IET 265 Total Quality Management for Technology .................... 3
CET 410 Managerial and Engineering Economics .................... 3
FIN 450 Introduction to Finance ........................................... 3
MANGT 421 Introduction to Operations Management .................. 3

MANGT 390 Business Law .................................................. 3
MANGT 530 Industrial and Labor Relations ............................... 3
MANGT 531 Personnel and Human Resources Management ............ 3
MANGT 596 Business Government, and Society ....................... 3
MANGT 595 Business Strategy ............................................. 3
MKTG 400 Marketing ....................................................... 3
MKTG 442 Personal Selling ................................................ 3

Total hours required for graduation 124

Business courses

BUS 110. Introduction to Business. (3) I, II. Study the objectives, decisions, and activities within a business organization. Topics include a study of management responsibilities and controls, organizational structures, and marketing activities.

BUS 121. Human Relations in Organizations. (2) Focuses on the many psychological and social pressures people experience when they interact with each other. Two hours rec. a week.

BUS 251. Financial Accounting. (3) I, II. Study of business topics such as alternative forms of business organizations; typical business practices; legal instruments such as notes, bonds, and checks. 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.

BUS 252. Managerial Accounting. (3) I, II. This course outlines the use of internal accounting data by managers in directing the affairs of business and non-business organizations. Pr.: BUS 251.

BUS 253. Accounting Using Microcomputers. (3) I. This course covers material that will prepare the student to select, install, set up, and operate commercial accounting software packages. The hands-on approach is used. Students will learn to identify inputs, reports, periodic table updates, and data flow for accounting applications. The class will physically install, set up, and run a commercial accounting software package. Emphasis is on accounting using the microcomputer. Pr.: BUS 251.

BUS 315. Supervisory Management. (3) I, II. 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. Pr. ENGL 100 and SPCH 105 or 106 or permission by instructor.

MANGT 366. Management Information Systems. (3) I. 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.: CMIS 105.

MANGT 390. Business Law I. (3) I. 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.

MANGT 420. Management Concepts. (3) II. 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. Pr.: Junior standing.

MANGT 421. Introduction to Operations Management. (3) I. Description and analysis of problems related to the output of goods and services, operations planning and control, and systems management. Pr.: MATH 205 or MATH 220 and STAT 320 or STAT 350.

MANGT 530. Industrial and Labor Relations. (3) II. 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.

MANGT 531. Personnel and Human Resources Management. (3) II. The personnel program and its operational processes of manpower planning, recruiting, testing, developing, and evaluating. Analysis of the personnel department's role in the organization with emphasis on problem solving. Pr.: MANGT 420.

MKTG 400. Marketing. (3) I. 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, 120, and junior standing.

College of Technology and Aviation

general courses

COT 150. The Humanities Through the Arts. (3) II. 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.

COT 200. Utilization of Media. (3) Surveys the uses, theories, research, practices, programs, skills, and foundations of instructional technology. Principles are applicable to school, college, library, business, industry, organizational, or alternative learning settings. Three hours rec. a week.

COT 205. Photography. (3) II. Basic camera and darkroom techniques of photography.

COT 299. Problems in Arts, Sciences, and Business. (Var.) I, II. Opportunity for advanced independent study in specific subject areas in Department of Arts, Sciences, and Business. Subjects are selected by the student and the instructor. Pr.: Consent of instructor.

EDCEP 111. The University Experience. (1-3) I, II. 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.

EDCEP 202. Career and Life Planning. (2) I, II. Applies theory and research concerning assessment of interests and career choice-making to individuals' planning and decision making. Focuses on increasing understanding of the complexities of the world of work and on skills of integrating such understanding with each person's experience, characteristics, motives, and values in the career exploration process. Reviews and research, writing, interviewing skills, and job search techniques.

EDCEP 211. Leadership Training Seminar. (2) I, II. General principles of leadership as applied to small groups. Study of the role of the leader, group processes and interaction, defining group goals, and techniques of observation. Workshop and supervision in small group leadership. Pr.: Sophomore standing and consent of instructor.

EDCEP 502. Independent Study in Education (1-3) I, II. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department chair.

English/communications courses

ENGL 380. Developmental English, (3) I, II. 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) I, II. Introduces 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) I, II. Introduces 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 202. Technical Writing. (3) I, II, S. Technical Writing applies rhetorical skills to the special writing needs of business and industry. Special emphasis is placed on the writing process and audience analysis. Three hours rec. a week. Pr.: ENGL 100.

ENGL 251. Introduction to Literature. (3) I, II. Study of form and technique in works of fiction, poetry, and drama.

ENGL 255. Literature and Technology. (3) Students will read literature about technology from a variety of perspectives including novels, short stories, articles, and excerpts from other types of writing. Three hours rec. a week. Pr.: ENGL 100.


SPCH 311. Business and Professional Speaking. (3) II. Principles and practice of speaking in an organizational setting. Areas of emphasis will be oral reports, interviewing, interpersonal communication, and working in groups. Pr.: SPCH 105 or 106.

Geographic information systems courses
GIS 150. Introduction to GIS. (3) II. In this introductory course in geographic information systems the student will review hardware and software components, explore several applications, and be introduced to data structures and basic functions. The student will explore application issues in GIS, operational and management issues; and which issues to consider when proposing and implementing a new GIS. Hands-on experience will be gained using a commercial GIS software package (e.g. ARC/INFO) on a PC-based graphics workstation. Two hours rec. and two hours lab a week. Pr.: CMST 103.

GIS 252. Internship. (1) I, II, S. Student works during summer or regular semester as an intern in a GIS-related industry. A report detailing duties performed and tasks accomplished is required at the end of the internship period. (Recommended during summer before second year and during second year.) May be repeated for credit.

GIS 300. Problems in GIS. (Var.) I, II, S. A course in which advanced study is done in a specific area chosen by the student. Pr.: Consent of instructor.

GIS 350. Advanced Issues in GIS. (3) I. This course deals with GIS algorithms, data structures, advanced computational topics, analysis of error, ways in which traditional planning and management theories and techniques can be implemented in GIS, and evaluation of how GIS can be used to answer specific planning problems. Two hours rec. and two hours lab a week. Pr.: CMST 103 and GIS 150.

GIS 355. Projects in GIS. (3) I, II. In this course the class will take an example real-world geographic information systems project, address the issues in the production environment, complete the project, start to finish, using a GIS software package. Two hours rec. and two hours lab a week. Pr.: CMST 103 and GIS 150.

GIS 451. Georeferencing. (3) I. This course introduces spatial referencing concepts and global position systems (GPS) applications. A framework for spatial referencing is a necessary part of geographic information system if different layers of information are to be interrelated. Two hours rec. and two hours lab a week. Pr.: MATH 100 and MATH 151 or MATH 150, and CET 130.

Mathematics courses
MATH 010. Intermediate Algebra. (3) I, II, S. Review of elementary algebra to MATH 100. Pr.: Two units of mathematics in grades 9–12 and a College Algebra PROB ≥ C or 43 or more on the ACT assessment; or a score of at least 7 on the mathematics placement test; or a score of at least 26 on the arithmetic placement test.

MATH 011. Intermediate Algebra Review. (2) I, II, S. Supplemental algebra lab that is required to be taken in conjunction with MATH 100; students will receive 2 hours credit, which will not count towards graduation. Two hours rec. a week.

MATH 015. Beginning Algebra. (5) This course provides coverage of the topics considered essential in an introductory algebra course. Five hours rec. a week. May not be used toward degree.

MATH 020. College Algebra Review. 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) I, II, S. 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 100; or two years of high school algebra and a College Algebra PROB ≥ C of 60 or more on the ACT assessment; or a score of at least 18 on the mathematics placement exam.

MATH 120. Logic. (2) Set theory is introduced on an intuitive basis and developed as a mathematical structure to include Boolean algebra. Symbolic logic will be introduced and then will be applied to the solutions of problems including statements, truth tables, arguments, and proofs. Two hours rec. a week.

MATH 125. Elementary Functions. (3) I, II. A 3-credit hour course composed of 2 credit hours of in-class lecture and 1 credit hour of laboratory. The lecture portion includes basic algebraic, geometric, and trigonometric concepts. The purpose of the laboratory is to help review mathematical concepts, provide individual help, and apply mathematical concepts related to the student’s technical area. Two hours rec. and two hours lab a week.

MATH 150. Plane Trigonometry. (3) I, II, S. 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 College Algebra PROB ≥ C of 60 or more on the Enhanced ACT mathematics; or a score of at least 20 on the mathematics placement exam.

MATH 151. Applied Plane Trigonometry. (2) I, II, S. 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 College of Technology and Aviation math placement exam or ACT score. Two hours rec. a week.

MATH 205. General Calculus and Linear Algebra. (3) II. 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).

MATH 214. Advanced Topics in Mathematics. (4) I. Course content will include solving definite multiple integrals, order relations, differential equations, linear constant-coefficient equations, mutually independent treatments of systems, the Laplace transform, power series solutions, numerical methods, and Fourier series methods for partial differential equations of second order. Pr.: MATH 215 and 220.

MATH 215. Calculus I. (5) S. 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.

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

MATH 220. Analytic Geometry and Calculus I. (4) I, II, S. 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.

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

MATH 222. Analytic Geometry and Calculus III. (4) Continuation of MATH 221 to include functions of more than one variable. Pr.: C or better in MATH 221.

MATH 240. Elementary Differential Equations. (4) Elementary techniques for solving ordinary differential equations and applications to solutions of problems in science and engineering. Pr.: C or better in MATH 222.

Modern language courses
SPAN 161. Spanish I. (5) Basic introduction to the structures of the Spanish language, emphasizing practice in the four skills: listening, speaking, reading, writing. Includes selected aspects of the cultures of Spanish speakers and practice in the language learning center.

Science courses
BIOL 198. Principles of Biology. (4) I, II, S. An introductory course for majors and nonmajors 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.

CHM 110. General Chemistry. (3) I, S. Principles, laws, and theories of chemistry; important metallic and nonmetallic substances. Pr.: C or better in MATH 220. CHM 111, is available for an additional hour of credit.) Three hours lec. a week. Pr.: MATH 101 or at least one year of high school algebra.

CHM 111. General Chemistry Laboratory. (3) I, S. An optional laboratory course to supplement the material of CHM 110. Three hours lab a week. Pr.: CHM 110 or conc. enrollment.

CHM 210. Chemistry I. (4) I, II, S. First course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. Three hours lec. and three hours lab a week. Pr.: One year of high school chemistry and MATH 120 or two courses of high school algebra.

CHM 230. Chemistry II. (4) II. Second course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. Three hours lec. and three hours lab a week. Pr.: CHM 210.

CHM 350. General Organic Chemistry. (3) I. A survey of types of organic reactions important to biological science areas including pre-veterinary and certain agriculture and home economics programs. Conc. enrollment in CHM 351 is permitted. Three hours lec. a week. Pr.: CHM 230.

CHM 351. General Organic Chemistry Laboratory. (2) One five-hour lab and one hour of lec. a week. Pr.: CHM 350.

GEOG 242. Physical Geography. (3) I. In this course the student will explore the issues of world geography and its physical elements. Three hours rec. a week.

GEOL 100. Earth In Action. (3) I. The earth’s physical, structural, and dynamic features; the most common minerals and rocks; processes affecting the earth. Three hours rec. a week.

GEOL 103. Elementary Geology Laboratory. (1) Field and laboratory investigation of minerals, rocks; use of maps; environmental studies; erosion, transportation, sedimentation. Two hours lab a week. Pr.: GEOL 100, 105, or 125 or conc. enrollment.
PHYS 101. The Physical World I, (3) II. 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 physics and atomic theory. The observations and phenomena are simple and basic. Three hours lec. a week. Open only to freshmen, sophomores, and first-semester transfer students. Not available for credit to students who have credit in PHYS 106. 

PHYS 103. The Physical World I Laboratory, (1) II. Two hours lab a week. Pr. or conc.: PHYS 101.

PHYS 113. General Physics I, (4) I, II. S. 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., and two hours lab a week. Pr.: MATH 150 or one-half units of high school algebra and one unit high school trigonometry.

PHYS 114. General Physics II, (4) I, II. S. 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.

PHYS 213. Engineering Physics I, (5) I. Mechanics and heat; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr. or conc.: MATH 221.

PHYS 214. Engineering Physics II, (5) II. Sound, electricity, magnetism, light, and modern physics; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr.: PHYS 213, MATH 221.

PHYS 342. Aviation Meteorology, (4) Basic aviation-related meteorology concepts through the study of atmospheric elements and how they generally affect the weather 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. Same as PPL 342.

Airframe and powerplant certificate (APC) 68 hours required for completion This two-year program prepares students for the Federal Aviation Administration airframe and powerplant certificate. Students who successfully complete the program will be awarded a certificate of completion.

Airframe and powerplant mechanics inspect, repair, modify, and maintain aircraft for manufacturers, commercial airlines, businesses, corporations, and general aviation operators.

**Statistics courses**

**STAT 320. Elements of Statistics.** (3) I, II. S. A basic first course in probability and statistics; frequency distributions, averages and measures of variation; probability; simple confidence intervals and tests of significance appropriate to binomial and normal populations; correlation and regression, including confidence intervals and tests of significance for bivariate populations. Pr.: MATH 100.

**Aviation**

Peter Kennedy, Department Head Professors Barnard and Gross; Assistant Professors Kennedy, and King; Instructors Claussen, Kelley, Kreiman, Rankin, Root, and Swain.

785-826-2644 www.sal.ksu.edu/~AERO

Airframe and powerplant certificate (APC) 68 hours required for completion This two-year program prepares students for the Federal Aviation Administration airframe and powerplant certificate. 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 airframe and powerplant maintenance technicians.

Airframe and powerplant mechanics inspect, repair, modify, and maintain aircraft for manufacturers, commercial airlines, businesses, corporations, and general aviation operators.

**Freshman**

Fall semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>AVM 111</td>
<td>Basic Aircraft Electricity</td>
</tr>
<tr>
<td>AVM 121</td>
<td>Aircraft Drawings</td>
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<tr>
<td>AVM 131</td>
<td>Aircraft Standards</td>
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<tr>
<td>AVM 141</td>
<td>Aircraft Science</td>
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<tr>
<td>AVM 151</td>
<td>Aviation Maintenance Fundamentals</td>
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Spring semester

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<tbody>
<tr>
<td>AVM 112</td>
<td>Aircraft Welding</td>
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<td>AVM 132</td>
<td>Aircraft Fluid Power</td>
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<td>AVM 142</td>
<td>Airframe Systems</td>
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<tr>
<td>AVM 152</td>
<td>Airframe Structures and Repair</td>
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<td>AVM 162</td>
<td>Airframe Electrical Systems</td>
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**Sophomore**

Fall semester

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<th>Course Code</th>
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<tbody>
<tr>
<td>AVM 231</td>
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<tr>
<td>AVM 241</td>
<td>Navigational Aids and Communication Systems</td>
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<tr>
<td>AVM 261</td>
<td>Aircraft Inspection and Assembly</td>
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<tr>
<td>AVM 321</td>
<td>Powerplant Fundamentals</td>
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Spring semester

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<td>AVM 322</td>
<td>Powerplant Operation and Troubleshooting</td>
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<tr>
<td>AVM 332</td>
<td>Gas Turbine Powerplant</td>
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<tr>
<td>AVM 342</td>
<td>Powerplant Induction and Fuel Systems</td>
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<tr>
<td>AVM 352</td>
<td>Powerplant Overhaul</td>
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**Summer session**

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<tr>
<td>SPCH 106</td>
<td>Public Speaking</td>
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<tr>
<td>MATH 151</td>
<td>Applied Plane Trigonometry</td>
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**Aviation maintenance degree (AVM)**

Associate of applied science 85 hours required for graduation The applied science degree in aviation maintenance is a terminal degree that can be earned in two years. The degree goes beyond the airframe and powerplant certificate program to include general education courses recommended by the Kansas Board of Regents.

**Freshman Fall semester**

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<td>Airframe Structures and Repair</td>
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**Sophomore Fall semester**

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</table>
Airway science—aviation maintenance (AWS AM)

Bachelor of science in aeronautical technology (airway science)
124 hours required for graduation

Students may continue their studies in aviation maintenance beyond the associate degree to obtain the bachelor of science degree in aeronautical technology. The two-year associate degree is designed as a terminal degree for the average maintenance technician.

The bachelor of science degree is designed for the maintenance technician with a future goal of a management position. This would include shop foreman, lead technician, and other supervisory positions.

The additional courses will give the student background for leadership roles in the aviation maintenance area. Courses in people skills and communications, both verbal and written, are enhanced. Additional math skills as well as computer skills will be developed.

There are two additional specialty areas in the maintenance field covered: the non-destructive testing of aviation parts and aircraft, and also the use of advanced composites in the larger transport category aircraft. This degree would be a strong asset to the maintenance technician looking for employment in the airline industry.

Freshman
Fall semester
AVM 111 Basic Aircraft Electricity ....................... 4
AVM 121 Aircraft Drawings .................................. 1
AVM 131 Aircraft Standards .................................. 4
AVM 141 Aircraft Science ..................................... 3
AVM 151 Aviation Fundamentals ......................... 3

Spring semester
AVM 112 Aircraft Welding .................................. 2
AVM 132 Aircraft Fluid Power ................................ 4
AVM 142 Airframe Systems .................................. 4
AVM 152 Airframe Structures and Repair .................. 5
AVM 162 Airframe Electrical Systems ..................... 4

Sophomore
Fall semester
AVM 231 Aircraft Finish and Fabrication .............. 3
AVM 241 Navigational Aids and Communication Systems .................................. 3
AVM 261 Aircraft Inspection and Assembly ............. 5
ENGL 100 Expository Writing I ............................ 3
MATH 100 College Algebra .................................. 3

Spring semester
ENGL 200 Expository Writing II .......................... 3
MATH 151 Applied Plane Trigonometry ................. 2
SPCH 106 Public Speaking .................................. 3
CMST 225 Commercial Software Analysis .............. 3

Junior
Fall semester
AVM 321 Powerplant Fundamentals ....................... 4
AVM 351 Powerplant Ignition and Electrical Systems .................................. 3
ENGL 202 Technical Writing ................................ 3
PHYS 113 General Physics I ................................ 4

Aviation maintenance review (AVMR)

Aviation maintenance review courses are designed to provide training for those students qualifying under FAR 65.77. This training is usually necessary to pass the FAA written, oral, and practical exams for the airframe and powerplant certificate. The credit hours for this training can be applied toward requirements for an associate degree in aviation maintenance. A maximum of 30 semester credit hours can be waived for the FAA certificate for airframe and powerplant maintenance when enrolled in an associate degree program at the college.

AVMR 220 Aviation Maintenance Review/General ... 4
AVMR 230 Aviation Maintenance Review/Airframe ... 4
AVMR 250 Aviation Maintenance Review/Powerplant ... 4

Avionics technology degree (AVIO)

Associate of applied science 69 hours required for graduation

Action is under way to modify the associate degree in avionics technology. Students will not be accepted into the avionics technology degree program, effective in the 2000–2001 academic year. Students interested in an avionics career should consider the electronic engineering technology associate degree program, as well as the certification of an airframe rating through the airframe and powerplant certificate program.

Avionics is a contraction of aviation electronics. It deals with all electronics on board an aircraft, and includes the areas of communication, navigation, and flight control. The program prepares students to be technicians in both general aviation and air carrier Repair Stations. There is a tremendous need for trained, qualified technicians in avionics, and coupled with the rapid advances in technology, the need is growing at a greater rate than for any other aviation-related career field.

Freshman
Fall semester
ELET 101 Direct Current Circuits ....................... 4
CMET 150 Digital Logic .................................. 3
MATH 100 College Algebra .................................. 3
MATH 151 Applied Plane Trigonometry ................. 2
AVIO 242 Installation ...................................... 4

Spring semester
ELET 102 Alternating Current Circuits ................. 4
ELET 110 Semiconductor Electronics .................. 4
AVIO 244 Navigation ....................................... 4
PHYS 113 General Physics I ................................ 4
SPCH 105 Public Speaking IA ............................ 2

Sophomore
Fall semester
AVIO 240 Aero Communications ....................... 4
AVIO 241 Navigation ....................................... 4
AVM 121 Aircraft Drawings ................................ 1
AVM 131 Aircraft Standards ................................ 3
ENGL 100 Expository Writing I ............................ 3
CMST 100 Applied Basic Programming ................. 2

Spring semester
AVIO 253 FCC License Study ............................. 1
AVIO 245 Pulse I ........................................... 4
AVIO 246 Pulse II ........................................... 4
AVIO 247 Flight Control Systems ....................... 3
BUS 110 Introduction to Business ......................... 3
ECON 120 Principles of Microeconomics ............... 3

Professional pilot degree (PPIL)

Associate of technology 68 hours required for graduation

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

The two-year associate degree emphasizes business courses as a complement to the English, math, and science requirements. Professional pilot graduates may fly as charter, business, corporate, or airline pilots.

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 Sundowners, 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 time 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.

Freshman
Fall semester
PPIL 111 Private Pilot ..................................... 4
PPIL 113 Private Pilot Flight Lab ......................... 1
MATH 100 College Algebra .................................. 3
ENGL 100 Expository Writing I ............................ 3
## Technology and Aviation

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
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<td>Fall semester</td>
<td>PPIL 111</td>
<td>Private Pilot</td>
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<td>PPIL 113</td>
<td>Private Pilot Flight Lab</td>
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<td>MATH 100</td>
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<td>ENGL 100</td>
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<td>PSYCH 110</td>
<td>General Psychology</td>
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<td>Spring semester</td>
<td>PPIL 112</td>
<td>Professional Instrument Pilot</td>
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<td>PPIL 114</td>
<td>Professional Instrument Flight Lab I</td>
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<td>PPIL 211</td>
<td>Professional Commercial Pilot Flight Lab II</td>
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<td>PPIL 213</td>
<td>Professional Commercial Pilot Flight Lab</td>
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<td>ECON 110</td>
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<td>Junior</td>
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<td>MANGT 390</td>
<td>Business Law</td>
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<td>STAT 320</td>
<td>Elements of Statistics</td>
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<td>Spring semester</td>
<td>PPIL 440</td>
<td>AVM 112. Aircraft Welding, (2) 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 weld-</td>
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<td>CMST 130</td>
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<td>Natural science elective</td>
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<tr>
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<td>AVM 113. Aircraft Fluid Power, (3) A study of basic fluid mechanics as it applies to practical applications in aircraft systems. Compressible and incompressible fluid sys-</td>
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<td></td>
<td>AVM 114. Aviation Safety Management</td>
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<td>Senior</td>
<td>PPIL 425</td>
<td>Advanced Aircraft Systems</td>
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<td>PPIL 362</td>
<td>Multi-Engine Ground School</td>
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<td>PPIL 363</td>
<td>Multi-Engine Flight Lab</td>
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<td>SPCH 106</td>
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<td>BUS 315</td>
<td>Supervisory Management</td>
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<td>Humanities/social science elective</td>
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## Airway science—professional pilot (AWS PP)

Bachelor of science in aeronautical technology (airway science) 124 hours required for graduation

Students may pursue studies in professional pilot beyond the associate degree level and 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 instrument flight instructor and multi-engine flight instructor certificates in addition to classes rooted in aviation applications. A King Air transition course is also available in this option and training is performed 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 Sundowners, Beechcraft Bonan- zas, Beechcraft Barons, and a Beechcraft C-90 King Air. Both standard and full graphics simulators are used for additional training benefit.

The lab time 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.

## Aviation maintenance courses

**AVM 111. Basic Aircraft Electricity,** (4) I. A basic concept of DC/AC circuits, with basic laws relating to the following: measuring voltage, current, resistance, continuity and leak- age; relationship of voltage, current and resistance in electri- cal circuits; reading and interpretation of electrical circuit diagrams; electrical devices and inspection and servicing of batteries. Three hours lec. and three hours lab a week.

**AVM 112. Aircraft Welding,** (2) 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 weld- ing processes are to be studied. One hour rec. and three hours lab a week.

**AVM 121. Aircraft Drawings,** (1) I. 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.

**AVM 131. Aircraft Standards,** (4) I. A survey of the organization of the Federal Aviation Administration and the Civil Aeronautics Board. Emphasis will be placed on the regulations, standards, and specifications of each of these organizations. Also included is an introduction to ground trans- port maintenance procedures. Two hours rec. and three hours lab a week.

**AVM 132. Aircraft Fluid Power,** (3) I. A study of basic fluid mechanics as it applies to practical applications in aircraft systems. Compressible and incompressible fluid sys- tems will be studied. Two hours rec. and three hours lab a week. Pr.: AVM 141.

**AVM 141. Aircraft Science,** (3) I. This is a study of applied mathematics and basic physics. Section one: mathe- matics will provide the learner with the tools needed to per- form the calculations normally confronted by the aviation maintenance technician. Section two: the study of basic sci- ence will enable the student to better understand the opera- tion of aircraft and the many complex systems needed to sustain safe flight.

**AVM 142. Airframe Systems,** (4) I. A study of the air- frame systems and components to include: pressurization, heating and cooling, and structural devices. Two hours rec. and six hours lab a week. Pr.: AVM 141.

**AVM 151. Aviation Maintenance Fundamentals,** (3) I. 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 familiar- ization, 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.

**AVM 152. Airframe Structures and Repair,** (5) I. A study of materials commonly used in airframe structures and the associated study of making structural repairs according to recommended procedures. Skills in sheetmetal are stressed. Three hours rec. and six hours lab a week. Pr.: AVM 141.

**AVM 162. Airframe Electrical Systems,** (4) I. 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. Two hours rec. and six hours lab a week. Pr.: AVM 111.

**AVM 231. Aircraft Finish and Fabrication,** (3) I. 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.

**AVM 241. Navigational Aids and Communication Sys- tems,** (3) I. A survey study of the aids to navigation and communications used in light and intermediate class air- craft. Operation and installation of the various types of equipment will be stressed. Two hour rec. and six hours lab a week. Pr.: AVM 111.

**AVM 261. Aircraft Inspection and Assembly,** (5) I. 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, 141.

**AVM 285. Helicopter Maintenance,** (7) S. A study of air- frame, rotor transmission, and engine components of tur- bine and reciprocating engine helicopters. Also includes a detailed study of required maintenance, histories, records, and inspection of components. Three hours rec.
and 12 hours lab a week. Pr.: Aviation maintenance major or consent of instructor.

AVM 290. Problems in Aviation. (Var.) I, II, S. Advanced study in a specific area chosen by the instructor. Pr.: Consent of instructor.

AVM 312. Aircraft Propellers. (2) II. A study of the use, maintenance, and inspection of propellers and their related control system. One hour rec. and three hours lab a week. Pr.: Departmental consent.

AVM 321. Powerplant Fundamentals. (4) 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, 141.

AVM 322. Powerplant Operation and Troubleshooting. (3) II. 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.

AVM 332. Gas Turbine Powerplant. (5) II. 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.

AVM 342. Powerplant Induction and Fuel Systems. (4) II. 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 altitude. Two hours rec. and six hours lab a week. Conc.: AVM 321.

AVM 351. Powerplant Ignition and Electrical Systems. (3) I. 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.

AVM 352. Powerplant Overhaul. (3) II. Practical experience in overhauling reciprocating engines. Engines are assembled and operationally checked in lab. One hour rec. and six hours lab a week. Pr.: AVM 321.

AVM 400. Composites. (4) II. This course will introduce composite materials in use in aircraft production; the course will be mainly concerned with the repair of these materials and the repair procedures. The course will start with the development of composites, a description of each type and the different qualities of each type and hands-on projects for repairs, and the techniques involved with the repairs, such as vacuum bagging and hot bonding. Pr.: AVM 152 or consent of instructor.

AVM 405. Non-Destructive Testing. (3) I, II, S. Introduction to nondestructive testing and inspection methods in use in the aviation industry. The course will cover the following types of inspection methods: visual, x-ray (radiographic) magnetic particle, ultrasonic, dye penetrant. Pr.: AVM 141 or AVM 261 or consent of instructor.

Aviation maintenance review courses

AVMR 220. Aviation Maintenance Review/General. (4) The general review course is designed for those individuals who have met the Federal Aviation Administration’s eligibility requirements under FAR 65.77. The review conforms to the three levels of training set forth by the FAA. Three hours rec. and three hours lab a week. Pr.: Departmental consent. This course may be offered in two parts as: AVMR 231 Aviation Maintenance Review/Airframe I and AVMR 232 Aviation Maintenance Review/Airframe II.

AVMR 250. Aviation Maintenance Review/Powerplant. (4) The powerplant review course is designed for those individuals who have met the Federal Aviation Administration’s eligibility requirements under FAR 65.77. The review conforms to the three levels of training set forth by the FAA. Pr.: Departmental consent. This course may be offered in two parts as: AVMR 251 Aviation Maintenance Review/Powerplant I and AVMR 252 Aviation Maintenance Review/Powerplant II.

Avionics courses

AVIO 240. Aero Communications. (4) I. A study of electronic communications principles which includes the RF spectrum from VLF through microwaves, concentrating on those special techniques applied in aviation. This includes the modulation systems of AM, SSB, pulse, digital, and video. The use of microprocessor systems to control circuitry and frequency synthesizers is thoroughly investigated. Typical operation of the growing use of satellites for communications is covered. Emphasis is placed on performance tests and measurements of transmitters and receivers, and troubleshooting to the component level. The course concludes with the operation and maintenance of the emergency locator transmitter system. Pr.: ELET 102 and 110.

AVIO 241. Navigation I. (4) I. A study of the aeronautical navigation systems classified as short range navigation, which includes the VOR, ILS (LOC/G/S/MKR), and NDB/ADF equipment. The ground signals and airborne receiving, processing, and display equipment is studied. The HIS and slaved compass systems are covered. An overview of the microwave landing system is made. The course concludes with a study of avionics audio systems, including microphones, headsets, audio control panels, and intercom systems. Pr.: ELET 102, ELET 110, and CMET 150.

AVIO 242. Installation. (4) I. This course studies the over-all requirements of operating a FAA certified Avionics Repair Station including the FARs that govern repair and alteration procedures and the proper documenting of those procedures. Techniques of installing avionics equipment in various types of fixed and rotary wing aircraft are studied and applied. Actual installation in airworthy aircraft is performed for “real world” student practice. The mechanical aspects of installation are covered including precision soldering, aviation hardware, practice installation of fabrication of special components, and computation of weight and balance of the completed installation. Throughout the course good record-keeping practices are ingrained into the students. Credit for completion of Repair Station Work Orders, FAA Form 337s, and all aircraft logbook entries. Pr.: AVM 131.

AVIO 243. FCC License Study. (1) I. This course is a one-hour-per-week, recitation-only study of the knowledge required to pass the Federal Communications Commission general license examination. A question/answer study book is used to guide the class.

AVIO 244. Navigation II. (4) II. A study of the long range navigation techniques used in aviation, which includes the LORAN, Global Positioning System, OMEGA/VLF, and Inertial Positioning systems. Introduction to direct route system using VOR/DME called RNAV is also studied. The student explores the signals emitted by the various types of ground stations to fully understand the airborne receiver and processing techniques required of each system. The interconnections to other aircraft avionics such as flight control systems and flight management systems is also studied. Pr.: AVIO 241.

AVIO 245. Pulse I. (4) I. II. This course studies two of the pulse systems used in avionics known as Distance Measuring Equipment (DME) and Transponder equipment. The characteristics of the airborne or ground emitted signals are studied, then the reception and processing of those signals is investigated in detail to the component level. This includes typical troubleshooting and alignment of the airborne equipment. An overview study is done of the traffic alert and collision avoidance system, and the course concludes with studying altitude encoders used with the ATC radar beacon TXP system and altitude alerters required by higher performance aircraft. Pr.: CMET 150.

AVIO 246. Pulse II. (4) II. This course continues the study of avionics pulse systems with the airborne weather radar system, radio altimeter system, and Stormscope system. The radar antenna, receiving/display and display systems are studied to the component level. This includes theory, operation, alignment, and troubleshooting details. The radio altimeter system is studied, and the course concludes with an overview and capabilities of the stormscope system. Pr.: CMET 150.

AVIO 247. Flight Control Systems. (3) II. A study is done of aerodynamic flight control laws, servo control systems, error signal generation, summing, processing, and amplification to control actuators of various types. Analog and digital flight control systems are both covered. The Electronic Flight Instrument System, Head Up Display, and Fly By Wire systems are covered from a conceptual, block diagram, and operational view. The course concludes with methods of integrating all avionics equipment into a complete package for an aircraft, and ensuring compatibility with all other equipment installed on the aircraft. Problems that can occur between avionics units and other aircraft systems are explored from a “systems approach” to troubleshooting. Pr.: AVM 131.

Professional pilot courses

PPIL 111. Private Pilot. (4) I, II, S. The subject areas necessary for completion and passing of the FAA Private Pilot Written Knowledge Test are presented. Four hours rec. a week. Pr.: CMET 150.

PPIL 112. Professional Instrument Pilot. (3) I, II, S. 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. Three hours rec. a week. Pr.: PPIL 111.

PPIL 113. Private Pilot Flight Lab I. (1) I, II, S. 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. Three hours lab a week. Conc.: PPIL 111.

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

PPIL 116. VFR Pilot Proficiency Lab. (1) I, II, S. Instruction and flight training necessary to safely operate an aircraft to meet the Federal Aviation Regulations. This course provides the student the theory and demonstrate proficiency to satisfactorily meet the FAA regulations for the current ratings held. Pr.: FAA Private Pilot certificate.

PPIL 197. IFR Pilot Proficiency Lab. (1) I, II, S. 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. Pr.: FAA Private and Instrument Rating.


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

PPIL 213. Professional Commercial Pilot Flight Lab. (2) I, II, S. An introduction to complex airplane operations and a review of those operations required of a commercial pilot. Pr. The completion of this course reads the student to take the commercial FAA practical test. Six hours lab a week. Pr.: PPIL 212. Conc.: PPIL 211.
PPIL 221. Preventive Maintenance. (2) I, II. This course will give the student hands-on experience with the 25 maintenance tasks allowed under FAR 43 entitled preventive maintenance. Two hours rec. a week.

PPIL 310. Aircraft Certification. (3) I, II. A presentation of Federal Aviation Regulations pertinent to aircraft certification, maintenance and associated documents, publication records, and weight and balance computations.

PPIL 312. Certified Flight Instructor Ground School. (6) I, II. 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.

PPIL 314. Certified Flight Instructor Flight Lab. (2) I, II, S. 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. Conc.: PPIL 312.

PPIL 342. Aviation Meteorology. (4) I, II. 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. Same as PHYS 342.

PPIL 362. Multi-Engine Ground School. (1) I, II, S. Ground instruction covering multi-engine aircraft to develop the aeronautical knowledge to meet the ground school requirements for a multi-engine land class rating. One hour rec. per week.

PPIL 363. Multi-Engine Flight Lab. (1) I, II, S. 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. Pr.: PPIL 362 or conc.

PPIL 379. King Air Transition. (3) I, II. The needed instruction, simulator, and flight training to obtain skills and experience to fly the Beechcraft King Air as Pilot in Command. The demonstration of flight maneuvers necessary to meet the Federal Aviation Regulations and demonstrate competent operations of aircraft systems in the Air Traffic Control System and in emergency flight conditions. Pr.: FAA Private, Instrument, and Multi-engine ratings.

PPIL 385. Airline Transport Pilot Rating. (2) I, II, S. 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 rec. and three hours lab a week. Pr.: Consent of instructor and evaluation of student’s pilot experience as it relates to FAR 61.151 through 61.157.

PPIL 389. Problems in Aviation. (1-18) I, II, S. 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 Aerodynamics. (1) I, II, S. Instruction and flight training necessary to develop an understanding and flight proficiency in basic aerodynamics. 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 113.

PPIL 400. Aviation Legislation. (3) I, II. A survey of state, federal, and international regulation of the aviation industry. Historical and current events, past and present legislation, conventions and treaties will be examined. Emphasis is on the historical and legislative aspects as they correlate to the development and control of aviation. Pr.: PPIL 111.

PPIL 415. Human Factors. (3) I, II. Aeromedical information, causes, symptoms, prevention, and treatment of flight environment disorders. Attitude effects, spatial disorientation, body heat imbalance, visual abnormalities and psychological factors are included as they relate to pilot performance and survival effectiveness. Pr.: PPIL 111.


PPIL 435. Air Transportation. (3) I, II. The development and present status of air transportation, federal legislation, characteristics and classification of air carriers; the organization and function of the FAA and the Civil Aeronautical Board are reviewed. Pr.: PPIL 111.

PPIL 440. FAR 135 Operations. (3) I, II. Aircraft and equipment evaluation, maintenance, flight operations, administration, fiscal considerations. Emphasis will be placed on Federal Aviation regulations, marketing, training requirements, record keeping. Pr.: PPIL 211.

PPIL 450. Aviation Safety Management. (3) I, II. 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; accident 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 philosophical 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.: PPIL 415.

PPIL 482. Certified Flight Instructor Flight Instructor Ground School. (4) I, II. 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.

PPIL 483. Certified Instrument Flight Instructor Flight Lab. (1) I, II. 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, and PPIL 482 or conc.

PPIL 492. Certified Multi-Engine Flight Instructor Ground School. (1) I, II. 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) I, II. 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, and PPIL 492 or conc.

Engineering Technology

David G. Delker, Department Head

Professors: Buchwald, Delker, Gold, Hassan, and Keating; Associate Professors Buchanan, Francisco, Kinsler, Swanson, and Wilson; Assistant Professors Dandu, Harding, Kahn, Leite, Mortensen, Simmonds, and Spaulding.

Engineering Technology

Civil engineering technology (CET)

Associate of technology

65 hours required for graduation

Civil engineering technicians perform functions in the control and layout of horizontal locations and vertical elevations for proposed construction of buildings, bridges, and transportation facilities. Their work includes preliminary and final surveys, assisting in design and detailing stage, or supervision of construction to maintain quality control.

The program prepares civil technicians for employment in industries dealing with the design and construction of highways, bridges, railroads, airports, water supply and distribution projects, and other projects ranging from small-scale construction jobs to those involving tremendous capital expenditures.

The associate degree program in civil engineering technology is accredited by the Technology Accreditation Commission of the Accrediting Board for Engineering and Technology, 111 Market Place, Suite 1050, Baltimore, Md., 21202. 410-347-7700.

Freshman

Fall semester

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<td>MATH 115</td>
<td>Plane Trigonometry</td>
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<tr>
<td>ENGL 100</td>
<td>Expository Writing</td>
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<td>MET 111</td>
<td>Technical Graphics</td>
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<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
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<td>CET 120</td>
<td>Materials Sampling and Testing</td>
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Spring semester

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<td>CET 130</td>
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Sophomore

Fall semester

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<td>CET 410</td>
<td>Managerial and Engineering Economics</td>
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<td>CET 323</td>
<td>Route Location Surveying</td>
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<td>MET 245</td>
<td>Material Strength and Testing</td>
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<td>CET 220</td>
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Spring semester

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<td>CET 312</td>
<td>Transportation Systems</td>
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<td>CET 313</td>
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<td>UNIV 317</td>
<td>University general education natural science elective</td>
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Surveying option (66 hours)

This option allows students to obtain an associate of technology in civil engineering technology while preparing more specifically for employment in the surveying industry.

Students choosing the surveying option can fulfill the requirements for an associate degree in CET while following the course curriculum listed and replacing CET 220, CET 312, 785-826-2677 www.ksu.edu/etd
This will make a total of 66 semester credit hours required for graduation in CET with the surveying option.

Surveying technology (SRVT)

Associate of technology
70 hours required for graduation

Action is under way to drop the curriculum leading to an associate degree in surveying technology. An option in surveying has been created in civil engineering technology. Following administrative approval, the surveying technology program will be eliminated as a separate program. Individuals interested in pursuing a program in surveying should refer to the civil engineering technology surveying option.

Surveying is necessary for the planning, design, and layout of all major engineering projects. Surveys are used for subdivisions, buildings, bridges, railroads, highways, airports, canals, dams, irrigation and drainage projects, and in preparation of any kind of map.

Surveying technology graduates may seek employment in construction, as government surveyors (federal, state, county, and municipal), as engineering consultants, and as private surveyors.

Any person who goes into private practice must be licensed. This program, combined with the necessary work experience, will help individuals qualify to take the Registered Land Surveyors Examination.

Freshman

Fall semester

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<tr>
<th>Course Code</th>
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<th>Hours</th>
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<td>MATH 100</td>
<td>College Algebra</td>
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<td>MET 111</td>
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<td>ENGL 100</td>
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<td>CMIS 105</td>
<td>Introduction to PC Software</td>
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Spring semester

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<td>CET 130</td>
<td>Plane Surveying</td>
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<td>CET 230</td>
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<td>General Physics I</td>
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<tr>
<td>STAT 320</td>
<td>Elements of Statistics</td>
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Sophomore

Fall semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CET 211</td>
<td>Statistics</td>
<td>3</td>
</tr>
<tr>
<td>CET 232</td>
<td>Surveying Astronomy</td>
<td>2</td>
</tr>
<tr>
<td>CET 236</td>
<td>Topography Surveying Practicum</td>
<td>3</td>
</tr>
<tr>
<td>CET 250</td>
<td>Photogrammetry</td>
<td>3</td>
</tr>
<tr>
<td>CET 323</td>
<td>Route Location Surveying</td>
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<tr>
<td>ENGL 202</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>CMST 101</td>
<td>Applied Basic Programming</td>
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Spring semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CET 150</td>
<td>Introduction to GIS</td>
<td>3</td>
</tr>
<tr>
<td>CET 234</td>
<td>Advanced Surveying Techniques</td>
<td>3</td>
</tr>
<tr>
<td>CET 235</td>
<td>Surveying Law</td>
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</tr>
<tr>
<td>CET 237</td>
<td>GPS and Network Surveying</td>
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<tr>
<td>CET 238</td>
<td>Boundary Surveying Practicum</td>
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<td>CET 312</td>
<td>Transportation Systems</td>
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<tr>
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</table>

Civil engineering technology electives must be a minimum of two credits from CET 120, CET 210, CET 220, CET 231, or CET 241.

Bachelor of science in land information technology (LIT)

A minimum of 60 hours beyond the associate degree

The curriculum leading to a B.S. in land information technology is being discontinued. Following administrative approval, both the surveying technology and land information technology programs will be eliminated. Students interested in a surveying program should look at the surveying option of the civil engineering technology program.

The land information technology degree is a +2 program that expands the associate degree in surveying technology or other related fields. It is the first bachelor's degree in Kansas to incorporate modern surveying and mapping technology such as global positioning systems, GIS, photogrammetry, and other advanced topics in surveying and land information.

Course work in this bachelor's degree program provides additional depth of study dealing with subdivision design, network adjustment, map projection, engineering database, remote sensing, and projects in GPS and photogrammetry.

Junior

Fall semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANGT 390</td>
<td>Business Law</td>
<td>3</td>
</tr>
<tr>
<td>CET 330</td>
<td>Land Surveying II</td>
<td>3</td>
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<tr>
<td>Business elective</td>
<td>3</td>
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<td>Humanities/social science elective</td>
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<td>Physical science elective</td>
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Spring semester

<table>
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<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CET 460</td>
<td>Engineering Technology Surveying</td>
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<tr>
<td>CET 450</td>
<td>Engineering Technology Database</td>
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<tr>
<td>Humanities/social science elective</td>
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Senior

Fall semester

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>GIS 451</td>
<td>Georeferencing</td>
<td>3</td>
</tr>
<tr>
<td>CET 232</td>
<td>Surveying Astronomy</td>
<td>2</td>
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<tr>
<td>CET 250</td>
<td>Photogrammetry</td>
<td>3</td>
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<tr>
<td>CET 430</td>
<td>Map Projection+</td>
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<tr>
<td>CET 434</td>
<td>Surveying Adjustment</td>
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<td>CET 490</td>
<td>Senior Seminar</td>
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Spring semester

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<tr>
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<tr>
<td>CET 550</td>
<td>Projects in Photogrammetry</td>
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<tr>
<td>CET 534</td>
<td>Projects in GPS</td>
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</tr>
<tr>
<td>CET 550</td>
<td>Applications of Remote Sensing</td>
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<tr>
<td>Humanities/social science elective</td>
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</tbody>
</table>

Students in the GIS option may choose to substitute seven of the above hours for Transportation (4 hours) and the three one-hour practicum courses (3 hours) required in the SRVT curriculum.

This would reduce the required additional hours beyond the associate degree in surveying technology to 16 semester hours.

*Can be substituted by a three-hour cartography course.

Civil engineering technology elective must be a minimum of two credits from CET 211, CET 231, or GIS 350.

Technical elective is to be selected from CET 220, CET 340, GIS 355, CMST 245, CMST 250, or MET 252.
### Computer information systems technology (CMIS)

**Associate of technology**

68 hours required for graduation

**Action is under way to modify the associate degree in computer information systems technology. Students will not be accepted into the computer information systems technology degree program, effective for the 2000–2001 academic year. The computer science technology degree will accommodate students wanting a computer information technology emphasis.**

The computer information systems technology curriculum emphasizes algorithmic design skills to develop fundamental problem-solving skills in multiple computer programming languages. Structured programming provides the tools for solving problems in practical computer applications. Information systems and business theory provide an understanding of the context within which systems are implemented. Class assignments are structured to prepare students for real-life programming projects. The curriculum places a strong emphasis on PC hardware, networking, and commercial software applications. Courses require a significant amount of laboratory work; the time spent in the lab will vary depending on the abilities of each student.

### Freshman

**Fall semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMST 100</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CMST 103</td>
<td>Algorithmic Design</td>
<td>3</td>
</tr>
<tr>
<td>CMIS 105</td>
<td>Introduction to PC Software</td>
<td>2</td>
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<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
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<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
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<tr>
<td>BUS 251</td>
<td>Financial Accounting</td>
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**Spring semester**

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<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CMST 130</td>
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<tr>
<td>CMST 180</td>
<td>Database Development</td>
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<tr>
<td>CMST 220</td>
<td>COBOL I</td>
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<tr>
<td>SPCH 105</td>
<td>Public Speaking 1A</td>
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<td>ENGL 202</td>
<td>Technical Writing</td>
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<tr>
<td>BUS 252</td>
<td>Managerial Accounting</td>
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### Sophomore

**Fall semester**

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<th>Course Title</th>
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<tbody>
<tr>
<td>CMST 250</td>
<td>Networking I</td>
<td>3</td>
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<tr>
<td>CMST 330</td>
<td>Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 202</td>
<td>Technical Writing</td>
<td>3</td>
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<tr>
<td>CMST 333</td>
<td>Software System Development</td>
<td>3</td>
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<tr>
<td>Computer science technology elective</td>
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<tr>
<td>Computer science technology elective</td>
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<tr>
<td>Humanities/social science elective</td>
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<td>Science elective</td>
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**Spring semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CMST 333</td>
<td>Software System Development</td>
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<tr>
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### Computer science technology elective

<table>
<thead>
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<th>Course Title</th>
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<tbody>
<tr>
<td>CMIS 140</td>
<td>Visual Basic I</td>
<td>3</td>
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<tr>
<td>CMST 220</td>
<td>COBOL I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 245</td>
<td>C++ Programming I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 255</td>
<td>Visual Basic II</td>
<td>3</td>
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<tr>
<td>CMST 300</td>
<td>Assembly Language Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMST 315</td>
<td>Networking II</td>
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<tr>
<td>CMST 320</td>
<td>COBOL II</td>
<td>3</td>
</tr>
<tr>
<td>CMST 341</td>
<td>Advanced C++ Programming</td>
<td>3</td>
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</table>

### Geographic information systems (GIS) option

66 hours required for graduation

This option allows the student to combine their computer learning with a specialization in GIS and application of global positioning systems (GPS) and related technologies.

The GIS option is a computer-based mapping system which stores, integrates, and analyzes information about land aspects. GPS is a satellite-based navigation and positioning system. GIS and GPS technologies are tools that are currently being utilized in tax mapping, resource management, navigation, routing, and tracking of delivery vehicles and emergency vehicles; facilities management; precision agriculture; planning; management of transportation systems and utility networks; legislative reapportionment; and monitoring of environmental hazards and utility networks; legislative reapportionment; and monitoring of environmental hazards and our water supply and water quality.

The need for graduates who are well versed in the GIS technologies is rapidly increasing. Employment opportunities are excellent with even greater demand in the foreseeable future.

### Freshman

**Fall semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH100</td>
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<td>MATH151</td>
<td>Applied Plane Trigonometry</td>
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<td>SPCH 105</td>
<td>Public Speaking 1A</td>
<td>2</td>
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<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
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<tr>
<td>CMST 103</td>
<td>Algorithmic Design</td>
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</tr>
<tr>
<td>CMST 100</td>
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**Spring semester**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CMST 140</td>
<td>Visual Basic I</td>
<td>3</td>
</tr>
<tr>
<td>CMST 130</td>
<td>Introduction to PC Hardware</td>
<td>3</td>
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<tr>
<td>GIS 150</td>
<td>Introduction to GIS</td>
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<tr>
<td>MET 111</td>
<td>Technical Graphics</td>
<td>3</td>
</tr>
<tr>
<td>CET 130</td>
<td>Plane Surveying</td>
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### Sophomore

**Fall semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CMST 250</td>
<td>Networking I</td>
<td>3</td>
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<tr>
<td>CMST 330</td>
<td>Systems Analysis and Design</td>
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<tr>
<td>CMST 333</td>
<td>Software System Development</td>
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<tr>
<td>Computer science technology elective</td>
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<tr>
<td>Humanities/social science elective</td>
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**Spring semester**

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<th>Course Title</th>
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<tr>
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<tr>
<td>University general education humanities/social science/business elective</td>
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### Computer science technology electives

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<th>Course Title</th>
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<tbody>
<tr>
<td>CMST 140</td>
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<td>CMST 220</td>
<td>COBOL I</td>
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<td>CMST 245</td>
<td>C++ Programming I</td>
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<td>CMST 255</td>
<td>Visual Basic II</td>
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<td>CMST 300</td>
<td>Assembly Language Programming</td>
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<td>CMST 315</td>
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<td>CMST 320</td>
<td>COBOL II</td>
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<td>CMST 341</td>
<td>C++ Programming II</td>
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<tr>
<td>CMST 345</td>
<td>Networking III</td>
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<tr>
<td>CMST 350</td>
<td>Unix Administration</td>
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</tbody>
</table>

Other electives as approved by the computer section head:

*Approved advanced program language elective

### Computer engineering technology (CMET)

**Associate of technology**

69 hours required for graduation

The computer engineering technology curriculum provides a solid foundation in both computer electronics and in computer software topics. Students in this program study circuit
analysis, digital electronics, microprocessor programming and interfacing, programming languages, and hardware/software integration. These technical subjects are taught in conjunction with courses in mathematics, science, and interpersonal communications.

Employers of computer engineering technicians include companies that use and develop data communication equipment, automated manufacturing systems, and computer peripheral equipment. Computer engineering technicians work in industrial automation, computer products design, computer networking, as well as computer system installation and maintenance.

The associate degree program in computer engineering technology is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050; Baltimore, Md., 21202. 410-347-7700.

Freshman

Fall semester
- ELET 101 Direct Current Circuits .................................. 4
- MATH 100 College Algebra ........................................ 4
- MATH 151 Applied Plane Trigonometry ........................ 2
- ENGL 100 Expository Writing I ................................. 1
- CMIS 105 Introduction to PC Software .......................... 2
- CMET 150 Digital Logic ............................................. 3

Spring semester
- ELET 102 Alternating Current Circuits .......................... 4
- ELET 110 Semiconductor Electronics ............................ 4
- MATH 220 Analytic Geometry and Calculus I ............... 4
- CMST 101 Applied BASIC Programming ..................... 2
- CMET 250 Microprocessor Fundamentals .................... 4

Sophomore

Fall semester
- ELET 260 Electronic Instrumentation and Measurements ...... 4
- ELET 290 Electronic Manufacturing I ............................ 4
- PHYS 113 General Physics I ....................................... 4
- CMST 222 Applications in C Programming for Engineering Technology ........................................ 3
- SPCH 105 Public Speaking IA ...................................... 2
- CMET 260 CAD Applications in Electronics ................. 2

Spring semester
- CHM 210 Chemistry I ............................................... 4
- CMET 250 Microprocessor Fundamentals .................... 4
- ENGL 202 Technical Writing ...................................... 3
- CMET 220 Applications in C Programming for Engineering Technology ........................................ 3
- Humanities/social science elective .............................. 3

Bachelor of science in electronic engineering technology (ELETB)

127 hours required for graduation

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

Course work 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 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 engineering technology is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050; Baltimore, Md., 21202. 410-347-7700.

Junior

Fall semester
- ELET 330 Electric Motors and Controls ...................... 4
- CMST 222 Applications in C Programming for Engineering Technology ........................................ 3
- MATH 214 Advanced Topics in Mathematics ............... 4
- Business elective ..................................................... 3

Spring semester
- ELET 310 Industrial Electronics ................................ 3
- ENGL 200 Expository Writing II ............................... 4
- Technical elective .................................................. 3
- Humanities/social science elective ......................... 3

Senior

Fall semester
- ELET 420 Telecommunication Systems ..................... 2
- ELET 450 Advanced Digital Circuits and Systems ........ 3
- Technical elective .................................................. 3
- Humanities/social science elective ......................... 3

Spring semester
- ELET 451 Digital Communication Circuits ............... 2
- ELET 450 Advanced Digital Communication Circuits .... 3
- Humanities/social science elective ......................... 3

Environmental engineering technology (EVET)

Associate of technology

64 hours required for graduation

The environmental engineering technology program has a heavy emphasis in chemistry, biology, and industrial processes and is concerned with processes that produce useful products in a safe, efficient, and cost-efficient manner. An environmental engineering technician might improve a chemical process to reduce toxic emissions, collect and analyze samples in the field, or work in an environmental laboratory. This person might also be involved in aspects of environmental management, in regulation, and in health and safety.

The environmental engineering technology program at Kansas State University at Salina you’ll learn about the relationships of organisms and chemicals in the environment, and the efforts of industry to reduce waste and pollution in manufacturing. The program emphasizes quality control, sampling, plans and methods, regulatory compliance, pollution prevention, and professional ethics.

Computers are heavily integrated into this program and are used in industry in such areas as problem solving, data collection, process simulation, optimization, and control.
Environmental engineering technology students gain laboratory experience in instrumental analysis, organic chemistry, environmental chemistry, microbiology, unit operations, and process control laboratories. In addition, they are encouraged to pursue summer internships in the chemical industry, when such positions are available.

The associate degree program in environmental engineering is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050; Baltimore, Md., 21202. 410-347-7700.

### Freshman

<table>
<thead>
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<td></td>
<td>MATH 151</td>
<td>Applied Plane Trigonometry</td>
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<tr>
<td></td>
<td>EVET 100</td>
<td>Introduction to Environmental Engineering Technology</td>
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<td></td>
<td>ENGL 100</td>
<td>Expository Writing I</td>
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<tr>
<td>Spring semester</td>
<td>EVET 150</td>
<td>Microbiology for Environmental Engineering Technology</td>
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<td>EVET 220</td>
<td>Waste Water Treatment</td>
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<td>EVET 235</td>
<td>Safety and Industrial Hygiene</td>
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<td>EVET 215</td>
<td>State and Federal Regulations</td>
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<td></td>
<td>CHM 350</td>
<td>General Organic Chemistry</td>
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<td>Spring semester</td>
<td>EVET 255</td>
<td>Environmental Sampling and Analysis</td>
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<td></td>
<td>EVET 265</td>
<td>Recycling and Pollution Prevention</td>
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<td>EVET 245</td>
<td>Waste Handling and Disposal</td>
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<td></td>
<td>Computer science elective</td>
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<td></td>
<td>University general education humanities/social science elective</td>
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### Bachelor of science in mechanical engineering technology (METB)

129 hours required for graduation (62 upper division + 67 associate degree)

Students may continue their studies in mechanical engineering technology beyond the associate degree level to obtain the bachelor of science degree in mechanical engineering technology. The baccalaureate degree typically requires two years of study beyond the associate degree.

The upper-division curriculum provides greater and more rigorous depth in mechanical theory and applications. Additional study of science, mathematics, communications, social sciences, humanities, and related business and industrial operations provides breadth beyond the student’s major concentration.

### Pre-engineering program

Many preliminary courses taken by engineering students are offered at K-State at Salina. This two-year nondegree program has been developed with K-State’s College of Engineering to enhance visibility of this alternative and to ensure proper course selection. Technical elective selection will be coordinated with the Engineering Student Services Office in Manhattan.

### Freshman

<table>
<thead>
<tr>
<th>Term</th>
<th>Course Codes</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Fall semester</td>
<td>ENGL 100</td>
<td>Expository Writing I</td>
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<tr>
<td></td>
<td>MATH 220</td>
<td>Analytical Geometry and Calculus I</td>
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<tr>
<td></td>
<td>CHM 210</td>
<td>Chemistry I</td>
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<td></td>
<td>SPCH 105</td>
<td>Public Speaking IA</td>
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<td>Humanities/social science elective</td>
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<tr>
<td>Spring semester</td>
<td>EVET 200</td>
<td>Expository Writing II</td>
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<tr>
<td></td>
<td>MATH 221</td>
<td>Analytical Geometry and Calculus II</td>
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<td>CHM 230</td>
<td>Chemistry II</td>
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<td></td>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
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<tr>
<td></td>
<td>MET 111</td>
<td>Technical Graphics</td>
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<td></td>
<td>MET 121</td>
<td>Manufacturing Methods</td>
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<tr>
<td></td>
<td>MATH 100</td>
<td>College Algebra</td>
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<td></td>
<td>MATH 151</td>
<td>Applied Plane Trigonometry</td>
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<td>CMST 101</td>
<td>Applied BASIC Programming</td>
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<td></td>
<td>ENGL 100</td>
<td>Expository Writing I</td>
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<tr>
<td>Sophomore</td>
<td>MET 117</td>
<td>Mechanical Detailing</td>
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<td></td>
<td>MET 125</td>
<td>Computer- Numerical-Controlled Machine Processes</td>
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<tr>
<td></td>
<td>CET 211</td>
<td>Statics</td>
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<tr>
<td></td>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
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<td></td>
<td>PHYS 113</td>
<td>General Physics I</td>
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<td>SPCH 105</td>
<td>Public Speaking IA</td>
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<tr>
<td>Spring semester</td>
<td>MET 231</td>
<td>Physical Materials and Metallurgy</td>
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<td></td>
<td>MET 245</td>
<td>Materials Strength and Testing</td>
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<td></td>
<td>MET 252</td>
<td>Fluid Mechanics I</td>
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<tr>
<td></td>
<td>ELET 100</td>
<td>Basic Electricity</td>
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<td></td>
<td>CHM 210</td>
<td>Chemistry I</td>
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<td></td>
<td>MET 230</td>
<td>Automated Manufacturing Systems I</td>
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<td></td>
<td>MET 246</td>
<td>Dynamics of Machines</td>
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<td>MET 264</td>
<td>Machine Design Technology I</td>
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<td></td>
<td>MET 265</td>
<td>Sophomore Design Project</td>
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<td></td>
<td>ENGL 202</td>
<td>Technical Writing</td>
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<td>Humanities/social science elective</td>
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<td>Computer science elective</td>
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### Junior

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<tr>
<th>Term</th>
<th>Course Codes</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Fall semester</td>
<td>MET 314</td>
<td>Computer-Aided Solid Modeling</td>
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<tr>
<td></td>
<td>MET 346</td>
<td>Elements of Mechanisms</td>
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<td>MET 365</td>
<td>Machine Design Technology II</td>
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<td></td>
<td>CMST 222</td>
<td>Applications in C Programming for Engineering Technology</td>
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<td></td>
<td>MATH 214</td>
<td>Advanced Topics in Mathematics</td>
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<tr>
<td>Spring semester</td>
<td>MET 333</td>
<td>Advanced Material Science</td>
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<td>MET 353</td>
<td>Fluid Mechanics II</td>
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<td></td>
<td>MET 383</td>
<td>Advanced CAD/CAM</td>
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<td>ELET 264</td>
<td>Electric Power and Devices</td>
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<td></td>
<td>ENGL 200</td>
<td>Expository Writing II</td>
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<td></td>
<td>Approved physics elective</td>
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### Senior

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<th>Term</th>
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<tbody>
<tr>
<td>Fall semester</td>
<td>MET 382</td>
<td>Industrial Instrumentation and Controls</td>
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<td></td>
<td>MET 462</td>
<td>Senior Design Project I</td>
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<td></td>
<td>MET 481</td>
<td>Automated Manufacturing Systems II</td>
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<td></td>
<td>IET 263</td>
<td>System Analysis and Quality Control</td>
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<td>STAT 320</td>
<td>Elements of Statistics</td>
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<td>Humanities/social science elective</td>
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<td>Humanities/social science elective</td>
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<tr>
<td>Spring semester</td>
<td>MET 469</td>
<td>Tool Design for Manufacturing</td>
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<td>MET 464</td>
<td>Senior Design Project II</td>
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<td>MET 471</td>
<td>Thermodynamics and Heat Transfer</td>
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<td>Principles of Macroeconomics</td>
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<td>Humanities/social science elective</td>
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### Pre-engineering program

The bachelor’s degree program in mechanical engineering technology is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050; Baltimore, Md., 21202. 410-347-7700.
Civil engineering technology courses

CET 110 Civil Technology Drafting. (2) I, II. A course in drafting the types of drawings common to civil engineering technology, including ownership certificates, plans and profiles, contour maps, site grading drawings, and topographic layouts. Drawings are made using traditional drafting equipment and computers. Six hours lab a week. Pr.: CET 111.

CET 120. Materials Sampling and Testing. (2) I. A course in the proper use of aggregates and concrete materials (Portland cement and asphalt) in construction. Sampling and testing methods conform with American Society of Testing Materials standards. Six hours lab a week.

CET 130. Plane Surveying. (4) II. 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. Two hours rec. and six hours lab a week. Pr.: CET 131.5.

CET 140. Print Reading for Civil Construction. (1) I. A course dealing with methods used to retrieve information from construction plans in order to build all or part of the project. Two hours lab a week.

CET 210. Civil CAD. (2) I, II. This course makes use of the computer as a tool for the generation of drawings typical of those used in civil and surveying fields. One hour rec. and two hours lab a week. Pr.: CMST 101. Pr. or conc.: CET 110.

CET 211. Statics. (3) I. A study of forces and their effects on the bodies upon which they act. Three hours rec. a week. Conc.: PHYS 113.

CET 220. Soils and Foundations. (2) I. A course in the identification and classification of soils by the Unified soil classification and used in the laboratory. One hour rec. and two hours lab a week. Pr.: MATH 100.

CET 230. Land Surveying I. (3) I, II. A course dealing with the history of land surveying, procedures for researching records, construction right-of-way surveys, writing legal descriptions, and production of survey documents. Two hours rec. and three hours lab a week. Pr.: or conc.: CET 130.

CET 231. Construction Surveying. (2) I. A study of vertical and horizontal alignment and methods used to maintain control stations on a construction job. Emphasis is on practical methods and solutions to problems found on the construction job site. One hour rec. and three hours lab a week. Pr.: CET 130.

CET 252. Surveying Astronomy. (2) I. A course in the use of spherical trigonometric calculations to determine bearing, azimuth, latitudes, longitude, and time from solar, polar, and star observations. Star recognition, locations and determination of line direction are emphasized. One hour rec. and three hours lab a week. Pr.: CET 130.

CET 234. Advanced Surveying Techniques. (3) II. A study of the advanced areas of surveying with primary emphasis on control networks, state plane coordinate systems, error theory, global positioning systems (GPS), tachometry, geodetic surveying, GPS, and the use of electronic surveying equipment. Two hours rec. and three hours lab a week. Pr.: CET 130, 323.

CET 235. Surveying Law. (3) I. A study of the legal aspects that apply to the surveying profession, and the role of the surveyor within the judicial framework of our court system. Three hours rec. a week. Pr.: CET 130.

CET 266. Topography Surveying Practicum. (1) I. A practical study of the surveyor's work with the emphasis on field work and calculations in topographic surveying. One week survey camp. Pr.: CET 130.

CET 237. GPS and Network Surveying Practicum. (1) II. A practical study of the surveying practice with the emphasis on field work and calculations in GPS and survey networks. One-week survey camp. Pr.: CET 130.

CET 238. Boundary Surveying Practicum. (1) III. A practical study of the surveying practice with the emphasis on field work and calculations in boundary surveying. One-week survey camp. Pr.: CET 230.

CET 240. Contracts and Specifications. (1) I. A study of the way a set of contracts and specifications are put together and how they are used as a set of data for a construction job. The course also stresses the way information is gained from documents with speed and accuracy. One hour rec. a week. Pr.: CET 140 and 231.

CET 241. Construction Methods and Estimating. (2) I. 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 rec. and two hours lab a week. Pr.: MATH 100.

CET 250. Photogrammetry. (3) I. A class in which aerial photographs are used to create topographic drawings, relative and absolute orientation, aerotriangulation, orthophoto and rectification, and coordinate transformations. Hands-on experience will be gained by using photogrammetric plotters to convert photographic data into engineering maps. Two hours rec. and two hours lab a week. Pr.: CET 130.

CET 252. Internship. (1) I. U.S. students work during summer or regular semester as an intern in a civil engineering, surveying, or other GIS-related industry. A report detailing duties performed and tasks accomplished is required at the end of the internship period. (Recommended during summer before second year and during second year). May be repeated for credit.

CET 300. Problems in CET. (Var.) I, II. A course in which advanced study is done in a specific area chosen by the student. Pr.: consent of instructor.

CET 310. Strength of Materials. (3) I. A study of the internal resistance to external forces. The course also deals with the resulting changes in the dimensions and shapes of bodies produced by outside forces. Three hours rec. a week. Pr.: CET 231.

CET 312. Transportation Systems. (3) I. A study of transportation systems with emphasis on traffic operations and control, planning, design, and drainage for highways, and urban roadways. Two hours rec. and two hours lab a week. Pr.: CET 130.

CET 313. Structural Design. (3) III. 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 rec. and four hours lab a week. Pr.: MATH 245.

CET 314. Structural Steel Design. (3) I, II, S. A course covering basic fundamentals of structural steel design. Stress calculations and design concepts are studied for use in either a design or inspection role. Two hours rec. and two hours lab a week. Pr.: CET 311.

CET 315. Reinforced Concrete Design. (3) I, II, S. A course covering basic fundamentals of reinforced concrete design. Stress calculations and design concepts are studied for use in either a simplified design, detailing, or inspection role. Two hours rec. and two hours lab a week. Pr.: CET 311.

CET 323. Route Location Surveying. (3) I. 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 rec. and three hours lab a week. Pr.: CET 130.

CET 330. Land Surveying II. (3) II. A continuation of the study of procedures and techniques used in the determination of legal boundaries. Special emphasis will be placed on the United States Public Land System. The correct techniques to be used in the writing of legal descriptions will be stressed. Two hours rec. and three hours lab a week. Pr.: CET 230.

CET 340. Mechanical and Electrical Systems. (3) I. A study of the way mechanical and electrical systems are used in the construction of a building by a contractor. Systems include plumbing, heating, ventilation, and air conditioning. Two hours rec. and two hours lab a week. Pr.: MATH 151, CET 113, and 241.

CET 350. Site Construction. (3) I. Study of site construction problems and procedures, sit survey and investigations, review of site plans, construction layouts, earthwork calculation, excavation/shoring methods, and surveying applications. Two hours rec. and three hours lab a week. Pr.: MET 111, CNS 210, CET 130, PHYHS 113.


CET 410. Managerial and Engineering Economics. (3) I. Economic analysis of problems as applied in the management of technology. Three hours rec. per week. Pr.: ECON 110.

CET 420. Sub-Division Design. (4) I. A study of the procedures used to execute the survey of control networks for large scale base maps for municipal use. The course will also emphasize the design and layout of plans for subdivisions. Three hours rec. and three hours lab a week. Pr.: CET 110 and CET 330.

CET 430. Map Protection. (3) I. A course in spherical and ellipsoidal geometry, conformal mapping, point line and angle transfer between a sphere, an ellipsoid, or other projection and projection principles, types of projections, deformation and characteristics of equidistant, azimuthal and conformal projections. Emphasis will be made on conformal projections used in surveying and state plane coordinate systems. Two hours rec. and two hours lab a week. Pr.: CET 230, 234.

CET 434. Survey Adjustment. (3) I. A course in numerical analysis, applications of linear algebra, error theory, least squares adjustment principal, condition and observation equations, internal and external reliability and their applications in survey network error analysis, and design of observation schemata and the use of adjustment software. Two hours rec. and two hours lab a week. Pr.: CET 234, STAT 320.

CET 450. Engineering Technology Database. (3) I. A study of the application of algebraic specifications and conceptual design tools in solving engineering technology problems, analyzing land information technology problems and spatial data requirements, the use of database technology in handling emergency management, transportation systems and the like, learning methods for conceptual database design for selected civil engineering or surveying technology projects. Two hours rec. and two hours lab a week. Pr.: CET 150, 255.

CET 460. Engineering Technology Surveying. (3) I. A study of the advanced methods of special engineering technology applications for surveying such as in high-level buildings and construction, across water bodies, deformation monitoring of structures, computer applications, and design of observation schemas and the use of adjustment software. Two hours rec. and two hours lab a week. Pr.: CET 234, 312.

CET 490. Senior Seminar. (1) I. A self-study on various technology and applications projects related to surveying and mapping discipline. Students will be guided by their advisor to carry out a self study on selected problems, write a report, and present their results to their colleagues and or at professional meetings. One hour seminar. Pr.: Senior standing and instructor permission.

CET 534. Projects in GPS. (2) I. A study of the application global positioning systems for large surveying projects, network transfer between a sphere, an ellipsoid, and a plane, and analytical block adjustment and self-calibration technology, digital photogrammetry and GPS-controlled photogrammetry. Emphasis is made on solving problems in team work environment. One hour rec. and three hours lab a week. Pr.: CET 250.

CET 550. Projects in Photogrammetry. (2) I. A study of the photogrammetric tools for large surveying projects, network measurements, mapping orthophotograph and analytical block adjustment and self-calibration technology, digital photogrammetry and GPS-controlled photogrammetry. Emphasis is made on solving problems in team work environment. One hour rec. and two hours lab a week. Pr.: CET 250.
CMIS 101. Introduction to Operating Systems. (3) I, II, S. This course introduces the fundamental concepts of operating systems and programming languages. Specific topics covered include an overview of operating systems and programming languages. Pr.: Previous computer experience.

CMST 220. COBOL I. (3) I, II. Study of the COBOL programming language. More advanced topics will be covered, including table processing, the SORT, SEARCH, and MERGE features, the Balanced Line algorithm, and indexed file processing as well as interactive processing and screen building and handling. Lab work includes writing advanced business application programs using the COBOL language. Three hours lec. a week. Pr.: CMST 220.

CMST 330. Systems Analysis and Design. (3) I, II. This course will study the steps in conducting a systems analysis, design, and development. Students will be required to analyze the computer needs of a local business and recommend possible systems solutions to be implemented. Three hours lec. a week. Pr.: CMST 303.

CMST 333. Software Development System. (3) I, II. Implementation and development of a software system. Project management and group programming dynamics are important aspects of this class. Pr.: CMST 330 (must be taken in preceding semester)

CMIS 200. Commercial Software Analysis. (3) I, II. Students will be given an in-depth introduction to commercially available software packages. This course will focus on the analysis and evaluation of software packages with special emphasis on the use of spreadsheets, desktop publishing, and word processing packages. Pr.: CMST 220.
CMET 341. C++ Programming II. (3) III. This class is designed to allow the student to apply the object oriented programming methodology to design and implementation of Windows applications. Students will implement abstract data types, use the foundations classes, control computer hardware, and interact with other Windows applications. Each student will submit an individual C++ project at the end of the semester. Three hours lec. Pr.: CMET 245.  
CMET 345. Networking III. (3) II. This course will provide the student with the information and skills needed to design, install, configure, secure, and administer the interface between a LAN and the Internet. The emphasis will be on designing and implementing secure systems communicating with a TCP/IP network. Two hours lec. and two hours lab a week. Pr.: CMET 245.  
CMET 350. UNIX Administration. (3) II. The course will cover the essentials for becoming a UNIX administrator. Subjects included will be bringing up a UNIX system, an in-depth look at the file-system, user configuration, handling security, modems, networking, and shell programming. Two hours lec. and one hour lab a week. Pr.: CMET 100 or CMIS 250.  

**Computer engineering technology courses**  
CMET 150. Digital Logic. (3) I. 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 of logic circuits. Two hours rec. and two hours lab a week. Pr. or conc.: ELET 101, CMIS 105.  
CMET 250. Microprocessor Fundamentals. (4) II. Concepts of microprocessor architecture, programming, and interfacing. Topics include assembly language programming, data conversion methods, peripheral device interfacing, and microprocessor-based system development tools. Two hours rec. and four hours lab a week. Pr.: CMET 150. Pr. or conc.: ELET 110, CMST 101.  
CMET 251. Digital Systems. (4) II. Emphasis on the design and development of digital systems for industrial applications. Topics include fundamentals of data communications, fiber optics, PLDs, FPGAs, and an overview of 16/32 bit microprocessor technology. Two hours rec. and four hours lab a week. Pr.: CMET 250, ELET 260.  
CMET 260. CAD Applications in Electronics. (2) I. Application of computer-aided design (CAD) software for electronics. Includes schematic capture, printed circuit board layout and routing software, advanced circuit simulation, and computer-aided design tools. One hour lecture, two hours lab a week. Pr.: ELET 110.  
CMET 450. Advanced Data Communications. (3) II. Study of modern data communications concepts and systems. Topic coverage includes telephone systems, lasers, fiber optics, modulation methods, error detection, data protocols, and local area networking. Two hours rec. and two hours lab a week. Pr.: CMET 250, ELET 421.  
CMET 451. Digital Circuits and Systems. (4) I. Applications of programmable logic, including microprocessors, microcontrollers, and PLDs to industrial control problems. Students use software design tools such as simulators, timing analysis programs, and cross compilers to design systems and analyze system performance. Data conversion methods and peripheral interfacing techniques are emphasized. Three hours rec. and two hours lab a week. Pr.: CMET 250 and CMST 222.  

**Electronic engineering technology courses**  
**ELET 100. Basic Electricity.** (3) I, III. A survey course designed to provide non-electronics majors with an overview of basic direct current and alternating current circuits. Laboratory exercises reinforce circuit theory and provide skills in the use of common electrical instruments. Three hours rec. and four hours lab a week. Pr.: CMET 150 and 250.  
ELET 101. Direct Current Circuits. (4) I. An introductory course in basic circuit theory. Analysis of passive circuit networks containing resistance, capacitance, and inductance operating in direct current conditions. Computer simulation of circuit performance. Laboratory exercises emphasize the use of basic electronic instrumentation to measure the characteristics of passive components and circuits. Three hours rec. and two hours lab a week. Pr. or conc.: MATH 100, CMIS 105.  
ELET 102. Alternating Current Circuits. (4) II. Analysis of passive circuit networks containing resistance, capacitance, and inductance operating in alternating current conditions. Includes an analysis of the sine wave, polar and rectangular complex algebra, inductive and capacitive reactance, impedance networks, power factor correction, resonance, and magnetic circuits. Also includes an introduction to three-phase power distribution. Two hours rec. and four hours lab a week. Pr.: ELET 101. Pr. or conc.: MATH 151.  
ELET 104. Direct Current Circuits Review. (1) II. Provides a review coverage of DC circuits. Includes a review of current and voltage concepts, resistance, power, series and parallel circuit techniques, mesh and nodal analysis, delta-wye conversions, Thévenin’s and Norton’s Theorems, capacitance, and inductance. One hour rec. a week. Pr.: ELET 100.  
ELET 105. Basic Electronics. (4) I. A survey course designed to provide non-electronics majors with 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 electrical instruments. Three hours rec. and two hours lab a week. Pr. or conc.: MATH 100.  
ELET 110. Semiconductor Electronics. (4) II. A survey of the family of active electronic devices. Analysis includes both graphical and mathematical models. Laboratory periods are devoted to the measurement of device characteristics in basic circuit configurations. Two hours rec. and four hours lab a week. Pr.: ELET 101.  
ELET 210. Linear Circuit Design. (5) I. The application of electronic devices to amplifiers. Emphasis is placed on analysis and design of RC-coupled, transformer-coupled, and direct-coupled amplifiers. Laboratory exercises emphasize principles of circuit design and analysis. Three hours rec. and four hours lab a week. Pr.: ELET 102 and 110.  
ELET 220. RF Communication Systems. (4) II. A survey of electromagnetic communication techniques and systems including amplitude modulation, frequency modulation, single-sideband, and pulse modulation. Transmission line concepts, antenna theory, and the effects of noise are also included. Laboratory work involves design and measurement along with field trips to representative sites. Three hours rec. and two hours lab a week. Pr.: ELET 210 and 260.  
ELET 260. Electronic Instrumentation and Measurements. (4) I. Theory and operation of basic electronic instruments. Includes analysis and application of ammeters, voltmeters, bridges, impedance meters, counters, and oscilloscopes. Examination of measurement methods and of reducing them. Laboratory activities emphasize applications of automated test equipment and associated control software. Two hours rec. and four hours lab a week. Pr.: ELET 102 and 110. Pr. or conc.: CMET 150.  
ELET 264. Electric Power and Devices. (3) I. Industrial applications of direct and alternating current power for non-electronics majors. Topics include DC and AC motor characteristics, motor speed control systems, electrical safety practices, power distribution systems, motor control devices, and electronic motor drive systems. One hour rec. and four hours lab a week. Pr.: ELET 100 and MATH 151.  
ELET 290. Electronic Manufacturing I. (1) I. Laboratory experience in the fabrication and assembly of electronic circuits. Emphasis is placed on design and layout techniques, printed circuit board fabrication, soldering materials and techniques, and packaging concepts. Includes both through-hole and surface mount technology. Two hours lab a week. Pr.: ELET 102 and 110. Pr. or conc.: CMET 150 and 260.  
ELET 310. Industrial Electronics. (3) II. A study of electronic circuits and systems encountered in industrial environments. Topics include power control devices and applications, power system design, optoelectronic devices and applications, transducers, and some areas in electronic emission and control concepts. Pr.: ELET 210 and CMET 250.  
ELET 330. Electric Motors and Controls. (4) I. Characteristics of DC and AC motors, generators, and control devices. Topics include motor configurations, speed control of motor starter circuits, polyphase systems, and variable frequency drives. Three hours rec. and two hours lab a week. Pr.: ELET 102.  
ELET 400. Advanced Network Analysis. (3) I. A study of various advanced network topics including Fourier series, Laplace transforms, signal flow graphs, feedback theory, responses of networks to various types of input signals, matching and attenuating networks, and filters. Computer programs such as PSpice, Matcad and Touchstone are used to predict the responses of networks. Three hours rec. a week. Pr.: ELET 210 and MATH 214.  
ELET 420. Electronic Communication Circuits. (3) II. A study of RF circuit design, including resonant circuits, filter networks, impedance matching networks, and transistor amplifier design using scattering parameters. Circuits are designed using the Smith Chart and analyzed using simulation programs on the computer. Laboratory work emphasizes use of test equipment in the analysis and optimization of circuit designs. Two hours rec. and two hours lab a week. Pr.: ELET 210 and MATH 214.  
ELET 421. Telecommunication Systems. (2) I. A survey of telecommunication systems, including the telephone network, microwave and satellite links, fiberoptic systems, and cellular radio systems. Two hours rec. a week. Pr.: ELET 220.  
ELET 492. Problems in Electronic Engineering Technology. (Var.) I, II, S. Opportunity for advanced independent study in specific computer-based data acquisition technology. Topics are selected jointly by the student and the instructor. Pr.: Consent of instructor.  
ELET 590. Electronic Design Laboratory. (2) I. Applications of the principles of the design process in executing design projects. Project will be developed by the instructor. Four hours lab a week. Pr.: ELET 330, 310, and 400.  

**Environmental engineering technology courses**  
EVT 100. Introduction to Environmental Engineering Technology. (3) I. Overview of environmental engineering technology. Provides students with a basic understanding of the sources of pollution and the primary processes that control the fate of pollutants in air, water, and soil. The course also presents principles of ecology and the impact of pollutants on the interrelation of species. Three hours rec. and two hours lab a week. Pr. or conc.: CHM 210.  
EVT 150. Microbiology for Environmental Engineering Technology. (4) II. The course examines the biological effects of water pollution, the biological methods for determining water quality, ecotoxicology, public health implications of water pollution, biological treatment of wastewater, and estuary and marine pollution. Two hours rec. and four hours lab a week. Pr: EVET 100.  
EVT 215. State and Federal Regulations. (3) I. Introduction to the process and application of laws and regulations that control the sources of pollution. This course will review the history of wastewater treatment, the pertinent legislation, and modern methods. The course will focus on the scientific and technical aspects of primary, secondary, and tertiary treatment. Three hours rec., two hours lab a week. Pr: EVET100 and 150.  

**Technology and Aviation** ■ 241
Mechanical engineering technology courses

MET 111. Technical Graphics. (3) I. II. Free-hand sketching, lettering, scales and measurements. Introduction to CAD systems. Basic drawing concepts and techniques to produce finished drawings. National and international standards. Theory and applications of orthographic projection and pictorial drawings. Standards for symbols and views including dimensioning included. Descriptive geometry, including, orthographic solutions involving the point, line and plane projections, intersections as well as surface development of solid bodies, slope, true length, and true size determination. Six hours lab a week. Pr.: MATH 100 or consent of instructor.

MET 117. Mechanical Detailing. (3) II. 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. Six hours lab a week. Pr.: MET 111, MATH 100 and 151.

MET 121. Manufacturing Methods. (3) I. Study and practice of welding, welding tests, and cost estimation. Introduction to welding metalurgy and special welding processes. Recitation and laboratory practice in basic machine shop operations on lathes and drill presses. Use of hand tools, measuring tools, metal cutting machines, and grinders are also studied. One hour rec. and six hours lab a week.

MET 125. Computer-Numerical-Controlled Machine Processes. (2) II. Study and practice of basic CNC programming and machining operations. Six hours lab a week. Pr.: MET 121. Pr.: MATH 100 and 151 or consent of instructor.

MET 210. Computer-Aided Drafting. (2) II. Applications and understanding of microcomputers in technical drafting and design are studied. Topics include generative graphics, hardware and software terminology, point plotting and line drafting, graphics, programming, geometric figures, dimensioning and annotating, and finished drawings. Six hours lab a week. Pr.: Knowledge of drafting.

MET 230. Physical Materials and Metallurgy. (3) I. A broad view of materials used in industry, including stresses 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 rec. and two hours lab a week. Pr.: MATH 245.

MET 245. Material Strength and Testing. (3) I. 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 rec. and two hours lab a week. Pr.: CEE 211.

MET 246. Dynamics of Machines. (3) I. Velocities, accelerations, and forces involved in mechanisms to produce motion. Work, energy, impulse and momentum concepts in kinetics. Vibrations in machine parts. Three hour rec. a week. Pr.: MATH 151; MATH 220; PHYS 113.


MET 264. Machine Design Technology I. (3) II. Continued study of design process including investigation of theories of failure, stress analysis, stress concentration, deflections, materials, and costs relating to machine design. Three hours rec. a week. Pr. or conc.: MTH 245.
MET 471. Thermodynamics and Heat Transfer. (3) II. 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 studied and investigated in the laboratory. Two hours rec. and two hours lab a week. Pr.: MET 252 and MATH 214.

MET 481. Automated Manufacturing Systems II. (4) I. 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 rec. and two hours lab a week. Pr.: MET 230. Pr. or conc.: MET 382.

MET 490. Industrial Work Internship. (var.) I, II, S. 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 section chairperson.

MET 492. Problems in Mechanical Engineering Technology. (Var.) I, II. Opportunity for advanced independent study in specific topic areas in mechanical engineering technology. Topics selected jointly by the student and the instructor. Pr.: Consent of instructor.

MET 499. Selected Topics in MET. (Var. 1–6) I, II, S. Group or individual study of a selected topic in mechanical engineering technology, title to be determined in advance of each time the course is offered. Total credits limited to 6 credit hours, with a maximum of 3 credit hours per semester. Instruction is by lecture, laboratory, or a combination of both. Pr.: Permission of section chairperson.

College of Engineering courses taught on the Salina campus

CNS 210. Introduction to Construction Computer Programming. (3) II. Computer and disk operating systems, programming techniques, and spreadsheets for construction applications. Two hours rec. and two hours lab a week. Pr.: MATH 150.

CNS 320. Construction Materials. (2) I. Study and analysis of construction materials, their properties, selection, and use. Two hours rec. a week. Pr.: EVED 205.
General Requirements

Admission
Admission into the College of Veterinary Medicine is based upon a competitive process among qualified students who have completed the minimum 70 required hours of pre-professional courses (see pre-professional requirements). Minimum qualifications include a 2.8 GPA or greater average over the pre-professional requirements and over the last 45 hours of undergraduate college work in order to be considered for an interview. A grade below a C in a pre-professional requirement is not acceptable.

Personal interviews may be required of any student under consideration. Selection is based upon academic achievement and professional potential as determined by grades, interview, application information, references, and GRE scores. Applicants are evaluated on such items as motivation, maturity, communication skills, experience with and knowledge of animals, and experience with and knowledge of veterinary medicine.

After highly qualified Kansans are selected, nonresidents from states with which K-State has a contract to provide veterinary medical education and who are certified by their state are selected.

A limited number of at-large positions are available.

From July 1 to September 15, applications for admission to the professional curriculum can be obtained from the admissions office of the College of Veterinary Medicine.

No applications are accepted after October 1.

Veterinary scholars
early admission program
High school seniors with ACT scores of 29 or higher or SAT scores of 1280 or higher are eligible to apply for the veterinary scholars early admission program. An application can be obtained from the College of Veterinary Medicine admissions office. Qualified applicants are interviewed by the admission committee.

Students in this program are guaranteed admission to the DVM degree program following completion of the prerequisites for the DVM degree program and completion of a bachelor’s degree at Kansas State University (all classes must be taken at K-State and a minimum of 3.4 GPA must be maintained).

Pre-professional requirements
The pre-professional work may be pursued at K-State in the College of Arts and Sciences or the College of Agriculture or in other academically accredited institutions.

Listed below are required courses, with K-State course numbers listed left.

<table>
<thead>
<tr>
<th>Requirements</th>
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<tbody>
<tr>
<td>ENGL 105 Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 120 Expository Writing II</td>
<td>3</td>
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<tr>
<td>SPCH 105 Public Speaking IA</td>
<td>2</td>
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<tr>
<td>or SPCH 106 Public Speaking I</td>
<td>3</td>
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<tr>
<td>CHM 210 Chemistry I</td>
<td>4</td>
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<tr>
<td>CHM 230 Chemistry II</td>
<td>4</td>
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<tr>
<td>CHM 350 General Organic Chemistry</td>
<td>3</td>
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<tr>
<td>CHM 351 General Organic Chemistry Laboratory</td>
<td>2</td>
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<tr>
<td>BIOCH 521 General Biochemistry</td>
<td>3</td>
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<tr>
<td>BIOCH 522 General Biochemistry Laboratory</td>
<td>2</td>
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<tr>
<td>PHYS 113 General Physics I</td>
<td>4</td>
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<tr>
<td>PHYS 114 General Physics II</td>
<td>4</td>
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<tr>
<td>BIOL 198 Principles of Biology</td>
<td>4</td>
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<tr>
<td>BIOL 310 Embryology</td>
<td>3</td>
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<tr>
<td>BIOL 511 Embryology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 455 Microbiology (with lab)</td>
<td>4</td>
</tr>
<tr>
<td>ASI 500 Genetics</td>
<td>3</td>
</tr>
<tr>
<td>Social sciences and/or humanities</td>
<td>12</td>
</tr>
<tr>
<td>Electives</td>
<td>9</td>
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</tbody>
</table>

All science courses (chemistry, physics, biology, and genetics) must have been taken within six years of the date of application. All pre-professional requirements must be graded.

A bachelor of science degree may be granted by the College of Agriculture or the College of Arts and Sciences upon completion of residency and academic requirements. Detailed information should be obtained from the dean’s office of the appropriate college.

Fees for veterinary medical students
See the Fees section in this catalog.

Doctor of veterinary medicine curriculum
The curriculum in veterinary medicine was established to prepare veterinarians for entry into a variety of veterinary medical careers. The professional curriculum in veterinary medicine is balanced and comprehensive with consideration given to all species.

The academic standards of the College of Veterinary Medicine govern honors, progression, probation, and dismissal.

Courses must be taken as prescribed. Elective courses may be taken by permission.

Completion of the professional curriculum leads to the degree of doctor of veterinary medicine. (Hours required for graduation: pre-professional—70; professional—164; total—234.)

First professional year
Fall semester
AP 700 Gross Anatomy I ............................. 6
AP 702 Nutritional Physiology and Metabolism 3
AP 710 Microanatomy ............................ 5
AP 737 Veterinary Physiology I ............ 5
DVM 700 Veterinary Orientation 1
20

Spring semester
AP 705 Gross Anatomy II .......................... 6
AP 720 Veterinary Neuroscience ............... 2
AP 747 Veterinary Physiology II ............. 6
CS 701 Clinical Skills I .......................... 1
DMP 705 Veterinary Immunology ............ 2
DMP 708 Principles of Epidemiology ....... 2
DVM 701 Ethics and Jurisprudence 1
20

Second professional year
Fall semester
AP 770 Pharmacology .............................. 5
DMP 712 Veterinary Bacteriology and Mycology 5
DMP 715 General Pathology ..................... 5
DMP 718 Veterinary Parasitology .......... 5
20

Spring semester
DMP 720 Systemic Pathology .................... 5
DMP 722 Veterinary Virology ................... 3
DMP 759 Laboratory Animal Science ...... 2
DMP 775 Clinical Pathology .................... 3
CS 703 Clinical Skills II ........................ 1
CS 709 Medicine I ............................... 4
CS 715 Radiology ................................. 3
21

Third professional year
Fall semester
DMP 777 Laboratory Diagnosis ................ 1
DMP 780 Avian Diseases ........................ 3
CS 711 Medicine II .............................. 4
CS 712 Food Animal Medicine ............... 4
CS 729 Surgery I .................................. 5
CS 801 Toxicology .............................. 3
26

Spring semester
DMP 753 Zoonosis and Preventative Medicine 3
CS 764 Clinical Skills III ...................... 1
CS 710 Companion Animal Medicine ..... 4
CS 713 Production Medicine ................. 2
CS 714 Clinical Nutrition ..................... 3
CS 728 Theriogenology ....................... 3
CS 730 Surgery II ............................... 5
21

Fourth professional year
Summer, fall, and spring semesters
33 hours required core rotations:
Small Animal Medicine
Small Animal Surgery
Equine Medicine and Surgery
Agricultural Clinical Practice
Radiology/Anesthesiology
Necropsy/Diagnostic Investigation
UNL KSU Animal Production

Plus minimum 9 hours of mini-electives and/or rotational electives.
The college’s library, which is a part of the Kansas State University libraries system, consists of approximately 40,000 volumes that deal with all phases of veterinary medical literature and many allied fields. It subscribes to more than 800 journals and has medical/veterinary CD-ROM data bases.

The Veterinary Medical Library

The Food Animal Health and Management Center provides leading-edge research and post-DVM and post-graduate education in the area of food animal health and management, with an emphasis on beef cattle and swine.

Clinical Sciences

G. Grover,* Interim Head

The KSU–Veterinary Medical Teaching Hospital is equipped for diagnosis and treatment of animal disease and for instruction of veterinary students, house officers, and post-graduate veterinarians.

The hospital has a capacity of 82 large animal patients and 150 small animal patients. Clinical faculty accompanied by students provide clinical veterinary service to clients in the local community, clients of referring veterinarians from a six-state region, and local and regional livestock farms. In addition to caring for sick animals, they provide preventative medical services and consultation on production medicine and management.

Fourth-year students are active participants in the hospitals and clinical services. Students are regularly assigned on a rotation basis during the year to various specialists on the clinical staff.

The department presents courses in medicine, surgery, obstetrics, theriogenology, anesthesia, radiology, oncology, dermatology, and other clinical specialists to veterinary students and post-DVM trainees.

Diagnostic Medicine/Pathobiology

M.M. Chengappa,* Head
Professors Briggs,* Chengappa,* Fenwick,* Keeton,* Kennedy,* Minocha,* Moore,* Mosier,* Nagaraja,* Oehme,* Ridley,* Schoning,* and Stewart; Associate Professors Andrews,* Chowdhury,* Dryden,* Fu,* Kapil,* Nietfeld,* Oberst,* Pickrell,* and Seedle,* Assistant Professors DeBrey,* Ganta,* and Wilkerson; Emeriti: Professors Bailie,* Cook,* Dennis,* Lordelo,* Phillips,* Strafuss,* and Vorhies; Associate Professors Gray,* and Milleret; Adjunct Assistant Professors Hennesys,* Henson,* and Kiel.

Courses in pathology, parasitology, bacteriology, virology, immunology, public health, toxicology, and clinical pathology are offered for students enrolled in the veterinary medicine curriculum. Third- and fourth-year veterinary medical students receive practical instruction in clinical laboratory procedures and the interpretation of results of laboratory tests.

Courses in disease of laboratory animals, wildlife, and fish are offered for non-veterinary undergraduate and graduate students.

A wide variety of research is conducted in the department that provides new information to enhance animal and human health. Major areas of focus include infectious diseases, immunology, erythrocyte function, environmental toxicology, and diagnostic test development.

The department serves the livestock and companion animal industry by conducting investigational procedures to identify animal disease problems. The department’s diagnostic laboratory is nationally recognized as fully accredited with capabilities in all areas of diagnostic medicine by AAVLD.

Cardiovascular physiology, immunophysiology, neuroscience, and pharmacology—major research themes within the department—are supported with modern research facilities and state-of-the-art research equipment.
Research study as a thesis or dissertation, and graduate study has major components required to adhere to the university policies. Students interested in pursuing graduate study are advised to familiarize themselves with these policies as early in their graduate careers as possible. Students are also advised that departments or interdepartmental graduate programs may have additional policies particular to those programs above and beyond these university policies.

Financial assistance

Financial assistance is available to graduate students in many disciplines to enable them to pursue an advanced degree. Such support is typically extended as fellowships, traineeships, graduate teaching assistantships, or graduate research assistantships, supported by university, state, federal, corporate, or private funding sources. Students interested in financial support are advised to contact the academic department or graduate program directly to obtain current information. Because many of these stipends are offered early, prospective students should make their inquiry upon first intent to pursue graduate studies. Students are also encouraged to visit the campus and discuss their goals for advanced study with the program faculty.

Graduate studies by seniors and undergraduate special students

Seniors at Kansas State University who have a minimum GPA of 3.0 on prior undergraduate work and are within two semesters of receiving a bachelor’s degree may take up to 9 hours for graduate credit in courses numbered in the 500, 600, and 700 sequences. Enrollment in courses in the 800 level and above is normally restricted to students admitted to the Graduate School. In exceptional circumstances, highly qualified students may enroll in courses numbered 800 and above after obtaining permission from the instructor of the course, the head of the department offering the course, and the dean of the Graduate School.

Those wishing to take more than 9 semester hours may apply for admission to, and be accepted by, the Graduate School following the award of a bachelor’s degree. Courses taken for undergraduate credit may not be changed to graduate credit.

A student enrolled as an undergraduate special student may not take courses for graduate credit.

Graduate Degrees

Master’s degrees

Master of science
Agricultural economics

Agronomy
Animal sciences
Apparel, textiles, and interior design
Architectural engineering
Biochemistry
Biological and agricultural engineering
Biology
Chemical engineering
Chemistry
Civil engineering
Computer science
Education
Adult, occupational, and continuing education
Educational administration
Elementary education
Secondary education
Special education
Student counseling and personnel services
Electrical and computer engineering
Entomology
Family studies and human services
Food science
Food service and hospitality management
and dietetics administration
Foods and nutrition
Genetics
Geology
Grain science
Horticulture
Industrial engineering
Kinesiology
Mass communications
Mathematics
Mechanical engineering
Microbiology
Nuclear engineering
Operations research
Physics
Plant pathology
Psychology
Statistics
Veterinary anatomy and physiology
Veterinary clinical sciences
Veterinary pathobiology

Master of arts
Economics
English
Environmental planning and management
Geography
History
Modern languages
Political science
Sociology
Speech
Theatre

Master of accountancy
Master of agribusiness
Master of architecture
Master of business administration
Master of engineering management
Intercollegiate Athletics

Max Urick, Head and Athletic Director
E-mail: rbath@ksu.edu
www.k-statesports.com

Coaches Bietau, Clark, Ra, Cole, Ro, Cole, Hale, Knight, Norris, McLaughlin, Patterson, Rebel, Rovelto, Snyder, and Wooldridge; Assistant Coaches Baker, Becker, Bennett, Chu, Cole, Dunn, Elgass, Ethridge, Fello, Fritz, Gadeker, Gush, Harris, Hensley, Hudson, Laing, Latimore, Lehman, McMillan, M. Miller, M. Miller, Moen, Oberkrom, Peterson, Serafini, J. Smith, M. Smith, M. Smith, Watson, J. Watson, and Weimers; Sports Information Assistants Bartlett, Dubert, Gilbert, Pinkerton, and Solt; Video Director Burge; Video Coordinator Eilert; Trainers Ferguson, Graham, and Pfug; Equipment Kleinau; Administrative Staff Adolph, Andrews, Barrett, Boyle, Duggan, Epps, Floyd, Fox, Green, Harper, Hughes, Mammola, McGuffin, O’Brien, Shields, Snyder, Spafford, Spiggins, Steele, Vetter, Weir–Larson, and Wyant.

K-State is a member of the Big 12 Conference and through that affiliation competes with Baylor University, the University of Colorado, Iowa State University, the University of Kansas, the University of Nebraska, the University of Missouri, the University of Oklahoma, Oklahoma State University, the University of Texas, Texas A&M, and Texas Tech.

Intercollegiate competition is open to all students and is coached by staff members who are specialists in their fields.

The men’s intercollegiate program competes in football, basketball, baseball, track (indoor and outdoor), cross country, and golf. The women’s program offers competition in cross country, volleyball, basketball, track (indoor and outdoor), tennis, golf, and crew.

Athletics courses

ATHM 101. Varsity Baseball. (1) I, II. Pr.: Consent of instructor.

ATHM 102. Varsity Basketball. (1) I, II. Pr.: Consent of instructor.

ATHM 103. Varsity Track. (1) I, II. Pr.: Consent of instructor.

ATHM 104. Varsity Football. (1) I, II. Pr.: Consent of instructor.

ATHM 105. Varsity Golf. (1) I, II. Pr.: Consent of instructor.

ATHW 150. Intercollegiate Basketball. (1) I, II. Pr.: Consent of instructor.

ATHW 152. Intercollegiate Track. (1) I, II. Pr.: Consent of instructor.

ATHW 154. Intercollegiate Tennis. (1) I, II. Pr.: Consent of instructor.

ATHW 155. Intercollegiate Volleyball. (1) I, II. Pr.: Consent of instructor.

ATHW 156. Intercollegiate Crew. (1) I, II. Pr.: Consent of instructor.

ATHW 157. Intercollegiate Golf. (1) I, II. Pr.: Consent of instructor.

Master of fine arts
Master of landscape architecture
Master of music
Master of public administration
Master of regional and community planning
Master of software engineering

Doctoral degrees

Doctor of education
Adult, occupational, and continuing education
Curriculum and instruction
Educational administration
Educational psychology
Special education
Student counseling and personnel services

Doctor of philosophy
Agronomy
Animal sciences
Biochemistry
Biology
Chemistry
Computer science
Economics
Agricultural General
Education
Adult, occupational, and continuing education
Curriculum and instruction
Student counseling and personnel services

Engineering
Biological and agricultural engineering
Chemical engineering
Civil engineering
Electrical and computer engineering
Industrial engineering
Mechanical engineering
Nuclear engineering
Entomology
Food science
Foods and nutrition
Genetics
Geography
Geology (Cooperative with University of Kansas)
Grain science
History
Horticulture
Human ecology
Apparel, textiles, and interior design
Family life education and consultation
Food service and hospitality management
Life span human development
Marriage and family therapy
Mathematics
Microbiology (see biology)
Physics
Plant pathology
Psychology
Sociology
Statistics
Veterinary pathobiology
Veterinary physiology
K-State Research and Extension

Marc A. Johnson, Director
George E. Ham, Associate Director
Richard Wootton, Associate Director
113 Waters Hall
785-532-6147
www.oznet.ksu.edu

K-State Research and Extension is dedicated to a safe, sustainable, competitive food and fiber system and to strong, healthy communities, families, and youth through integrated research, analysis, and education.

K-State Research and Extension provides practical, research-based information and educational programs to address critical issues facing individuals, families, agricultural producers, business operators, and communities.

K-State Research and Extension is organized into the following core mission themes; agricultural industry competitiveness; food, nutrition, health, and safety; natural resources and environmental management; youth, family and community development.

One K-State Research and Extension partner, the Kansas Agricultural Experiment Station (KAES), conducts original research both on and off campus. Twenty-four departments in five colleges are involved. K-State Research and Extension is also strongly allied with the Graduate School in training graduate students; interested graduate students are encouraged to seek research assistantships. Many undergraduate students work for K-State Research and Extension, which greatly adds to the classroom experience. Off-campus research is centered at two research-extension centers, two research centers, and 11 experiment fields in various parts of the state.

The other K-State Research and Extension partner, the Cooperative Extension Service, provides an important learning bridge between the university and the people of the state. It applies scientific knowledge, principles, and practices to the grassroots problems of Kansans. At the same time, this unique information delivery system brings back requests for new knowledge to the research staff at the university.

The Cooperative Extension Service staffs five area offices (two operate as part of a Research/Extension Center) and helps maintain county extension offices, staffed by off-campus K-State faculty members, in all 105 Kansas counties.

County extension agents, as official representatives of the United States Department of Agriculture and K-State, are responsible for making people aware of educational programs in the core mission themes. The agents serve as a local source of information regarding programs of many states and federal agencies, and then help people apply this information to their specific situation.

Information is published in scientific journals; in station bulletins, extension bulletins, national and international conferences; and in popular journals and news releases to the press and radio and television stations. Requests for station publications should be sent to the Distribution Center, Umberger Hall.

Agricultural Experiment Station

Western Kansas Agricultural Research Centers: Colby–Garden City–Hays

Patrick I. Coyne, Head and Professor

Agricultural Research Center—Hays

Professors Brethour, Harvey, Martin, and Stahlman; Associate Professors Kofoid and Seifers; Assistant Professors Harmony and Thompson.

Investigations are primarily related to plant and animal systems specific to western Kansas, where rainfall is limited. They include beef grazing, feeding, and breeding studies; crop improvement, with special emphasis on wheat, sorghum, pearl millet, and specialty crop improvement; soil management; weed control; plant disease; and insect management.

Northwest Research-Extension Center—Colby

Associate Professors Lamm and Sunderman; Assistant Professor Aiken.

Major areas of research are crop improvement; soil management; irrigation; weed control; and horticulture.

Southwest Research-Extension Center—Garden City and Tribune

Professor Schlegel; Associate Professors Buschman, Currie, Norwood, and Witt; Assistant Professor Troien.

Current investigations involve irrigation research; dryland soil and crop management, crop improvement; weed control; insect and other pest control in crops and livestock; soil management; and beef cattle nutrition and management studies; environmental management for livestock operations.

KSU Southeast Agricultural Research Center

Lyle W. Lomas, Head and Professor

Professors Moyer and Sweeney; Associate Professor Kelley; Assistant Professor Long.

Research focuses on soil and water conservation; crop improvement; beef cattle grazing investigations; and forages.

Experiment fields and irrigation development farms

The Kansas Agricultural Experiment Station includes 11 experiment fields: Cornbelt (Powhattan), North Central Kansas (Belleville), Irrigation (Scandia), Sandalby Irrigation and Dryland (St. John), South Central Kansas (Hutchinson), Harvey County (Hesston), East Center (Ottawa), and Kansas River Valley Irrigation (Rossville, and Silver Lake).

Experimental work is devoted to horticultural and forest crops at three fields: John Pair Horticultural Research Center (Wichita), Pecan Experiment Field (Chetopa), and East Central Horticulture Field (Olathe).

Affiliated agencies

Kansas Water Resources Research Institute Cooperating with the Water Resources Institute, University of Kansas

William L. Hargrove, Director

The Kansas Water Resources Research Institute conducts basic and applied research on water use and to train scientists in water resources. Representatives of K-State and the University of Kansas participate in institute policy making and research. Research is focused on finding the most effective ways of conserving, using, and distributing available water.

Food and Feed Grain Institute

Roe Borsdorf, Director

The Food and Feed Grain Institute has these goals: to develop effective methods of milling and processing grains; to evaluate and improve the quality and nutritional properties of food grains; to find new uses for grains; and to improve the handling, transporting, storing, and domestic and international use of grains and grain food products. Institute scientists are faculty members of the Departments of Grain Science and Industry, Agricultural Economics, Agricultural Engineering, and personnel of agencies such as the U.S. Grain Marketing and Production Research Center.

Center for Applied Statistics

George A. Milliken, Director

Center for Applied Statistics provides consulting services for scientists associated with the Agricultural Experiment Station.

Kansas Center for Agricultural Resources and the Environment

William L. Hargrove, Director

The Kansas Center for Agricultural Resources and the Environment (K CARE) is an interdis-
Extension Agricultural and Natural Resources

Daryl D. Buchholz, Assistant Director, Professor
Specialists in several departments of the Colleges of Agriculture and Engineering offer direct educational and technical assistance to citizens throughout the state.

In addition, interdisciplinary programs in water quality; resource use and conservation; community and economic development; value-added processing and production; food, feed, and forage production; animal production and utilization; and farm business and financial management are offered.

Agricultural economics
Daniel J. Bernardo, Head

Farm management
Professors Barnaby and Darling; Associate Professors McEowen and Warmann; Assistant Professors Jones, Kastens, and O’Brien; Administrator DeLano; Farm Management Extension Agricultural Economists Allen, Althausen, J. Dawson, R. Dawson, Docken, Everson, Freeze, Herbel, Huschka, Manny, Miller, Roddy, Rogers, Rowell, Schwarzentraub, Smith, Snyder, D. Stucky, T. Stucky, Thompson, Wahl, Wilken, Witt, and Wood. Emeriti: Professors Fausett, Schlander, and Thomas; Associate Professors McReynolds and Parker; Assistant Professor Overley; Farm Management Extension Agricultural Economists Collins, Dickson, Faidley, Germann, Greene, Hackler, Hageman, and Mullern.

The extension educational program in farm management is divided into two areas: Kansas Farm Management Association programs and area and state farm management programs.

In the Kansas Farm Management Association program, the 24 farm management agricultural economists conduct an intensive educational program with approximately 2,700 Kansas farm families in the six farm management associations.

The extension farm management program is conducted by state specialists and area economists. It is done with in-depth educational programs in cooperation with the county extension agents. The area specialists conduct in-depth workshops in farm business management with farm families, provide a nearby reference resource for agents, and develop educational materials for agent use.

Agricultural policy
Professor Flinchbaugh

The public affairs extension educational program provides educational information on policy issues of current interest. Problems are analyzed, alternatives and consequences examined, and the people are challenged to reach decisions.

The economic information program provides current data on factors affecting farming, business and industrial operations, labor supply and demand, and family living costs.

Extension marketing
Professors Barton, Mintert, and Tierney; Emerita: Professor Walker.

The main projects of marketing include marketing information, agri-business, and commodity marketing activities. News releases, monthly teleconferences, publications directed to the general public, and special information directed toward specific agricultural audiences are used to disseminate information.

Extension economic development
Professor Darling.

Extension economic development assists communities in development efforts. News releases, publications, and seminars are offered through county extension agents and area community development specialists.

Extension local government
Assistant Professors Garrett and Leatherman.

The extension local government programs provide direct educational assistance in the areas of structure, management, finance, and policy.

Extension biological and agricultural engineering
James K. Koelliker, Head
James P. Murphy, State Leader

Professors Harner, Koelliker, Murphy, Powell and Rogers; Assistant Professors Alam, Taylor, and Wolf; Emeriti: Professors Clark, Holmes, Jepsen and Wendling.

Extension agricultural engineering conducts an educational program which relates to engineering principles to agricultural concerns including water management, water quality, waste management, food processing, ag safety, pesticide application equipment, and livestock production facilities.

Extension agronomy
David B. Mengel, Head
David A. Whitney, State Leader

Professors Devlin, Fjell, Kilgore, Lamond, Mengel, Ohlenbusch, Peterson, Regelhr, Shroyer and Whitney; Associate Professors Duncan, Eberle, and Thompson; Assistant Professors McVay, Staggenborg, and Stockton. Emeriti: Professors Bieberly, Bohannon, and Edelblute.

Extension agronomy conducts a statewide educational program in agricultural crop production and natural resource conservation. The program is focused on conservation and protection of natural resources through education and technology transfer that results in improved, stable crop production efficiency. The breadth of the program is in understanding the dynamics of crops, weeds, soils, and water on crop production.

Extension animal sciences and industry
Jack G. Riley, Head
John Smith, State Leader

Professors Brazle, Kuhl, Penner, Riley, Schafer, Smith, and Spaeth; Associate Professors Aramouni, Arns, Blasi, Bolze,
Boyle, Nelssen, Stokka, and Tokach; Assistant Professors Beyer, Boyle, Brouk, Huck, Johnson, Marston, and Paisley; Instructor Lee. Emeriti: Professors Adams, Call, Corah, Dunham, Francis, Good, Henderson, Westmeyer, and Zoellner; Extension Assistant Olson.

Extension specialists in animal sciences and industry provide leadership for state programs in beef cattle, dairy cattle, horses, poultry, sheep, swine, meats, dairy products, value-added food products, food safety, and wildlife damage control.

Extension entomology Sonny Ramaswamy, Head Randall A. Higgins, State Leader
Professors Bauernfeind, Brooks, Cress, Higgins, Mock, Ramaswamy, and Sloderbeck; Emeriti: Professors Gates and Lippert.

Extension entomology is concerned with integrated insect and mite management or control for Kansas citizens. Pilot pest management projects are used to introduce and validate integrated approaches to managing pest populations.

Extension grain science and industry
Brendan J. Donnelly, Head
Timothy J. Herrman, State Leader
Associate Professor Hermann; Emeriti: Balding, Schoeff, and Wilcox.

Educational efforts target all sectors of the grain industry and include people involved with wheat breeding-production, grain handling, merchandising, processing, baking, feed manufacturing, and regulatory compliance.

Two thrusts of this program include grain utilization and processing quality, and flour mill, feed mill, and grain elevator management. Subjects include wheat quality as it relates to milling and baking properties, commercial and on-farm grain storage and quality management techniques, on-farm feed manufacturing, commercial feed processing, grain industry safety and regulatory compliance, plant sanitation, food safety, and grain grading.

Extension horticulture, forestry, and recreation resources
Thomas D. Warner, Head
Charles W. Marr, State Leader
Professors Marr and van der Hoeven; Associate Professor Barden, Gast and Stevens; Assistant Professor Carey; Emeriti: Professors Leuthold and Morrison.

Programs in extension horticulture and landscaping serve persons interested in fruits, nuts, vegetables, flowers, turf, shrubs, ornamental and shade trees, and forest and riparian management.

Extension plant pathology
Robert Zeigler, Head
Douglas J. Jardine, State Leader
Professors Jardine, Schwenk, and Tisserat; Associate Professor Bowden; Instructor O’Mara; Emeriti: Professors King and Willis.

Plant pathology extension specialists provide information about the occurrence and nature of plant diseases and the economic means for their control.

Youth, Family, and Community Development
An educated and knowledgeable citizenry is the foundation of our state’s economic productivity, democratic character and social system, and quality of life. K-State programs inform and help people through research and education, including:

• Building strong, healthy communities.
• Improving parenting skills and family relationships.
• Preparing youth to be responsible citizens.
• Balancing demands of work, family community, and time for self.
• Developing consumer and financial management skills.

4-H youth development
Gary W. Gerhard, Assistant Extension Director and State Leader
Professors Fisher and McFarland; Associate Professors Adams, Fultz, and Gerhard. Associate Specialist Lindquist, Emeriti: Professors Apel, Bates, Busset, Eyestone, and Redman; Associate Professors Borst, Salmon, and Whipp; Assistant Professor Weaver.

Family studies and human services
William Meredith, Head
Professors Meredith, Smith, and Walker; Associate Professors Altus, Bradshaw, and Jones.

Apparel, textiles, and interior design
Gwendolyn O’Neal, Head
Professor O’Neal; Associate Professor Munson; Assistant Professor Bode. Emeriti: Professors Anderson, Carlson, Ellithorpe, Slinkman, and Tucker; Associate Professor Howe; Assistant Professor Starkey.

Community development
Associate Specialist McAdoo; Emeriti: Professors Frazier and Norby; Associate Professors Halazon and Sisk.

Food, Nutrition, Health, and Safety
Kansas is the nation’s number one meat processor, number one producer of hard red wheat, number one flour miller, and number one producer of grain sorghum. The state also is a national leader in producing many other agricultural commodities.

Such an important industry relies heavily on food safety and nutrition research and expertise at K-State. Many people are asking questions about food additives, livestock drugs, and crop and vegetable pesticides. The potential for food handling and processing errors has increased. As lifestyles become more urban, people are separated further from the food production system. Fewer citizens than ever understand how food is produced and processed, nor do people understand the government safeguards to maintain a safe food supply. Many do not know what constitutes a balanced diet. K-State Research and Extension scientists and extension personnel are working to insure a safe food supply from production to consumption; promote healthier and safer lives; and develop new, appealing food products.

Human nutrition
Virginia Slimmer, Head
Professor Slimmer, Assistant Professor Higgins. Emeriti: Professor Clarke; Associate Professors Atkinson, Clonts, and Wells.

Animal sciences and industry—food safety
Jack G. Riley, Head
Professors Riley and Penner; Associate Professor Aramouni.

Office of Community Health
David A. Dzewaltowski, Extension
Distinguished Professor
Our faculty have professional experience in editing and producing publications, creating graphic design, writing news releases, producing radio and television news and features, managing information systems, training to enhance communication and technology software skills, supporting the creation of distance education courses and enhancement of classroom technologies, and duplicating and distributing educational materials.

**Extension field operations**

**Southwest Area Office**
Paul Hartman, Area Extension Director
Professors Sloderbeck and Thompson; Associate Professor Young; Assistant Professors Alam, Dumler, and Huck; Instructor Addison; Director Hartman; Emeriti: Professor Mann; Assistant Professor Blankenhagen.

**Northwest Area Office**
Reba White, Area Extension Director
Associate Professor O’Brien; Assistant Professors Barker, Johnson, and Stockton; Instructor Curry; Director White; Emeriti: Assistant Professor Mikesell and Overley.

**Northeast Area Office**
James L. Lindquist, Area Extension Director
Associate Professors Mark and Tokach; Assistant Professor Staggenborg, Instructors Lubben, Mack, Nolting, and White-Huling; Director Lindquist; Emeriti Professors Figurski, Francis, and Newsome; Associate Professor Utermoehlen.

**Southeast Area Office**
Benny S. Robbins, Area Extension Director
Professors Brazle, Kilgore, and Robbins; Associate Professor Price; Assistant Professor Fogelman; Instructor Domsch; Emeriti: Professors Fausett and Lippert; Associate Professor Appleby.

**County extension offices**
There are extension offices in each of the 105 counties.
Outreach

Division of Continuing Education

Elizabeth A. Unger, Vice Provost and Dean of Continuing Education
A. David Stewart, Assistant Dean for Program Development and Interim Director, Academic Services
Douglas W. King, Director, Administrative Systems
Lynda Spire, Director, Conferences and Non-Credit Programs
John Allard, Director, Kansas Regents Network (TELENET 2)
Linda Teener, Director, UFM
Jim Miller, Assistant to the Dean

College Court Building
785-532-5566 or 1-800-432-8222
E-mail: info@dce.ksu.edu
www.dce.ksu.edu/dce

The Division of Continuing Education brings together K-State’s teaching resources with learners throughout Kansas, the nation, and the world. Courses, conferences, professional updates, and other learning experiences extend university facilities and resources to individuals and organizations. The university makes use of the Internet, TELENET 2 (a partnership of Regents’ institutions), the Regents Educational Communications Center (a video production facility), teleconferences, live compressed video (CODEC), satellite downlinks, audio and videotapes, multimedia, face-to-face instruction, and electronic synchronous instruction. Location, once a major obstruction for those seeking degrees, controlling education units, professional updates, or personal enrichment, is being overcome through effective use of technology and services to distance students.

The Division of Continuing Education has a trained staff to assist those seeking academic credit or wishing to earn a degree in a non-traditional way. These people help students who have encountered obstacles to traditional college attendance, such as barriers created by distance, employment, physical handicap, or family responsibilities. Students are guided to faculty members who will advise them in their individual programs of study, and they are helped to select options such as off-campus classes, conferences, short courses, workshops, audio and video courses, telecourses, TELENET 2 courses, World Wide Web courses, correspondence study, credit by examination, internships, or independent study. The division offers credit and non-credit courses year round, including offerings in intersession, summer school, and through the program at Fort Riley.

Degrees through distance education
Bachelor’s degree in animal science and industry
Bachelor’s degree in interdisciplinary social science
Bachelor’s degree in general business
Bachelor’s degree in food science and industry
Course work leading towards a bachelor’s degree in dietetics
Master’s degree in agribusiness
Master’s in electrical engineering
Master’s in civil engineering
Master’s in software engineering
Master’s in chemical engineering
Master’s in engineering management
Master’s in industrial and organizational psychology

Degrees in Kansas
Master’s degree in adult and continuing education—Kansas City and Wichita
Master’s degree in environmental planning and management—Topeka and Manhattan
Master’s degree speciality in elementary/secondary education
ESL speciality—Kansas teachers
Classroom technology—Manhattan area

Intersession
Intersession is conducted during three major breaks in the academic calendar: early January, late May and early June, and August. Annually, many regular and new or experimental credit and noncredit courses are offered in intersession, providing students with an opportunity to examine academic areas not scheduled in their current curricula and faculty members with a means to experiment with new ideas and formats for teaching. Students are encouraged to consult with their advisors to determine if a particular intersession course will fulfill specific degree requirements.

Fort Riley
K-State works in cooperation with the Army Education Center to provide courses to the Fort Riley community at times convenient to military personnel and their dependents. The courses allow the pursuit of associate, bachelor’s, and master’s degrees in several disciplines, including general social sciences, business administration, and education. Although military personnel have priority, all K-State students are encouraged to investigate this opportunity to pursue their academic goals by visiting the K-State personnel at Fort Riley who are familiar with degree requirements and procedures on acceptance of transfer work. For additional information contact the division office at Fort Riley at 785-784-5930.

TELENET 2
TELENET 2 is a system comprised of a network of desktop video units at teleconferencing centers throughout Kansas that are linked together via telephone lines. A TELEbridge is also available to allow additional temporary teleconferencing classrooms to be established anywhere in Kansas for both credit and non-credit courses and programs, in-service training, meetings, or conferences.

UFM Community Learning Center
UFM is a community learning center that develops and conducts informal educational opportunities that do not involve prerequisites, grades, or credits. More than 500 programs are available during the three sessions a year. Classes, symposia, forums, and unstructured learning experiences covering a range of human interests, activities, and concerns are offered.

International Agricultural Programs

Robert Hudgens, Assistant Dean
105D Waters Hall
785-532-7034
E-mail: blhudgens@oznet.ksu.edu
www.oznet.ksu.edu/dp_iap

Since 1956 K-State has extended its outreach mandate to serve people throughout the world. Faculty members have participated in short-courses, technical assistance assignments, and sabbatical activities in India, Nigeria, the Philippines, Botswana, Honduras, and Pakistan. Many of these activities were through development projects funded by USAID, which focused on strengthening agricultural research and extension in universities and government ministries. As part of the Mid-America International Agricultural Consortium and several collaborative research support projects, faculty have also participated in projects in Peru, Morocco, Liberia, Egypt, Tunisia, and Kenya.

Study tours and semester abroad programs offer Kansas students the opportunity for international experiences during their degree
programs. In 1999 K-State students visited Mexico, Botswana, Kenya, Mongolia, Holland, and France. These experiences enhanced understanding of other cultures and improved foreign language skills, increasing the competitiveness of K-State students for jobs in the global economy. K-State is actively seeking additional opportunities for student and faculty international travel through educational partnerships with universities in other countries, private sector internships, and faculty collaborative research activities. Such international engagement enhances the relevance of campus teaching, provides for a more multi-ethnic local community, and benefits agriculture in this state.

**Kansas Regents Educational Communications Center**

Mel Chastain, Director  
E-mail: ecc@ksu.edu  
www.ksu.edu/ecc

The Educational Communications Center houses resources for the production and distribution of courses and other educational experiences via instructional television, distance education, video conferencing, multimedia, and the Internet. Distribution capabilities include Ku-Band satellite uplinks, fiber optics, Low Power TV, compressed video, video tape, CD-ROM, WWW, and a wide range of other technologies.

Dole Hall also houses studio and control room facilities for instructional use by journalism and mass communications faculty and students, as well as offices and studios for both Cooperative Extension and TELENET 2. Human resources include curriculum design, video and multimedia production, systems engineering, installation and maintenance, academic specialization, long-range budgeting, and project management.

The ECC provides electronic access to and interconnection between each of the Kansas Regents’ institutions. The center not only produces and distributes university-level instructional material, but also develops course work and in-service content for public schools, as well as credit and noncredit continuing education material.

AKINS, RICHARD GLENN, Prof. of Chemical Engineering (1963). BS 1957, MS 1958, U. of Louisville; PhD 1962, Northwestern U. (\*)

AKKINA, KRISHNA RAO, Assoc. Prof. of Economics (1972). BA 1963, M. of Andhra; MA 1966, Delhi School of Economics; PhD 1972, U. of Minnesota. (\*)


AMOS, JOHN M., Adjunct Prof., Industrial and Manufacturing Systems Engineering (1987). BS 1956, MS 1957, Kansas St. U.; PhD 1960, Ohio St. U.


ANDERSON, ELINOR A., Prof. Emerita; Ext. Specialist, Family Economics (1963). BS 1939, MS 1952, Kansas St. U.


ANDREW S, GORDON, Assoc. Prof. of Pathology (1992). BS 1975, Cornell; DVM 1984, Oklahoma St. U. (\*)


ARCK, WILLIAM, Dir. of Alcohol and Other Drug Education Service (1982). BS 1978, MS 1979, Kansas St. U.
COCHRAN, ALFRED W., Prof. of Music (1979). BME 1972, Memphis St. U.; MM 1975, PhD 1986, Catholic U. (*)


COLE, KAREN S., Prof. Emeritus of Medicine (1979). BS 1964, Central Missouri St. U.; MPA 1979, U. of Missouri, KC.


COPELAND, JAMES L., Prof. Emeritus of Chemistry (1962). BS 1952, U. of Illinois; PhD 1962, Indiana U. (*)


CORUM, ROBERT T., Prof. of Modern Languages (1977). BA 1969, Old Dominion Col.; MA 1971, PhD 1975, U. of Virginia. (*)


COTTON, MELVIN CLYDE, Asst. Prof. Emeritus of Electrical and Computer Engineering (1955). BS 1945, MS 1948, U. of Kansas; Professional Engineer in Kansas, 1947; in Missouri, 1952. (*)


COYNE, PATRICK L., Prof. and Head, Western Kansas Agricultural Research Ctrns., Agronomist (1985). BS 1966, Kansas St. U.; PhD 1969, Utah St. U. (*)


CRAWFORD, GOLDA M., Assoc. Prof. Emerita of History (1946). BS 1928, MS 1940, Kansas St. U.; PhD 1963, Syracuse U. (*)


CREECH, TOM, Prof. Emeritus, Arts, Sciences, and Aviation, Col. of Tech. and Aviation (1976). BSME 1957, MS 1961, Kansas St. U.


CURNUTTE, BASIL, JR., Prof. Emeritus of Physics (1954). BS 1945, U.S. Naval Academy; PhD 1953, Ohio State U. (*).


DAHL, ROBERT E., Prof. Emeritus of Architectural Engineering and Construction Science (1976). BS 1951, MS 1954, Kansas St. U.; Professional Engineer. (*).


DAVIDSON, STEVEN, Asst. Prof. of Interior Arch. (1997). BFA 1977, Kansas St. U. (*).


DAY, DENNIS J., Prof. of Landscape Arch. and Regional and Community Planning (1966). BSLA 1964, Michigan St. U.; MLA 1966, U. of Michigan; Registered Landscape Architect. (*).


DE BOWES, RICHARD M., Prof. Emeritus, Agr. and Resources, Kansas St. U. (*).


DENNIS, STANLEY, Prof. of Pathology and Microbiology (1966). BS 1949, PhD 1961, U. of Sydney. (*).


DUNBAR, JOHN O., Prof. and Dean Emeritus of Agricult.; Dir. of the Agr. Exp. Sta. (1976). BS 1942, MS 1948, PhD 1954, Purdue U. (*)


DUNN, JON D., Prof. (1990). BA 1962, Col. of Idaho; PhD 1967, U. of Kansas (*).


DURG, JACK CLYDE, Prof. Emeritus of Interior Arch. (1954). BArch 1951, Oklahoma St. U.; MS 1957, Kansas St. U. Registered Architect. (*)


GERMANN, RALPH N., Farm Management Association Fieldman Emeritus (1956). BS 1951, MS 1957, Kansas St. U.


GIBBONS, JAMES, Assoc. Prof. of Chemical Engineering (1956). BS 1951, MS 1954, PhD 1956, Kansas State U. (*).

GILES, JENNIFER C., Prof. Emeritus of Forestry (1965). BS 1963, MS 1965, PhD 1968, Kansas St. U. (*).

GILL, BIKRAM S., Assoc. Prof. Emeritus of Food Animal Sciences (1948). BS 1947, U. of Kansas; PhD 1949, U. of Georgia. (*)


GOWDY, KENNETH K., Assoc. Dean Emeritus of Engineering and Prof. of Mechanical and Nuclear Engineering (1957). BS 1955, MS 1961, Kansas St. U.; PhD 1965, Oklahoma St. U.; Professional Engineer. (*)


Graham, Ralph O., Prof. Emeritus, Communications (1961). BA 1948, Peru St. Teachers Col.; Nebraska; MS 1955.


Gray, Andrew W., Assoc. Prof. Emeritus, Diagnostic Lab; Research Pathologist (1964). DVM 1953, MS 1963, PhD 1966, Kansas St. U.


Gray, Thomas J., Prof. of Physics (1977). BS 1960, MS 1962, North Texas St. U.; PhD 1967, Florida St. U. (*)


Greig, Betty S., Adjunct Asst. Prof. of Hotel, Restaurant, Institution Management and Dietetics (1989). BS 1948, U. of Arkansas; MS 1968, Kansas St. U.


Griffith, Lester E., Co. Ext. Agent, Agricultural Agent Emeritus, Marion Co., Marion (1949). BS 1949, Kansas St. U.


GUENTHER, BRADLEY L., Computer Info. Specialist, Agricultural Research Unit, USDA, ARS (1936). BS 1935, MS 1936, Kansas St. U. (*)


HAFT, EVERETT EUGENE, Prof. Emeritus of Electrical and Computer Engineering (1961). BS 1947, MS 1951, PhD 1955, U. of Wisconsin; Professional Engineer in Wisconsin, 1952. (*)


HAGEMANN, CHARLES A., Farm Management Assoc. Fieldman Emeritus (1936). BS 1936, Kansas St. U.

HAGEN, LAWRENCE J., Adjunct Asst. Prof. of Agronomy; Research Agricultural Engineer, Wind Erosion Research Unit, USDA, ARS (1967). BS 1982; MS 1967, N. Dakota St. U.; PhD 1980, Kansas St. U. (*)


HAGNOLD, MERLE FREDRICK, Prof. Emeritus of Biology (1950). BS 1939, MA 1941, U. of Minnesota; PhD 1948, U. of Nebraska. (*)


HAJDA, JOSEPH, Prof. Emeritus of Political Science (1957). BA 1951, MA 1952, Miami U.; PhD 1955, Indiana U. (*)


HALLE, BYRON W., Assoc. Prof. Emeritus of Hort. (1951). BS 1944, MS 1947, Kansas St. U.; PhD 1950, U. of Nebraska. (*)


HANKLEY, WILLIAM JOHN, Prof. of Computing and Information Sciences (1972). BSEE 1962, MS 1964, Northwestern U.; PhD 1967, Ohio U. (*)


HARRIS, LAWRENCE H., Asst. Prof. Emeritus of Veterinary Science (1968). BS 1943, MS 1946, Iowa St. U. (*)


HARING, WILLIAM L., Prof. Emeritus of Medical Education; Animals Research Nutritionists (1997). BS 1959, Texas A&M U.; MS 1960, Oklahoma St. U. (*)


HARNESS, JAMES P., III, Prof. of Biological and Agricultural Engineering; Agricultural Engineer (1983). BS 1979, MS 1981, PhD 1983, Virginia Poly. Inst. and St. U.; Professional Engineer, 1983. (*)


HAWLEY, M. DALE, Prof. of Chemistry (1986). BA 1960, MA 1962, U. of Northern Iowa; PhD 1965, U. of Kansas. (**) 
HAYTER, RICHARD B., Assoc. Dean for Ext. and Outreach; Prof. of Architectural Engineering and Construction Science; Dir. of Kansas Industrial Ext. Service (1980). BS 1965, S. Dakotta St. U.; MS 1973, PhD 1975, Kansas St. U. (**) 
HEROD, JON G., Farm Management Association Fieldman Emeritus (1957). BS 1957, Kansas St. U. 
HEYWOOD, KENNETH M., VP Emeritus, KSU Foundation (1956). BS 1938, Kansas St. U. 
HEROD, JON G., Farm Management Association Fieldman Emeritus (1957). BS 1957, Kansas St. U. 


HIGHTOWER, RAY E., Asst. Dean of Engineering; Asst. Prof. of Mechanical and Nuclear Engineering; (1961). BS 1964, Kansas St. U.

HILL, OPAL BROWN, Assoc. Prof., Emerita of Art and Clothing, Textiles, and Interior Design (1944). BS 1944, MS 1945, Kansas St. U. (*)


HOAG, RICHARD, Prof. of Arch. and Dir. of Graduate Studies in Arch. (1985). BA 1969, MA 1977, U. of Washington. (?)


HOEFLIN, RUTH, Dean and Prof. Emerita of Human Ecology; Agr. Exp. Sta. (1957). BS 1940, Iowa St. U.; MA 1945, U. of Michigan; PhD 1950, Ohio St. U. (*)

HOFFMAN, DAVID L., Adjunct Prof. of Arch. (1996). BA 1971, Iowa St. U.


HOPKINS, T. L., Prof. Emeritus of Entomology; Research Entomologist, Insect Physiology, Biochemistry, Toxicology, Agr. Exp. Sta. (1960). BS 1951, MS 1956, Oregon St. U.; PhD 1960, Kansas St. U. (*)


HUSCHKA, JAMES A., Farm Management Association Fieldman (1977). BS 1977, Kansas St. U.


HUIRRE, MAUREEN, Assoc. Prof. of Modern Languages (1989). BA 1971, PhD 1980, Bryn Mawr Col. (*)


JARDINE, DOUGLAS J., Prof. of Plant Pathology; Ext. State Leader, Plant Pathology Program (1985). BS 1976, MS 1977, PhD 1985, Michigan St. U. (*)


JIANG, HONGXING, Prof. of Physics (1988). BS 1981, Fudan U., China; MS 1983, PhD 1986, Syracuse U. (*)


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■ University Faculty

KENNEDY, FAYE L., Coord. of Microcomputing
Systems, Computing and Telecommunications Activities

KINSER, JAMES R., III, Producer/Dir., Kansas Regents
Educational Communications Cntr. (1990). BS 1984, U. of
Texas at Austin.

(*)

KENNEDY, GEORGE A., Prof. of Veterinary Diagnostic
Pathology, Dept. of Veterinary Diagnosis; Research
1975, Kansas St. U.; Diplomate 1976, American Col. of
Vet. Pathologists. (*)

KINSLER, LESLIE A., Assoc. Prof. of Engineering
Technology (1980). BA 1972, Emporia St. U.; MCS 1988,
Wichita St. U.

KOCH, BERL A., Prof. Emeritus of Animal Sciences and
Industry (1956). BS 1949, Iowa St. U.; MS 1951, Cornell
U.; PhD 1956, U. of California. (*)

KIRK, CLAUDIA A., Adjunct Faculty of Clin. Sci.
1986, PhD 1994, U. of California at Davis. (*)

KOEHLER, JOHN, Admin. Officer and Section Head of
Professional Pilot, Col. of Tech. and Aviation (1995). BS
1974, U.S. Military Academy, West Point.

KIRKHAM, MARY BETH, Prof. of Agronomy; Crops
Wellesley Col.; MS 1969, PhD 1971, U. of Wisconsin. (*)

KOELLIKER, JAMES K., Prof. and Head, Biological
and Agricultural Engg. (1973). BS 1967, Kansas St. U.; MS
1969, PhD 1972, Iowa St. U.; Professional Engineer, 1972.
(*)

KENNEDY, PETER J., Head of Aviation and Asst. Prof.,
Professional Pilot Program (1990). All flight ratings, airplane and helicopter.
KENNEDY, ROBERT K., Lieutenant Colonel, US Army,
Prof. of Military Science, (1996). BS 1979, Pennsylvania
St. U.; MS 1990, U. of Denver.
BA 1981, Luther Co.; PhD 1988, U. of Iowa. (*)

KIRMSER, PHILIP GEORGE, Prof. Emeritus of
Mathematics and Engineering (1942). BS 1939, MS 1944,
PhD 1958, U. of Minnesota; Professional Engineer, 1961.
(*)

KENT, NANCY JO, Co. Ext. Agent Emerita, Family and
Consumer Sciences, Ford Co., Dodge City (1959). BS
1959, Fort Hays St. U.

KISER, HARVEY L., Senior Agricultural Economist,
Agricultural Economics (1979). BS 1959, MS 1963, PhD
1966, Ohio St. U.

KEPKA, GARY, Asst. Info. Tech. Spec., Communications

KISSICK, BEVERLEE, Prof. and Dir. of Libraries. Col.
of Aviation and Technology (1987). BS 1959, MS 1981,
PhD 1985, Kansas St. U.

KERSHNER, TERRY, Dir. of Alumni Cntr. Campaign
BM 1985, MM 1987, Indiana U.
KERSTETTER, K. TOD, Asst. Prof. of Music (1999).
BM 1985, Furman U.; MM 1987, Indiana U.; DMA 1995,
U. of Georgia. (*)
KEY, DAVID V., Co. Ext. Agent, Nemaha Co., Seneca
AB 1948, Olivet Nazarene Col.; MA U. of Missouri–
Kansas City; PhD 1959, U. of Minnesota. (*)
KHAN, SAEED, Asst. Prof. of Electronic Engineering
Tech. (1997) BS 1984, Bangladesh U.; MS 1989, PhD
KHATAMIAN, HOUCHANG, Assoc. Prof. of Hort.
Guelph. (*)
KIBBY, JIMMIE R., Co. Ext. Dir. Emeritus, Wyandotte
U.
KIEFER, NANCY F., Arts and Sciences Advisor (1993).
BA 1973, Washington U., St. Louis; MA 1983, Kansas St.
U.
KIEFER, STEPHEN W., Prof. and Head of Psychology
(1982). BA 1973, Washington U., St. Louis; MA 1975,
PhD 1978, Arizona St. U. (*)
KILGORE, GARY L., Prof. of Agronomy, Ext. Specialist,
Crops and Soils, Southeast (1972). BS 1964, MS 1966,
Kansas St. U.

KLAASSEN, HAROLD E., Assoc. Prof. Emeritus of
U.; PhD 1967, U. of Washington. (*)
KLABUNDE, KENNETH J., U. Dist. Prof. of Chemistry
(*)
KLEINAU, JAMES L., Athletics Equipment Mngr.,
(1979). BS 1977, Oklahoma St. U.
KLEMM, ROBERT D., Prof. Emeritus of Anatomy
(1972). BS 1957, Capital U.; MS 1959, Ohio U.; PhD 1964,
Southern Illinois U. (*)
KLOPFENSTEIN, CAROL F., Prof. Emerita of Grain
1959, MS 1963, Pennsylvania St. U.; PhD 1978, Kansas St.
U. (*)
KLUITENBERG, GERARD J., Assoc. Prof. of
Davis; PhD 1989, Iowa St. U. (*)
KNACKENDOFFEL, ELIZABETH A., Asst. Prof.,
Education (1986). BS 1978, MS 1979, Emporia St. U.; PhD
KNAPP, ALAN, Prof. of Biology; Plant Ecology, Agr.
1988, U. of Wyoming. (*)
KNAPP, MARY C., Assoc. State Climatologist Weather
Data Librarian, Communications (1985). BVS 1977,
Kansas St. U.

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