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
103 Fairchild Hall
Manhattan, KS 66506–1103
E-mail: ksugrad@grad.ksu.edu
www.ksu.edu/grad

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

**Equity in athletics**
In accordance with the Equity in Athletics Disclosure Act, an annual report pertaining to K-State’s athletic programs is available to prospective students, students, and to the public in the following locations: Intercollegiate Athletics, 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 Academic Services, Kansas State University, 204 Anderson Hall, Manhattan, KS 66506–0124 (785-532-4392).

Please recycle this catalog.
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About the Catalog

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) I, 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.

Reference number (i.e., 42730)
The five-digit number, automatically reassigned each semester, designates a course section.

Course number (i.e., KIN 220)
The three to five letters denote the department offering the course. The three digits represent the level of the course.

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

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

Departmental sections

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

Faculty section

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

Graduate faculty

Consult the K-State Graduate Catalog, available online at www.ksu.edu/grad/faculty/faculty.htm.

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
www.k-state.edu/admit

Admissions Guide and workbook: Overview of majors and student life. Includes applications for admission, scholarships, and campus housing.

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, 785-532-5566; 1-800-432-8222
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

Brochure for Educators: Listing of courses of interest to educators. Available each semester.
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 socio-political 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 Higher Learning Commission of the North Central Association of Colleges and Schools (30 N. LaSalle St., Suite 2400, Chicago, IL 60602, 1-800-621-7440).

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.

Calendar

Additional academic dates and deadlines can be found online: www.ksu.edu/calendar/eventview.cgi/registrar/academic

Fall Semester 2002

August 26, Monday
Semester begins.

September 2, Monday
University holiday.

October 18, Friday
Student holiday.

November 27–29, Wednesday–Friday
Student holiday.

November 28–29, Thursday–Friday
University holiday.

December 13, Friday
Last day of semester.

December 13–14, Friday–Saturday
Commencement.

December 16–20, Monday–Friday
Semester examinations.

January 2003 Intersession

December 30, 2002–January 15, 2003,
Monday–Friday
Intersession.

Spring Semester 2003

January 16, Thursday
Semester begins.

January 20, Monday
University holiday.

March 17–21, Monday–Friday
University holiday.

May 9, Friday
Last day of semester.

May 12–16, Monday–Friday,
Semester examinations.

May 16–17, Friday–Saturday
Commencement.

May 2003 Intersession

May 19–June 6, Monday–Friday
Intersession.

May 26, Monday
University holiday.

Summer Semester 2003

May 19–August 8
May 26, Monday
University holiday.

July 4, Wednesday
University holiday.

August 2003 Intersession

August 4–22
Intersession.

Fall Semester 2003

August 25, Monday
Semester begins.

September 1, Monday
University holiday.

October 17, Friday
Student holiday.

November 26–28, Wednesday–Friday
Student holiday.

November 27–28, Thursday–Friday
University holiday.

December 12, Friday
Last day of semester.

December 12–13, Friday–Saturday
Commencement.

December 15–19, Monday–Friday
Semester examinations.
January 2004
Intersession

December 29, 2003–January 14, 2004,
Monday–Friday
Intersession.

Spring Semester 2004

January 15, Thursday
Semester begins.

January 19, Monday
University holiday.

March 22–26, Monday–Friday
Student holiday.

May 7, Friday
Last day of semester.

May 10–14, Monday–Friday
Semester examinations.

May 14–15, Friday–Saturday
Commencement.

May 2004
Intersession

May 17–June 4, Monday–Friday
Intersession.

May 31, Monday
University holiday.

August 2004
Intersession

August 2–20, Monday–Friday
Intersession.

Summer Semester 2004

May 17–August 6

May 31, Monday
University holiday.

July 5, Monday
University holiday.
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 a student achieve her or his 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: A student may elect to pursue two majors at one time.

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

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: A program of courses that meets the requirements for a degree in a particular field of study.

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

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.k-state.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 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.k-state.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.

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 980 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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<thead>
<tr>
<th>Subject</th>
<th>Units required</th>
<th>Courses to take</th>
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<tbody>
<tr>
<td>English</td>
<td>4</td>
<td>One unit of English for each year of high school</td>
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<tr>
<td>Natural science</td>
<td>3</td>
<td>Choose three units from:</td>
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<td></td>
<td>• Biology</td>
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<td>• Advanced biology</td>
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<td>• Physical/earth/general science</td>
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<td>• Chemistry</td>
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<td>• Physics</td>
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<td>At least one unit must be in chemistry or physics.</td>
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<tr>
<td>Math</td>
<td>3</td>
<td>One unit each of:</td>
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<td>• Algebra I</td>
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<td>• Algebra II</td>
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<td>• Geometry</td>
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<tr>
<td>Social science</td>
<td>3</td>
<td>One unit of U.S. history</td>
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<tr>
<td></td>
<td></td>
<td>One-half unit of U.S. government</td>
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<td>One unit selected from:</td>
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<td></td>
<td></td>
<td>• Psychology</td>
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<td>• Economics</td>
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<td>• History</td>
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<td>• Current social issues</td>
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<td>• Sociology</td>
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<td>• Anthropology</td>
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<tr>
<td></td>
<td></td>
<td>• Race and ethnic group relations</td>
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<tr>
<td></td>
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<td>One-half unit selected from:</td>
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<td></td>
<td>• World history</td>
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<tr>
<td></td>
<td></td>
<td>• World geography</td>
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<tr>
<td></td>
<td></td>
<td>• International relations</td>
</tr>
</tbody>
</table>

Computer technology 1 May be met by passing a proficiency examination.

Resident students must have a 2.0 in the precollege curriculum.

Nonresident students must have a 2.5 in the precollege curriculum.

Glossary of Terms

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. Personal grade reports or student copies of transcripts 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.

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 score of 980 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

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units required</th>
<th>Courses to take</th>
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<tbody>
<tr>
<td>English</td>
<td>4</td>
<td>One unit of English for each year of high school</td>
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<tr>
<td>Natural science</td>
<td>3</td>
<td>Choose three units from:</td>
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<td></td>
<td>• Biology</td>
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<td>• Advanced biology</td>
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<td>• Physical/earth/general science</td>
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<td>• Chemistry</td>
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<td></td>
<td>• Physics</td>
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<td>At least one unit must be in chemistry or physics.</td>
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<tr>
<td>Math</td>
<td>3</td>
<td>One unit each of:</td>
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<td>• Algebra I</td>
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<td>• Algebra II</td>
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<td></td>
<td>• Geometry</td>
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<tr>
<td>Social science</td>
<td>3</td>
<td>One unit of U.S. history</td>
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<tr>
<td></td>
<td></td>
<td>One-half unit of U.S. government</td>
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<td>One unit selected from:</td>
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<td></td>
<td>• Psychology</td>
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<td>• Economics</td>
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<td>• Civics</td>
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<td>• History</td>
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<td>• Current social issues</td>
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<td>• Sociology</td>
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<td>• Anthropology</td>
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<tr>
<td></td>
<td></td>
<td>• Race and ethnic group relations</td>
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<td></td>
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<td>One-half unit selected from:</td>
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<td></td>
<td>• World history</td>
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<td>• World geography</td>
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<tr>
<td></td>
<td></td>
<td>• International relations</td>
</tr>
</tbody>
</table>

Computer technology 1 May be met by passing a proficiency examination.

Resident students must have a 2.0 in the precollege curriculum.

Nonresident students must have a 2.5 in the precollege curriculum.
GED graduates must:
- Achieve an overall average GED score of 50 points or higher.

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.

*Some academic programs require higher GPAs

**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
- Interior design
- 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 $25 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 30 college-level credits and have less than 2.3 GPA will not be admitted to the College of Business Administration.

All documentation should be sent to the Office of Admissions in Manhattan. 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. Up to 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**

| Minimum university general education credit hours to be taken at K-State |
|---------------------------------|------------------|
| Number of completed transfer credit hours accepted at K-State |
| 0–14 | 6 |
| 15 and above | 3 |

**Bachelor’s degree programs**

| Minimum university general education credit hours to be taken at K-State |
|---------------------------------|------------------|
| Number of completed transfer credit hours accepted at K-State |
| 0–7 | 18 |
| 8–29 | 12 |
| 30–44 | 9 |
| 45 or more | 6 |

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.
Credit by exam credits may be considered “transfer credits” for purposes of the university general education policy.

In course descriptions UGE courses are marked with a diamond (◆).

**Approved courses**

Courses currently approved for university general education credit are listed on the web at: [www.k-state.edu/registrar/enroll/gened.html](http://www.k-state.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 of arts 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.k-state.edu/admit/tran_info.html](http://www.k-state.edu/admit/tran_info.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 $50 nonrefundable application fee; translated secondary schooling records, or a credentials evaluation report; 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 show proficiency in English before being admitted. Students may do this by presenting acceptable results from TOEFL, SAT or ACT. If the student cannot show adequate proficiency the following conditional admission options may be offered:
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 $25 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.
Academic Advising

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. 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-term 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

Pre-professional programs are advised in the College of Arts and Sciences dean’s office.

Law schools 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 considering law school. Pre-law students select majors in any college on campus. Students who are undecided as to major should explore curriculum options with an Open Option advisor in the College of Arts and Sciences.

While the Association of American Law Schools does not prescribe a particular pre-law curriculum, it emphasizes 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 early in their undergraduate career. Additional information about pre-law can be found on the pre-law website at www.ksu.edu/artsci/prelaw/.

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 clinical laboratory science (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 care. 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), Excelsior College Exams, DANTES, high school International Baccalaureate, and the College Board High School Advanced Placement Testing Program (AP). Local examinations (quiz outs) 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.

www.k-state.edu/admit/requirements.html
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. Credit earned by special examination is considered resident credit.

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 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

Donald E. Foster, University Registrar
118 Anderson Hall
785-532-6254

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 enrollment 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 enrollment 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 he or she 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 in 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 course. 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, secondary major, or minor. Courses that are specified by name or number and courses that meet general distribution requirements, courses required to meet UGE requirements, and courses to be applied in a secondary major or minor are not considered free electives.

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 other grades are given for such courses and they are not figured into the grade point average.

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 examinations missed may be made up.

Withdrawal From the University

A student who withdraws from the university must complete a notice of withdrawal form; contact the appropriate dean’s office.

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.

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.

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

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. Final examinations for summer semester courses occur during the last week of each course at the course time and location.

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 submission 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.

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 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 no return 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

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 allowing bonds to be issued to support the expansion of the Recreation Complex. This bond issue is to be retired by the continuation of part of the previously assessed fee for the retirement of the original construction bond indebtedness.

Bramlage Coliseum repair and replacement fee

1992 student legislation provided for the continuation of a portion of the debt retirement fee previously assessed for the Bramlage Coliseum bonds following their retirement in May of 1993.

Library 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 Recreation Complex (equipment, interior upkeep, supplies, etc.).

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. A current comprehensive fee schedule can be found on the Controller’s Office website (www.ksu.edu/controller) under “cashiers” and “tuition and fee schedule.”

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>$ 77.75c</td>
<td>$308.65</td>
</tr>
<tr>
<td>Veterinary medicine (per credit hour)</td>
<td>$177.10e</td>
<td>$609.60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Campus privilege fee rates</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1st hour</td>
<td>$ 64.00</td>
<td></td>
</tr>
<tr>
<td>2nd thru 12th hour</td>
<td>$ 17.00 per hour</td>
<td></td>
</tr>
<tr>
<td>Maximum fee for 12 hours or more</td>
<td>$ 251.00 total</td>
<td></td>
</tr>
</tbody>
</table>

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 for undergraduate student taking 15 credit hours $1,417.25 $ 4,880.75

Total for veterinary medicine student enrolled in 20 credit hours $3,793.00 $12,443.00

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>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Campus privilege fee rates</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1st hour</td>
<td>$ 32.00</td>
<td></td>
</tr>
<tr>
<td>2nd through 6th hour</td>
<td>$ 13.50 per hour</td>
<td></td>
</tr>
<tr>
<td>Maximum fee for 6 hours or more</td>
<td>$ 99.50 total</td>
<td></td>
</tr>
</tbody>
</table>

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.

a Students enrolled in a spring semester but not attending summer semester, 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 semester 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.

c Employees (as defined in the Eligibility for Resident Tuition section) are assessed the resident tuition.

d Summer semester campus privilege fees are not applicable to students enrolled in formally organized classes actually conducted at off-campus locations.
Tuition and Fees

Off-campus courses
(based on course level, subject to change without notice.)

<table>
<thead>
<tr>
<th></th>
<th>Credit</th>
<th>Resident</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>per credit hour</td>
<td>$90.00</td>
<td>$321.00</td>
</tr>
<tr>
<td>Veterinary</td>
<td>per credit hour</td>
<td>189.00</td>
<td>622.00</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)
Campus privilege fees per day $1.00*

*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></th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>For first-time admission</td>
<td>$25.00</td>
</tr>
<tr>
<td>For international students</td>
<td>50.00</td>
</tr>
<tr>
<td>For admission to Undergraduate Degree Completion Program</td>
<td>30.00</td>
</tr>
</tbody>
</table>

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

Engineering equipment fee
Undergraduate and graduate students $14.00 per credit hour enrolled in engineering courses

Field camps
(subject to change without notice)

Summer field camps in geology, archeology Vary to correspond to direct costs.
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
Kansas Open Records Act fee
As filed with the Kansas Department of Administration
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
Electronic enrollment access fee
$4 per semester

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>Item</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment fees for an undergraduate Kansas resident—Manhattan campus 14 hours</td>
<td>$1,340</td>
</tr>
<tr>
<td>Books and supplies, approximately</td>
<td>359</td>
</tr>
<tr>
<td>Room and board in university housing (20-meal plan)</td>
<td>2,406</td>
</tr>
<tr>
<td>Clothing, laundry, postage, travel, extra meals, phone, social activities (varies with the individual)</td>
<td>1,477</td>
</tr>
<tr>
<td><strong>Total estimated expenses (half of academic year)</strong></td>
<td><strong>$5,582</strong></td>
</tr>
</tbody>
</table>

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.
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>Tuition (based on student classification)</th>
<th>Resident</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate (per credit hour)</td>
<td>$ 68.75</td>
<td>$251.70</td>
</tr>
</tbody>
</table>

Campus privilege fees

| 1st hour through 11 hours | 14.66a |
| Maximum for 12 or more hours | 175.92a |

Summer semester
(subject to change without notice)

<table>
<thead>
<tr>
<th>Tuition</th>
<th>Resident</th>
<th>Non-resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate (per credit hour)</td>
<td>$68.75</td>
<td>$251.70</td>
</tr>
</tbody>
</table>

Campus privilege fees

| 1st hour through 6 hours | 14.66a |
| Maximum for 6 or more hours | 87.96a |

*Credit 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>$ 48.00</td>
<td>$ 73.00</td>
</tr>
<tr>
<td>Cessna 172 Skyhawk</td>
<td>68.00</td>
<td>93.00</td>
</tr>
<tr>
<td>Beechcraft BE-23 Sundowner</td>
<td>68.00</td>
<td>93.00</td>
</tr>
<tr>
<td>Beechcraft BE-33A Bonanza</td>
<td>133.00</td>
<td>158.00</td>
</tr>
<tr>
<td>Beechcraft BE-58 Baron</td>
<td>249.00</td>
<td>274.00</td>
</tr>
<tr>
<td>Beechcraft BE-90 King Air</td>
<td>484.00</td>
<td>534.00 *</td>
</tr>
<tr>
<td>Cessna Citation Jet</td>
<td>n/a</td>
<td>75.00 **</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      |

Flight instructor (cost included in aircraft dual/hour rates)

| One-on-one flight instruction | per hour | 25.00 |
| Cessna Citation Jet | 75.00 ** |

*King Air dual instruction rates on transportation flights cap at three hours ($150).

**The Citation Jet is only available for dual instruction on transportation flights; rates cap at three hours ($225).

Other fees

International student matriculation (non-refundable) | 45.00

Off-campus credit courses

Workshops, conferences, and seminars; when announced (per credit hour) | 82.00

A & P program only (per credit hour) | 93.00

Course charge

An additional charge maybe made to correspond with the actual cost of providing goods and services which are an integral part of a course bearing academic credit.

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 and 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 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.

Refund Policy

This policy is subject to change without notice. The following information 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.
## Degrees

### 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) 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
- (E) Clinical laboratory science (medical technology), B.A. or B.S.
- (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) 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
- (F) Marketing
- (F) Management information systems
- (E) General business

### Certificate

- (A) Study of arts and sciences through primary texts

### College of 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

### 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**
- (F) Nutritional sciences (pre-medical)
- (C or F) Nutrition and exercise sciences
- (C) Public health nutrition
- (C or F) Athletic training program (nondegree)

**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) College of Veterinary Medicine
  - Family and consumer economics
  - Family life and community services
  - Life span human development
  - Family studies and human services and social work

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

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

B.S. in interior design
(C) Interior design

College of Technology and Aviation
Associate of applied science
(E) Applied business

Associate of science
(F) Applied business

Associate of technology
(E) Aviation maintenance
(F) Civil engineering technology
(E) Computer science technology
(F) Construction engineering technology
(F) Electronic engineering technology
(F) Mechanical engineering technology
(E) Professional pilot
(F) Web development 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 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.)

Suggested College Preparation in Math

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

(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, Secondary Majors, and Certificates

Minors
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
- Contemporary citizenship in agriculture
- Entomology
- Feed science and management
- Food science
- Horticulture
- International agriculture
- 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
- Physics
- Political science
- Rhetoric/communication
- Statistics
- Theatre
- Women’s studies

College of Business Administration
- Business

College of Education
- Leadership studies

College of Engineering
- Computer science
- Digital systems
- Embedded systems (computer engineering)
- 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
- International studies
- Latin American studies
- Natural resources and environmental sciences
- Women’s studies

Certificate programs
- Aviation maintenance (airframe—power plant)
- Athletic training preparation
- International business
- Primary texts: study of arts and sciences

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.

UGE 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 in fall 1997 or later will be obligated to meet UGE requirements. Transfer students need to contact their departmental advisors and see the Transfer Admission section of this catalog.

Overview of requirements
Students must complete at least 18 hours of approved UGE courses, one-third of which must be at the 300-level or above.

The courses accepted for UGE credit will vary according to college and major. All students should consult with their advisors to determine which UGE 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. It is available at www.ksu.edu/courses/ on the web.
- More information about the UGE program is available at: www.ksu.edu/cat1/uge

Approved courses
In course descriptions, UGE courses are marked with a ♦. A list of currently offered UGE courses is available on the web at this address: 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 UGE 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 UGE 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 UGE requirements are concerned; these students must meet the UGE requirements for the curriculum they are entering.

UGE policy for double majors and dual degrees
A student must meet the UGE requirements for his/her primary degree/major. UGE requirements for additional degrees or majors are waived.
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 enrolled 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 may be used in fulfilling graduation requirements. Only the grades A, B, C, D, and F are used in calculating resident grade averages.

### 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 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:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
</tr>
<tr>
<td>D</td>
<td>1.0</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
</tr>
</tbody>
</table>

### 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 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 during the semester in question will not be dismissed. (Exception: A student who earns less than a 1.0 semester GPA in his or her first semester at K-State will be dismissed.)
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 2.200 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 registration withheld will receive a letter providing a contact person and information about reinstatement or enrollment procedures.

### 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:

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<td>greater than 105</td>
<td>2.00</td>
</tr>
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</table>

*Defined in item 1 above

6. Students who earn a K-State semester GPA of 2.200 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 registration withheld will receive a letter providing a contact person and information about reinstatement or enrollment procedures.
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 10 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 10 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>Men’s Glee Club (MUSIC 135, 408)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Women’s Glee Club (MUSIC 140, 409)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Instrumental Ensemble</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(MUSIC 117, 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 Collegian Journalism (MC 360)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>K-State Agriculturists (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>KSDB participation (MC 460)</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Men’s Athletics (ATHM)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Women’s Athletics (ATHW)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Extracurricular credit is also available with the K-State Dance Workshop (through Dance Production course)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Credits 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.

Student Records

University policy
Kansas State University maintains various student records, to document academic progress as well as to record interactions with university staff and officials. To protect the student’s rights to privacy, and to conform with federal law, the university has an established policy for handling student records. Interpretation of this policy is based on experience with educational records, and the policy itself may subsequently be modified in light of this experience. Notice of this policy and of students’ rights under the federal law is given annually. Copies of this policy are available at the Registrar’s Office, 118 Anderson Hall, and are published in the Undergraduate Catalog and in the Course Schedule.

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, enrollment status, 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, 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, Counseling Services, Lafene.
   h. Actions of academic standards committees: 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, Pittman Building.
l. 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
o. Foreign student records: Foreign student advisor, International Student Center.
p. Test scores for College Level Examination Program (CLEP), American College Testing Program (ACT), Miller Analogies Test MAT, etc.: director of academic assistance center, Holton Hall.

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 upon request and may obtain a copy of the record at cost, according to the following schedule.

   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: at cost.

   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 a statement to this effect to the official responsible 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 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 may 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 (American Express, 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 $3.50 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 student ID number.
3. Your date of birth.
4. Your beginning and ending dates of enrollment at K-State.
5. The number of transcripts you are requesting.
6. Where each transcript requested is to be sent (please provide an accurate and complete address). If separate sealed envelope is required for transcript, indicate in request.
7. $5 for each transcript requested.
8. Your original signature.
9. Your current home address and daytime telephone number.
10. Indicate if you want the transcript held up until current semester grades are posted and/or until your degree is posted.
11. Fax requests require an American Express, MasterCard, Visa, or Discover card number and expiration date.

**In person**

Come to the Registrar’s Office (118 Anderson Hall) in Manhattan or College Advancement (208 College Center) in Salina. You must have your K-State student ID or driver’s license for identification purposes.

No one else (including your spouse, parent, etc.) may pick up your transcript without your written permission. (If someone else is to pick up your transcript, identify by name the person who is authorized to obtain your transcript and include your original written signature.)

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**All-University Regulations**

**Student Conduct**

**Philosophy of student conduct**

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

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

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

**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. Forgering, 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, 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 faculty, staff, or law enforcement officers acting in performance of their duties or failure to identify oneself to these persons when requested to do so.

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 a university-sponsored activity.

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 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.

22. Any illegal or unauthorized taking, selling, or distribution of class notes.

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 System
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 are 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 University Handbook: www.ksu.edu/uaec/ffbook. Information about these policies can also be found in the student life handbook section of the campus phone book.

For information about other policies go to www.ksu.edu/policies.

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 of the alleged violator.

Grievances involving change of grade (but not academic dishonesty)

a. All efforts will be made by the student and instructor involved to settle grade disputes. Grade appeals must be initiated within six months following the issue date of the grade in question.
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 the Office of Affirmative Action 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.

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 Office of Affirmative Action. Students with complaints of harassment by other students should contact the Women’s Center, Office of Student Life, or the Office of Affirmative Action. 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 Office of Affirmative Action.

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.
Sexual violence

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

Community Principles

Principles of community

Kansas State University is a land-grant, public research university, committed to teaching and learning, research, and service to the people of Kansas, the nation, and the world. Our collective mission is best accomplished when every member of the university community acknowledges and practices the following principles:

We affirm the inherent dignity and value of every person and strive to maintain an atmosphere of justice based on respect for each other.

We affirm the right of each person to freely express thoughts and opinions in a spirit of civility and decency. We believe that diversity of views enriches our learning environment and we promote open expression within a climate of courtesy, sensitivity, and mutual respect.

We affirm the value of human diversity for community. We confront and reject all forms of prejudice and discrimination, including those based on race, ethnicity, gender, age, disability, sexual orientation, religious or political beliefs, economic status, or any other differences that have led to misunderstandings, hostility, and injustice.

We acknowledge that we are a part of the larger Kansas community and that we have an obligation to be engaged in a positive way with our civic partners.

We recognize our individual obligations to the university community and to the principles that sustain it. We will each strive to contribute to a positive spirit that affirms learning and growth for all members of the community.

Campaign for nonviolence

www.ksu.edu/nonviolence

This campaign works to apply the principles of active nonviolence to problems associated with discrimination, harassment, violence, and other abuses of power.
Student Financial Assistance

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

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

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

Programs

Scholarships
Each year nearly 4,000 Kansas State University undergraduate students receive more than $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 semester, or have been enrolled in at least 6 resident semester credit hours at K-State during the preceding spring semester.

Services for veterans
The university maintains a veterans’ service to aid veterans 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 veteran’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 semester 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 scheduled (full-time aid)</th>
<th>Minimum hours to be successfully completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 hours</td>
<td>9 hours</td>
</tr>
<tr>
<td>9 hours scheduled (3/4-time aid)</td>
<td>7 hours</td>
</tr>
<tr>
<td>6 hours scheduled (1/2-time aid)</td>
<td>4 hours</td>
</tr>
</tbody>
</table>

Graduate requirements per semester

<table>
<thead>
<tr>
<th>Hours scheduled (full time)</th>
<th>Minimum hours to be successfully completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 hours</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 Admissions 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 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) and the DANTES Program. 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 and DANTES 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 (PLT, PPST)
- Scholastic Aptitude Test (SAT)
- Test of Spoken English (TSE)
- Veterinary College Admission Test (VCAT)

Academic and Career Information Center

Michelle Haupt, 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/counseling/aodes.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

**Clovia**  
1200 Pioneer Lane  
Manhattan, Kansas 66502  
785-539-3575

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 Chairman, 1200 Pioneer Lane, Manhattan, Kansas 66502, 785-395-4500.

**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.

### Counseling Services

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

Counseling Services is open 8 a.m. to 5 p.m. weekdays.

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.

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 Counseling Services.

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

### Disability Support Services

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

Disability Support 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 students with mobility impairments upon request. Priority enrollment is available to 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, 4-track tape recorder, 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
Holton 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.

Greek Affairs

Barb Robel, Advisor
Holton Hall
785-532-5546
E-mail: greekaffairs@ksu.edu
www.ksugreekaffairs.com

Sororities

Booklets describing sororities and setting forth the provisions regulating selection of new members are provided to all prospective freshmen and interested upperclass-women by Panhellenic Council.

House bills in sororities will average approximately $1,900 a semester. This includes room, board, and sorority dues. Freshman members, however, live in residence halls and pay sorority dues of approximately $100 a month.

The following national sororities have established chapters at K-State: Alpha Chi Omega, Alpha Delta Pi, 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.

Freshmen 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 $1,900 a semester.

The following national fraternities are established at K-State: Acacia, 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 Phi, Pi Kappa Alpha, Pi Kappa Phi, Sigma Alpha Epsilon, Sigma Chi, Sigma Lambda Beta, Sigma Nu, Sigma Phi Epsilon, Tau Kappa Epsilon, 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@k-state.edu
www.k-state.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 provides students with a sense of belonging and an avenue for involvement. Research indicates academic achievement is enhanced by involvement. Students who choose a community-based living group are provided many opportunities for interaction with other students and university staff.

Furthermore, the opportunity to participate in organized social, athletic, and educational events contributes to career success.

K-State provides on-campus residence hall living for approximately 3,800 students and 528 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 and leadership 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.

The academic-year contract is issued to the student following receipt of a residence hall application and $25 nonrefundable application fee for full 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 semester or a monthly payment plan.

Smurthwaite Leadership/Scholarship House

The Smurthwaite Leadership/Scholarship House is a unique program for women 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. Since 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, cultural, and social 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, as well as plan larger all-hall events.
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 rate includes gas, water, and trash. A deposit equivalent to one month’s rent is required. There is a $25 nonrefundable application fee due at the time of application. Assignments are made on a first-come, first-serve basis, and early application is recommended.

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, reading lounge, and the Barbara Wilson Children’s Room.

The Taiwan Wing houses the ISC staff. The staff provides administrative services required for international students and scholars by their home countries and the United States Immigration and Naturalization Service. Staff members act as the university’s primary resource for international student programs and provide leadership and support for a variety of programs that promote global awareness and understanding.

The Korean 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.

K-State Student Union
Bernard J. Pitts, Executive Director
785-532-6591
www.union.ksu.edu

Since 1956 the K-State Student Union has served the university with a variety of social, recreational, educational, and cultural activities. Its programs and services, supported by student fees and generated revenue, provide students, faculty, staff, alumni, university departments, and friends of the university with an exciting hub of campus life.

The facility features the official K-State Bookstore; a large food court with additional dining alternatives throughout the Union; an art gallery; full-service bank and ATMs; a copy center; computer store; Cats’ Den convenience store; lounges; two auditoriums; K-State ID Center; a recreation area with auto-score bowling, billiards, and pro shop; and much more.

Union Program Council is the student volunteer program arm of the Union. UPC sponsors more than 400 programs a year to enrich the extracurricular, out-of-classroom experience for all students.

The Union Governing Board—comprised of students, faculty, and staff members—establishes building policy and provides direction under which the Union operates.

The Office of Student Activities and Services can be found on the ground level of the Union.

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.

International students from countries with a high incidence of tuberculosis and others who have spent more than four months in such a country are required by university policy to be skin tested for tuberculosis prior to enrolling at K-State.
Multicultural Programs and Services

224 Anderson Hall
785-532-6536
E-mail: mso@ksu.edu

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 Association (NASA), United Black Voices (UBV), 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
Emily Lehning, Assistant Director
122 Anderson Hall
785-532-6318
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.

Office of Student Life

Pat J. Bosco, Associate Vice President for Institutional Advancement and Dean of Student Life
122 Anderson Hall
785-532-6237

Scott Jones, Interim Director and Assistant Dean of Student Life
102 Holton Hall
785-532-6432

Chris Christensen, Interim Assistant Director
Nancy Bolsen, Interim Assistant Director
785-532-6432

E-mail: studentlife@ksu.edu
www.ksu.edu/studentlife

Student life services, including Admissions, Student Financial Assistance, Greek Affairs, Housing, K-State Student Union, New Student Services, Recreational Services, Registrar, and the Office of Student Life, 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.

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 award-winning 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; climbing wall; 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 50 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.

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.

Student Activities and Services

Gayle Spencer, Coordinator
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 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/sga

The purpose of the Student Governing Association is to help students voice concerns, suggestions, or grievances. Every student is a member of SGA and is represented by 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 six standing committees: academic affairs/university relations, allocations, 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.

Upward Bound and Other Youth Programs

Reginland McGowan, Assistant Vice President for Educational and Personal Development Programs
201 Holton Hall
785-532-5399
E-mail: reggiem@ksu.edu

Upward Bound
532-6497 or 532-6374 (math and science program)
Upward Bound provides academic and personal counseling and guidance to disadvantaged high school students from Pottawatomie, Riley, and Geary counties. Upward Bound Math and Science serves students from Topeka and Salina. Each program motivates students with academic potential and prepares them for postsecondary education. Emphasis is on academics, social, cultural, and vocational activities and experiences during the school year and a summer campus residential program.

Gear Up
532-5380 (Gear Up I) or 532-3658 (Gear Up II)
Gear Up I and II provide academic support to encourage and motivate youth to successfully complete secondary and postsecondary education. The target school is Junction City Middle School.

Earl Woods National Youth Golf Academy/The First Tee
532-5399

This nonprofit organization serves underrepresented youth by providing accessibility to the game of golf. Students (ages 6 to 17) from the Manhattan and Junction City areas, including the Upward Bound and Gear Up programs along with a weeklong National First Tee Academy, are given instructions in golf, life skills, and leadership.

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 an online newsletter, Women’s Circle.

The center is a founding member of the K-State Campaign for Nonviolence (www.ksu.edu/nonviolence) and provides leadership on mutual projects.
**Auxiliary Services and Facilities**

**Affirmative Action**

Clyde Howard, Director  
214 Anderson Hall  
785-532-6220  
E-mail: affect@ksu.edu  
www.ksu.edu/affect  
The Office of Affirmative Action is available to students on matters of equal opportunity in admissions, access to programs and activities, and employment due 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  
K-State Alumni Association  
1720 Anderson  
785-532-6260  
E-mail: alumni@ksu.edu  
www.k-state.com  
The Kansas State University Alumni Association is a 38,000-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 200,000 alumni and friends, publication of the K-Staters, sponsorship of alumni gatherings, Homecoming, and class reunions.

**Child Care**

**KSU Child Development Center**  
Barbara Ferguson, Director  
1948 Jardine Drive, Building L-9  
785-532-3700  
E-mail: kscdcd@ksu.edu  
The KSU Child Development Center is a non-profit 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 21/2), preschoolers (ages 2 1/2 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 regular 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 DeLuccie, Director of Early Childhood Programs  
Justin Hall  
785-532-5510  
Fax: 785-532-5505  
E-mail: fshs@ksu.edu  
The school operates early childhood programs for children aged 6 weeks through five years at the Stone House Ruth Hoeflin Early Childhood Education Center and C.Q. and Georgia Chandler III Institute for Child and Family Studies on N. Manhattan Ave. Enrollment in the programs is open to members of the K-State and Manhattan communities. The facility is licensed by the state of Kansas. The Early Childhood Center consists of two classrooms and provides full day care and education for 30 children ranging in age from 18 months to five years of age. Priority in enrollment is given to children of parents working full time.

The Early Childhood Laboratory hosts an interagency program with USD 383. The facility integrates children who have disabilities with nonhandicapped children. Forty-eight children, ranging in age from 3 to 5 years, are enrolled in this part-day preschool program.

The Infant-Toddler Early Learning Center provides full day care and education services to eight eligible children, aged 6 weeks to three years. Children are enrolled through the Riley County Early Head Start/Family Connections program.

The learning environments and planned activities 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  
Computing Labs and InfoCommons  
More than 400 PCs, plus printing facilities and Unix workstations, are available in Hale Library and 24 hours a day in the university computing labs. The labs may be freely used by students and employees. Labs provide access to electronic information resources and software programs, including e-mail, Internet/web access, word processing, spreadsheet, databases, statistical analysis, multimedia creation, and programming languages.

**Campus network**  
CNS maintains the university’s fiber-optic data network that connects all K-State buildings. It links to K-State’s central computer systems, many departmental computers, the university’s website, and Internet and Internet2.

**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 website plus personal pages), Unix accounts, administrative systems, and many other services and electronic information resources.

**Electronic information resources**  
Information resources online at K-State include KATS for student services; the library catalogue system; the K-State Digital Library; K-State Online for web-based courses; course information at courses.ksu.edu; and an anti-virus site at antivirus.ksu.edu.
Central LANs
CNS provides local area network servers running Novell Netware and Microsoft NT/2000 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 technology classrooms.

K-State website
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 KATS, K-State Online, and library systems.

Family Center
Stephan R. Bollman, Director
Nancy T. O’Conner, 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/fshs_fc.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.

For more than half a century, the Kansas State University Foundation has supported the teaching, research, and public service mission of K-State. Gifts received through the foundation fund undergraduate and graduate student scholarships, establish faculty chairs and professorships, provide departmental support, and enhance the campus infrastructure.

Private support infuses life into virtually all academic and support programs. Since 1986 K-State has added nearly 1.6 million square feet in new buildings and additions to buildings. Although the state provided partial funding for these projects, they would not have been possible without additional private support.

The Kansas State University Foundation was established in 1944 as the official fundraising arm of the university. Its mission is to encourage private support for the university’s benefactors. It is a separate, independent organization chartered by the state of Kansas as a 501C(3) non-profit educational corporation. Gifts to the foundation are tax deductible.

The foundation is responsible for the administration of more than 4,000 fund accounts and the processing of more than 78,000 gifts annually. A 175-member volunteer board of trustees and a 15-member executive committee formulates policy for the foundation.

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
785-532-7400
www.lib.ksu.edu
Kansas State University libraries provide support for the educational, research, extension, and public service 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 is available to K-State students.

The reference unit, located on the second floor of Hale Library, provides 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 Dow Multicultural Resource Center provides research and instructional services to support K-State’s multicultural curricula, programs, organizations, and ethnically diverse student populations.

Hale Library maintains more than 200 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 34 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; weighs, 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.

Speech and Hearing Center

Julie Schraeder–Neidenthal
Director of Clinical Services
107 Leasure Hall
785-532-6879, 785-532-6873
E-mail: schraede@humec.ksu.edu
www.ksu.edu/humec/fshs/fshs.htm

The Speech and Hearing Center provides evaluation, intervention, and consultation services to university students with articulation, fluency, voice, language, or hearing impairments. These clinical services are also available to children and adults of the surrounding communities. The center provides educational and clinical experiences for students preparing for careers in speech-language pathology and audiology.

Student Publications

Ron Johnson, Director
103 Kedzie Hall
785-532-6555
www.kstatecollegian.com

K-State students of all majors produce the Kansas State Collegian daily newspaper and Royal Purple yearbook—the nation’s most honored tandem of collegiate publications.

Student journalists produce and select all content in the Collegian and Royal Purple. Their experience as reporters, photojournalists, designers, graphics journalists, illustrators, copy editors, and editors launches them into internships and careers across the nation.

Student Publications, Inc., is an independent local agency that publishes the newspaper, yearbook, and campus telephone book. Its board of directors hires editors in chief and supervises finances, but content decisions rest with the student staffs of the publications. Both the newspaper and yearbook have faculty advisors who also teach in the A.Q. Miller School of Journalism and Mass Communications.

Royal Purple staffs are hired annually. Collegian staffs are hired by semester. Staff applications are available in 103 Kedzie Hall, with applications due in early November and early April for subsequent terms.

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.

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 and cable TV 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
E-mail: upress@ku.edu
www.kansaspress.ku.edu

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

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

a304 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. Michie, Director
Elfrieda Nafziger, Coordinator of Travel Seminars
Crissan Zeigler, International Education Advisor
304 Fairchild Hall
785-532-5990
Fax: 785-532-6550
E-mail: sikarraj@ksu.edu
www.ksu.edu/oip/study_abrd

The Study Abroad Program offers a variety of international group travel seminars 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 as Council for International Educational Exchange (CIEE) and Semester-at-Sea.

K-State also offers students a variety of credit and noncredit learning opportunities abroad through travel seminars 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 Spain, and travel seminars to Europe, Asia, Africa, and Latin America. The coordinator of group study abroad assists faculty to develop 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
- Jim Hohenbary
785-532-6904

- Fulbright
Walter Kolonosky
785-532-6760

- Modern languages (majors only)
Robert Corum
785-532-6760

- Blue Key
102 Holton Hall
785-532-6432

- Rotary Ambassadoral Scholarship
Larry Erpelding
785-532-6151
Steven Graham
785-532-5729

- Rotary World Peace Scholarship
William Richter
785-532-5990

- Barton–Dobenin Study Abroad Fellowship
College of Business Administration (majors only)
785-532-6190

- 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
E-mail: elp@ksu.edu
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 four 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 or ENGL 078 Oral Communication for International Students.

For other information and a brochure, write or e-mail the English Language Program at the addresses above.

International and Area Studies Programs

Students seeking to enrich their college experience and enhance their personal and professional development may take advantage of several interdisciplinary international education opportunities.

College of Agriculture
Larry Erpelding
785-532-6151
E-mail: lhe@ksu.edu
A minor in international agriculture is available to students with agricultural majors. The minor requires a combination of language, international course work, and experience abroad.

College of Arts and Sciences
Bradley Shaw, Director
International and Area Studies
215 Eisenhower Hall
785-532-1988
Fax: 785-532-7004
E-mail: ias@ksu.edu
www.ksu.edu/ias

The College of Arts and Sciences offers two secondary majors to undergraduates in any discipline: international studies and Latin American Studies. For more information, see the Secondary Majors section of this catalog.

College of Business Administration
Student Services
107 Calvin Hall
785-532-6180
www.cba.ksu.edu/cba

Training in global business operations ensures that students are prepared to meet future challenges in the global marketplace. This can be accomplished through the certificate in international business or the international studies program in the College of Arts and Sciences.

International Community Service Program
Carol Gould, Director
785-532-5701
E-mail: ksuserve@ksu.edu
Fax: 785-532-0671
Edwards Hall
Carol Gould, Director

Since 1990 the K-State Community Service Program has placed teams of students abroad to work on service projects for the benefit of their host communities. Past project countries have included Costa Rica, Dominican Republic, Paraguay, Mexico, El Salvador, Jordan, and India. Projects are normally 8 to 10 weeks during the summer. Participants are chosen in the fall semester prior to the project and enroll in a preparatory course during spring semester. The Community Service Program also has summer service projects in Kansas communities, many of which include international participants.

International Development Programs

The Office of International Agricultural Programs, the International Grains Program, the International Meat and Livestock Program, and other units maintain projects abroad, provide short-term consultants, and provide short-course 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. Gould, Director
785-532-5701
International Grains Program
Brendan Donnelly, 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
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/


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 multiethnic, 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 or minor 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

AMETH 160 Introduction to American Ethnic Studies ............................................. 3
ATH 200 Introduction to Cultural Anthropology ............................................. 3
or ANTH 210

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 ............................................. 9
B. Background/ancestral cultures of category A ..................................... 3
C. Any United States ethnic group or the ancestral culture of a United States ethnic group .................................................................................. 3

Capstone course

AMETH 499 Senior Research Project in American Ethnic Studies .................. 3

Total credits required .................................................................................. 24

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

AMETH 160 Introduction to American Ethnic Studies ............................................. 3
ATH 200 Introduction to Cultural Anthropology ............................................. 3
or ANTH 210

3 American ethnic studies electives in category A ....................................... 9
as described in the catalog and the AMETH handbook

Total credits ............................................................................................. 15

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. 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

A. African American, Asian American, Hispanic American, and Native American

General

EDCEP 886 Multicultural Counseling
EDCIP 455 Teaching in a Multi-Cultural Society
EDCIP 733 Curriculum Materials for Ethnic Diversity
EDCIP 736 Education of the Disadvantaged
ENGL 655 Readings in American Ethnic Literature
MC 530 Media, Race, and Social Change
PSYCH 557 Psychology of Ethnic Humor
SOCI 570 Race and Ethnic Relations in the U.S.
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
FHSH 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
SPCH 450 Female Slave Rhetoric

Asian American

ANTH 524 Topics: New Immigrants

Hispanic/Latino American in the U.S.

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

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
C. Any United States ethnic groups and the ancestral cultures of those groups (all the courses listed under categories A and B, along with the following)

General
ANTH 220 Introduction to Linguistic Anthropology
ANTH 516 Ethnomuscoscopy
ANTH 519 Applied Anthropology
ANTH 676 Old World Archaeology
ANTH 685 Race and Culture
BIOL 320 Economic Botany
ENGL 580 Selected World Literature
GEOG 100 World Regional Geography
GEOG 460 Geography of Europe
HIST 582 Modern Eastern Europe
KIN/
SOCIO 435 Sport in Contemporary Society
POLSC 629 Development Policy and Administration
PSYCH 335 Social Psychology
SOCIO/
SOCWK 510 Social Welfare as a Social Institution
SOCIO 541 Wealth, Power, and Privilege
SOCIO 840 Comparative Social Systems

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 652 International Politics of South Asia
SOCIO 742 Society and Change in South Asia

French
FREN 510 Modern French Culture
FREN 514 French Civilization

German
GRMN 530 German Civilization

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 591 History of Russia to 1801
POLSC 627 Eastern and Central European Politics
POLSC 630 Politics of Russia and Former Soviet Lands

University general education credit.

Credit and content
All courses regularly offered for American ethnic studies credit have at least 40 percent of 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

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 completion of the secondary major in gerontology, ACCTG 231 Accounting for Business Operations’, 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 on Aging. When planning, the emphasis can be completed within 24 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 315. Introduction to Gerontology. (3) I. 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 related to contemporary American society. Pr.: None.

GERON 600. Seminar in Gerontology. (3) II. An interdisciplinary course organized topically, with students presenting papers on aging-related issues that draw upon the students’ previous and concurrent academic experience. Provides supervised independent study and subsequent discussion, allowing students to integrate and order their perspectives on gerontological issues. Pr.: Completion of 15 hours of course work in gerontology.

GERON 665. Practicum in Gerontology. (3) I, II, S. Supervised field experience in an aging-related setting as a practical application of gerontological knowledge and skills. Pr.: Consent of instructor.

GERON 610. Seminar in Long-Term Care Administration. (3) (Offered January intersession only). Administration principles involved in the planning, organizing, and directing of long-term care agencies. Includes an in-depth exposure to federal and state standards and regulations governing long-term care.

GERON 615/DHE 615. Long-Term Care Administration Internship. (6) Includes: (a) field experience in the general administration of long-term care programs and/or facilities: planning, budgeting, program management, and service delivery; (b) exposure to federal and state standards and regulations governing long-term care; and (c) professional leadership development. Pr.: Junior standing, 15 hours of gerontology, MANGT 420, ACCTG 231, GERON 610, and GPA of 2.5 or above (3.0 or above in long-term course administration coursework).

GERON 620. Problems in Gerontology. (1–3) Independent study of selected problems. Pr.: Background of courses required for problem undertaken and consent of instructor.

Departmental course electives
See the appropriate college sections of this catalog for further description.

College of Agriculture
Horticulture
HORT 525 Horticulture for Special Populations ....... 3

College of Architecture, Planning, and Design
Architecture
ARCH 730 Environment and Aging ................. 3
ARCH 740 Building Related Health and Safety* .... 3

Interior architecture
IAR 730 Facility Management ............................. 3

Landscape architecture/regional and community planning
PLAN 515 Introduction to Planning ................. 3
PLAN 715 Planning Principles ......................... 3
PLAN 761 Community Development Workshop .... 3

College of Arts and Sciences
Biology
BIOL 310 Bioethics ...................................... 3
BIOL 404 The Biology of Aging ........................ 3

History
HIST 520 Death and Dying in History .............. 3
HIST 534 Social History of American Medicine .... 3

Kinesiology
KIN 335 Physiology of Exercise ..................... 4
KIN 520 Practicum in Exercise Science .......... 3
KIN 796 Topics in Physical Education ............. 3

Philosophy
PHILO 100 Introduction to Philosophical Problems* ........................................ 3
PHILO 365 Medical Ethics ............................. 3

Psychology
PSYCH 518 Introduction to Health Psychology .... 3
PSYCH 520 Life-Span Personality Development .... 3

Social work
SOCWK 563 Social Work Professional Seminar .... 3

Sociology
SOCIO 535 Population Dynamics ................... 3

Speech
THTRE 253 Multicultural Storytelling* .......... 3
THTRE 563 Storytelling* ............................. 3
THTRE 665 Drama Therapy for Special Populations .... 3
THTRE 760 Principles of Drama Therapy ....... 4
College of Business Administration

Accounting

*ACCTG 231 Accounting for Business Operations .................................. 3

Finance

FINAN 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

Apparel, textiles, and interior design

IDH 651 Designing Supportive Environments .................................. 3
*IDH 710 Housing/Facility Management ........................................... 3
IDH 725 Community Housing Needs ........................................... 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
Management .................................................. 3
FSHS 708 Topics in Family Studies and Human Services
Management .................................................. 2-3
FSHS 770 Economics of Aging .................................................. 3
FSHS 845 Adult Development and Aging ........................................... 3

Gerontology

GERON 315 Introduction to Gerontology ........................................... 3
GERON 600 Seminar in Gerontology ........................................... 3
GERON 605 Practicum in Gerontology ........................................... 3
GERON 610 Seminar in Long-Term Care Administration
Management .................................................. 3
GERON 615 Long-Term Care Administration Internship
Management .................................................. 3
GERON 620 Problems in Gerontology ........................................... 3

Hotel, restaurant, institution, management and dietetics

HRIMD 475 Field Experience in Hospitality Management
Management .................................................. 4

Human nutrition

•FN 132 Basic Nutrition .................................................. 3
FN 352 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

*Required for long-term care administration emphasis, but no credit as gerontology elective in secondary major.
*Required for long-term care administration emphasis.
*Center on Aging approval required for gerontology credit.
*Project approval from Center on Aging required.
*Credit as long-term care administration elective only.
*University general education credit.

Industrial and Labor Relations

Clive Fullagar, Psychology
469 Blummont Hall
785-532-6850

www.cba.ksu.edu/cba/underg/indlabor.htm

The secondary major in industrial and labor relations is a 24-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.

Four 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 (12 hours)

• ECON 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 537 Industrial Conflict Resolution ........................................... 3
PSYCH 564 Psychology of Organizations ........................................... 3
SOCIO 546 Bureaucracy in Modern Societies ...................................... 3

III. Group electives

Select two courses total from two different groups.

Group A

MANGT 531 Personnel and Human Resources
Management .................................................. 3
MANGT 639 Advanced Labor Relations ........................................... 3

Group B

• ECON 507 The Japanese Economy ........................................... 3
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

SOCIO 450 Introduction to Social Interaction ........................................... 3
SOCIO 570 Race and Ethnic Relations in the USA ...................................... 3
SOCIO 647 Sociology of Work .................................................. 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.

Requirement

I. Language requirements

Students must complete the equivalent of four semesters of a modern foreign language.

Students must also complete 24 hours of course work, distributed as follows:

II. Core

Geographic knowledge

GEOG 100 World Regional Geography

Cultural understanding

ANTH 200, 204, or 210 Introduction to Cultural Anthropology

International relations

At least one course with an asterisk in the approved course list found at www.ksu.edu/ias/foreignlang.htm.

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.

II. Electives

The remaining 12 hours may be taken from the approved course listing. No more than 6 elective hours may be applied from one single discipline, and no more than 6 hours may be counted toward both a secondary major in an area studies program and in international studies. 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 approved for the secondary major in international studies are found at www.ksu.edu/ias. The website listing is revised each semester as new courses are added and changed and others are removed from the curriculum.

Please note that other international studies courses are offered as “special studies,” "topics,“ “problems,” or “seminar” categories. Intersession offerings may sometimes be acceptable. Transfer credits from approved study abroad programs, or other institutions, may be accepted as part of the student’s program of study.

Elective offerings

Courses are generally available in the following fields:

Agriculture

Anthropology

Architecture, planning, and design

Art

Economics
be acceptable. Transfer credits from approved study abroad programs, or other institutions, may be accepted as part of a student’s program of study.

Requirements

I. Language requirement
Students must complete Spanish IV or its equivalent, or demonstrate more advanced competence in Spanish or Portuguese.

II. Area courses
Students must complete 21 hours of area courses, including Senior Research. Courses must be taken in a minimum of four departments, with no more than 9 hours in any one department.

Please see www.ksu.edu/ias/iascourses.htm for a current list of courses.

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. Many courses may simultaneously meet the student’s own college or major degree requirements. In this way, electives and required courses within a college curriculum may count toward the secondary major in Latin American studies.

Courses approved for the secondary major in Latin American studies are found at www.ksu.edu/ias. The website listing is revised each semester as new courses are added or changed and others are removed from the university curriculum.

Please note that other Latin American studies courses are offered as “special studies,” “topics,” “problems,” or “seminar” categories.” Intersession offerings may sometimes...

Natural Resources and Environmental Sciences

Charles Martin, Director
118 Seaton 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.

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

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.

ECON 110 Principles of Macroeconomics or ECON 120 Principles of Microeconomics

b. Two of the following basic NRES courses. These courses must be from different departments and total a minimum of 6 credits.

AGRON 305 Soils

AGRON 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

GEOG 105 Oceanography

GEOG 115 Environmental Geology

GEOG 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

AGRON 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

ENTOM 250 Insects and People

ENTOM 312 General Entomology
Women’s Studies

Jacqueline D. Spears, Director


E-mail: womst@ksu.edu
www.ksu.edu/womst

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 counseling, or pre-law. Women’s studies is also an excellent liberal arts concentration, forming a firm basis for graduate work in any 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, S. An interdisciplinary introduction to academic and community-based thinking about women’s lives: (1) how gender inequality in society restricts women’s development, limits their contributions to the dominant culture, and subjects women to systematic violence and (2) strategies with which women can gain power within existing institutions and develop new models of social relations. Particular attention will be paid to issues of race, ethnicity, and class.

WOMST 205. Gender, Ethnicity, and Class. (3) I. The diversity of women’s experiences, within the United States and in other countries. Using a framework that examines how gender is shaped within the contexts of ethnicity and class, students will be introduced to multicultural feminism through an active examination of history, literature, and social science.

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 examine how approaches to social change have influenced the First World women relate to women’s movements and organizations in the Third World. Pr.: ENGL 100 or 110.

WOMST 405. Senior Seminar in Women’s Studies. (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 410. Feminist Thought. (3) II. A survey of a variety of feminist analyses of society, culture, and work, as well as visions for social change. The historical development of key feminist theories, contemporary debates, and multicultural and global feminism will be analyzed.

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; and 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 510. The History and Politics of Family Violence. (3) Interseession. 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 nature 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.

Secondary Majors ▪ 49
WOMST 550. Women and Popular Culture. (3) II. Images of women in a variety of popular media forms: fiction, film, television, music (including MTV), magazines, advertising, and material culture. Women are explored as objects, consumers, and producers of popular culture. Material is drawn from a variety of disciplines, including psychology, sociology, history, literary criticism, and cultural studies. Pr.: WOMST 105 or at least 3 hours of women’s studies credit.

WOMST 560. Women and Violence. (3) I. The roots of male violence against women, cultural forms of sexual coercion and violence, and strategies for envisioning and enacting social change. Topics addressed include rape/sexual harassment. Pr.: WOMST 105 or at least 3 hours of women’s studies credit.

WOMST 580. Women and Religion. (3) I. How gender relations and women have been shaped by the development of religious ideologies and practices throughout the contemporary world, as well as in early class and pre-class societies. Construction of gender by religious institutions and feminist religious activities studied in relation to Christianity, Islam, Hinduism, Buddhism, traditional Native American faiths, and diverse forms of paganism. Pr.: WOMST 105 or at least 3 hours of women’s studies credit.

WOMST 590. Field Experience in Women’s Studies. (3) II. In even years. Includes field placement in campus or community organizations in order to explore different ways to promote women’s self-sufficiency and social equality. Concurrently, students will engage in academic readings and class sessions that address feminist approaches to social change, program design, and participatory action research. Pr.: WOMST 105 or at least 3 hours of women’s studies credit.

WOMST 700. Advanced Topics in Women’s Studies. (3–3) II. 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 disciplines and feminist approaches to social change, program design, and participatory action research. Pr.: WOMST 105 or at least 3 hours of women’s studies credit.

College of Arts and Sciences

Anthropology
ANTH 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 604 Expository Writing Workshop: Women’s Writing and Feminist Rhetoric
ENGL 655 Readings in American Ethnic 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 710 Studies in a Literary Genre: Gender, Gothic, and Horror in Literature and Film
ENGL 720 Shakespeare Comedy and Gender
ENGL 730 Restoration and 18th-Century Drama
ENGL 740 Feminist Literary Theory

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 European History
HIST 984 Topic: Gender in American History

Kinesiology
KIN 602 Gender Issues in Sport 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 Music by Women Composers

Philosophy
PHIL 135 Introduction to Social and Political Philosophy
PHIL 150 Introduction to Philosophy of Feminism
PHIL 525 Social Political Thought (when offered as Women in Western Thought)

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 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 630 Topics in Rhetoric and Communication (when offered as Feminism and Rhetoric) or Women and Political Campaign Communication

College of Education

Economic Status of Women
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
FHS 300 Problems in Family Studies and Human Services (when offered as The Mature Woman: Middle Age and Later Years)
FHS 350 Family Relationships and Gender Roles
FHS 600 Economic Status of Women
FHS 708 Topics in Family Studies and Human Services (when offered as The Legal Rights of Women)
FHS 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

Lawrence H. Erpelding, Associate Dean
Kevin J. Donnelly, Assistant Dean
Jackie McClaskey, Assistant Dean
117 Waters Hall
785-532-6151
www.ag.ksu.edu

The College of Agriculture offers 14 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. Colbert Hills Golf Course supports teaching and research related to the golf course management program. Greenhouses and field plots provide plants for horticulture and agronomy 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

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.

International study opportunities
The College of Agriculture supports various programs for international experiential learning through agricultural study tours, semester abroad programs, and summer internships in other countries. An international agriculture minor that requires completion of an international experience is available to agriculture majors. Students in all majors are encouraged to include foreign language and international culture and business courses in their curricula. International travel and study programs are coordinated by the assistant dean for international agricultural programs in 106D Waters Hall. Additional information on international agricultural programs is provided in the Outreach section of the catalog and at www.oznet.ksu.edu/dp_iap.

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 wish 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 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, landscape and turf management, 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.

Sciences/professional
A science/professional option prepares students for research and graduate and professional schools. This option allows students to structure programs strong in the basic sciences and/or other areas that will enhance success in graduate and professional schools such as law and veterinary medicine.

Additional options are available in certain curricula or majors to allow students to develop specific strengths or specializations.

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 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
AGCOM 410 Agricultural Student Magazine .................. 2
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 .................................. 2
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 542 Professional Selling and Sales Management ............ 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 ASI Lab .................................................. 1
MATH 100 College Algebra .................................. 3
Hort 256 Human Dimensions of Horticulture .............. 3
AGCOM 110 Introduction to Ag Communications ............ 1

Example II
GENAG 101 Ag Orientation .................................. 3
GENAG 101 Ag Orientation .................................. 1
CHM 110 General Chemistry ................................ 3
CHM 111 General Chemistry Lab ................................ 1
CHM 210 Chemistry I ........................................ 4
ENGL 100 Expository Writing I ................................. 3
GRSC 100 Principles of Milling ................................ 3

Example III
GENAG 101 Ag Orientation .................................. 3
ECON 110 Principles of Macroeconomics .................. 3
EDSEC 300 Introduction to Agricultural Education ...... 1
AGRON 220 Crop Science ..................................... 4
AGRON 220 Crop Science ..................................... 3
ASI 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; environmental communications; range management; and soil and water science.

A major in park management and conservation with options in law enforcement, park manager, administration, or interpretation 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.

Students may major in agricultural communications and journalism with an environmental option through the Department of Communications.

These programs provide training for individuals interested in interpretation and application of ecological principles to environmental problems involving natural resources. Each
The agribusiness complex of industries (processing, preservation, distribution, and retailing of farm-produced food, and manufacture 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 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 complete the requirements for both majors and earns 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 about requirements for those minors. Minors in both contemporary citizenship in agriculture and international agriculture are also available. Requirements are outlined in the General Agriculture section in this catalog.

Agriculture honors program
The College of Agriculture honors program enables capable students to expand their skills and stimulate their curiosity for continual learning. Students can explore a career area of interest through working closely with a faculty member on an honors project, attend professional meetings for research presentations, and have the potential for publication of the final paper in a student or professional research journal. Participants are recognized at the College of Agriculture awards ceremony and commencement, and a notation of honors program completion is included on the K-State diploma and transcript. Funding for honors project expenses and scholarships for selected participants are also available.

Students, on advice from faculty members, propose, prepare, and conduct an honors project of their choice. The intent of this activity is to provide the student with hands-on experience in the functioning of persons in academia and, therefore, must be of a creative nature. This project will be relevant to one or more of the missions of land grant institutions: research, extension, and/or instruction. The honors project is typically completed during the senior year. The supporting programs and courses taken during the freshman, sophomore, and junior years are designed to build toward the development and completion of a successful honors project.

Graduation with honors requires completion of an approved honors project and the reporting of that project in written and oral form in GENAG 515 Honors Presentation. The honors graduate must also complete a minimum of two upper-level courses (600 or above) in the student’s area of interest and have at least a 3.4 cumulative GPA. Membership in the honors program is by invitation and application.

Entering freshmen agriculture students with a 28 ACT (or equivalent SAT) or in the top 10 percent of their high school graduating class are invited to join the Freshman Honors Experience. Sophomores, juniors, seniors, or second-semester junior transfer students with a GPA of 3.5 or above are invited to associate membership. Full membership is attained following submission of an approved honors project proposal.

Freshmen Honors Experience (FHE)
Participants in the FHE will enroll in Ag Orientation (or Ag Econ/Agbusiness Orientation) for the fall semester and Introduction to the Honors Program in the spring. This course will introduce students to a variety of research and projects that are taking place at the university and industry. Participants will be required to attend the GENAG 515 presentations. Students in the FHE are considered part of the honors family and are welcome at all meetings and activities. Those who achieve a 3.5 GPA at the end of the freshman year will be invited for associate membership. Being in the FHE is not a prerequisite for completion of the honors program.

Associate membership
Students at this level will create, with a member of the honors faculty, an academic plan of action. Members must maintain an 3.4 GPA to remain in the program. If the GPA falls below this level, the student has one semester to raise it 3.4 before being dropped. During the sophomore and junior years, members will enroll in GENAG 495 Agriculture Honors Seminar for 0 or 1 credit each semester. Sequential special topics in GENAG 495 will include Current Research Issues in Agriculture, Research Methods, and Writing Proposals. Up to three total credits may be attained in GENAG 495.

Full membership
Full membership is attained by submission of the approved honors project proposal during the junior or senior year. Full members are eligible to compete for project funding and scholarships. They will also assist with teaching the Introduction to the Honors Program course for the FHE. During the final semester, members will enroll in GENAG 515 Honors Presentation for one credit. If additional aca-
demic credit is needed and warranted for the honors project, honors students may also enroll for up to 8 hours in a “special problems” course in the appropriate department.

Additional information on the program and examples of previous honors projects can be found at: www.ag.ksu.edu/honorsprogram/ag.htm. Students are also encouraged to contact their academic advisor, members of the Honors Faculty Advisory Committee, or the Student Honors Committee to learn more about the benefits of honors participation. Questions about membership and requirements should be directed to the College of Agriculture Academic Programs Office in 117 Waters Hall.

General Agriculture
Lawrence H. Erpelding, Associate Dean
Kevin J. Donnelly, Assistant Dean
Jackie McClaskey, Assistant Dean
www.ag.ksu.edu

Contemporary citizenship in agriculture minor
This minor assists students in building the knowledge that they need to serve as active citizens in society and to understand the way our agricultural industry, rural areas, and global communities interact now and in the future. The minor focuses on agricultural policy and issues while encompassing ethics, personal development, and societal relationships in order to better understand the correlation between agriculture and rural and urban communities at the local, state, national, and global levels. These topics will encourage the citizenship development needed to sustain and build agriculture in the future and will also enhance understanding of the effects of agriculture on society as a whole.

The minor requires the completion of 18 credit hours. The minor requires one foundation course, two ethical and societal relationships courses, and two policy and issues courses. In addition, GENAG 450 Citizenship and Ethics in Agriculture, a capstone course, is to be taken during the junior or senior year of the program of study.

Foundation courses (3–4 hrs)
AGEC 120 Agricultural Economics and Agribusiness
ASI 102 Principles of Animal Science
ASI 302 Introduction to Food Science
AGRON 220 Crop Science
FOR 375 Introduction to Natural Resource Management
HORT 201 Introductory Horticultural Science

Ethical and societal relationships (6 hrs)
ANTH 511 Cultural Ecology and Economy
ANTH 524 Immigrant America
BIOL 310 Bioethics
BIOL 303 Ecology of Environmental Problems
BIOL 433 Wildlife Conservation
ECON 527 Environmental Economics
ECON 681 International Trade

Policy and issues (6 hrs)
ASI 303 History and Attitudes of Animal Use
AGEC 410 Agriculture Policy
AGEC 415 The Global Agriculture Economy, Hunger, and Poverty
AGEC 416 Agricultural Law and Economics
AGEC 610 Current Agriculture and Natural Resource Policy Issues
AGRON 335 Environmental Quality
AGRON/ PLPTH 505 Biotechnology
ASI 595 Contemporary Issues in Animal Science and Agriculture
ATM 661 Water and Waste in the Environment
ENTOM 250 Insects and People
FOR 285 Forest Resource Management
RRES 440 Outdoor Recreation Policy
GENAG 450 Citizenship and Ethics in Agriculture

Capstone course (3 hrs)
GENAG 450 Citizenship and Ethics in Agriculture

Students must complete a “declaration of intent” form describing their plan to fulfill the course work requirements for the minor. The form will be submitted to and approved by the Office of Agriculture Academic Programs.

International agriculture minor
Experiential learning through international study and travel broadens horizons and increases understanding of global issues by allowing students to examine different agricultural systems, the global marketplace, and the role of social values in food consumption patterns. This minor in will add value to undergraduate degree programs, enhance employment opportunities with multinational corporations, and prepare students to function in diverse communities.

The minor requires completion of 16 credit hours. The program is open only to majors in the College of Agriculture. It consists of one foundation course, a foreign language, an international experience, and a capstone seminar. Students are required to complete at least two semesters of university-level foreign language courses. The international experience may consist of a travel study course, study abroad, community service, or internship. Academic credit can be granted for international experiences.

The minor requires completion of 16 credit hours. The program is open only to majors in the College of Agriculture. It consists of one foundation course, a foreign language, an international experience, and a capstone seminar. Students are required to complete at least two semesters of university-level foreign language courses. The international experience may consist of a travel study course, study abroad, community service, or internship. Academic credit can be granted for international experiences.

Foundation course (3 hours)
GENAG 200 Topics. Kansas Agriculture in the Global Society. or
AGEC 415 The Global Agricultural Economy, Hunger, and Poverty.

Foreign language courses (10 hours)
Students must complete or quiz out of two semesters of one foreign language.

International experience (2 hours)
GENAG 505 Comparative Agriculture or departmental internship, problems, or topic course.

Capstone seminar (1 hour)
GENAG 790 Seminar in International Agriculture

Elective courses
Students are encouraged to select elective courses in agriculture, social science, and humanities areas and/or free electives that complement their study of the region or country selected as the focus of their program.

Students must complete a “declaration of intent” form, describing their plan to fulfill the course work, language, and international experience requirements for the minor. The form will be submitted to and approved by the Office of Agriculture Academic Programs.

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, II. Assists 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. Citizenship and Ethics in Agriculture. (3) II. The study of agriculture’s relationship with society while encompassing ethics and personal development. Current controversial issues and multidimensional policy topics facing the agricultural industry 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.: Junior or senior standing.

GENAG 495. Agriculture Honors Seminar. (Var., 0–3) I, II. Seminars treat topics relevant to students participating in the College of Agriculture honors program. Pr.: Sophomore standing and acceptance into the honors program.

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. S. Presentation of completed teaching or extension activity, research project, or demonstration project. Pr.: Successfully completed honors proposal and permission of honors advisor.

GENAG 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.: All writing and oral communications courses required for major. Pr. or conc.: 15 hours of approved courses in NRES secondary major. Cross-listed with DAS 582 and DEN 582.
Agriculture General Requirements section. Agriculture General Requirements section.

**Agricultural Economics**

Daniel Bernardo, Head
Barry L. Flinchbaugh, Extension State Leader
Arlo Biere, Undergraduate Program Coordinator
Ted Schroeder, Director of Graduate Programs
Allen Featherstone, Director of MAB Program

Professors Barkley, Barnaby, Barton, Bernardo, Biere, Burton, Darling, Dhyuvert, Featherstone, Flinchbaugh, Fox, Grunewald, Johnson, M. Langemeier, Mintert, Norman, Schroeder, Schurle, Tierney, and Williams; Associate Professors Boland, Jones, Kastens, Leatherman, McEwen, and O’Brien; Assistant Professors Arata, Crespi, Marsh, H. Peterson, and J. Peterson; Senior Agricultural Economists Kiser; Assistant Agricultural Economist Neils; Administrator of Kansas Farm Management Program Albright; Emeriti Professors Buller, Dunbar, Erickson, Figurski, Hess, Kelley, Knight, Koudele, L. Langemeier, Manuel, Maxon, McCoy, Orazem, Parker, Phillips, Schlender, Sjo, Soering, Sorenson, Thomas, and Walker.

E-mail: undergrad@agecon.ksu.edu
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Our curricula offers students the skills needed in business, while balancing them with their own interests and career goals. The agribusiness degree has two options: agribusiness and international. The agricultural economics major has three options: specialty, farm management, and quantitative.

**Agribusiness**

Bachelor of science in agribusiness 127 semester hours

Students will complete course work in science, math, and communication, plus courses in agribusiness and agricultural economics. To give a better understanding of agribusiness and the broad range the field covers, students will choose from two degree options: agribusiness and international agribusiness.

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 technology* .................................. 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* ................................................. 3-4

*Third semester*
- ECON 110 Principles of Macroeconomics ....................................... 3
- ENGL 200 Expository Writing II ........................................ 3
- Humanities elective** .................................................. 3
- Natural science elective* ................................................. 3-4
- Social science (select from: psychology, sociology, political science, anthropology, history, geography, women’s studies, or American ethnic studies) .................................................. 3

*Fourth semester*
- AGEC 318 Food and Agribusiness Management ........................................ 3
- ACCTG 231 Accounting for Business Operations ........................................ 3
- Ag or food science technology* ........................................ 3-4
- AGCOM 400 Ag Business Communications or ENGL 516 Written Communication for the Sciences .................................................. 3
- Communication ............................................................ 3

*First year*
- Three hours in English (above 200), Speech (above 200) or a modern language. 15-16

*Second year*
- *Select 6 credits from AGRIC 220, HORT 201, AGRIC 305, 330, ATM 160, ASI 102, 105, 318, 320, 302, 305, GRSC 100.
- **Select from history, music, art, English (above 210), philosophy, theatre, dance, or modern language.
- ***Select from either General Chemistry and Lab or Chemistry I, Principles of Biology, or General Physics I.

*International agribusiness option*

This program focuses on global issues facing agribusiness today. Students complete basic agribusiness course work, study another language, and participate in an overseas experience. This is crucial to grasp the wide range of issues facing international agribusinesses and their place in the global economy.

Additional requirements for international option

- ACCTG 241 Accounting for Investing and Financing ........................................ 3
- AGEC 415 The Global Agricultural Economy .................................................. 3
- AGEC 490 Computer Applications ........................................................................ 2
- AGEC 500 Production Economics .................................................. 3
- AGEC 505 Agricultural Market Structures .................................................. 3
- AGEC 513 Ag Finance .................................................. 3
- AGEC 515 Food and Agribusiness Marketing .................................................. 3
- AGEC 599 Food and Agribusiness Management Strategies .................................................. 3
- AGEC 623 International Ag Trade .................................................. 3
- GEOG 100 World Regional Geography (for social science elective) .................................................. 3

Agricultural economics electives
- Select 6 credits from AGEC 410, 416, 420, 520, 525, 590, 598, 605, 610, 631, 632, 680, and 712.

**Business (9 credits required)**

- MANGT 420 Management Concepts .................................................. 3
- MANGT, MKTIB, FINAN, or ACCTG .................................................. 3
- MANGT 690, MKTG 544, or FINAN 643 .................................................. 3
- ECON 510 Intermediate Macroeconomics .................................................. 3

International experience .................................................. 3

Language requirements

Must complete Spanish III, French III, or third course for any other modern language.

Statistics .................................................. 3-6
Free electives .................................................. 14-17

Total including first two years .................................................. 127

**Agricultural economics**

Bachelor of science in agriculture 127 semester hours

The agricultural economics program balances the theoretical and practical applications of agricultural economics to give students the best grasp on emerging issues facing professionals in food and agriculture today. Students earn a B.S. in agriculture with a major in agricultural economics.

The requirements for the first two years are virtually the same as those for the agribusiness degree. Exceptions to those requirements are noted in the discussion of the farm management, specialty pre-vet, and quantitative option.

Students must complete university general education requirements as specified by the College of Agriculture. See College of Agriculture General Requirements section.

Farm management option

Teaching how to apply agricultural economics to the management of the farm, ranch, or
commercial feedlot, this program includes course work in livestock and crop production, agricultural technology, and agricultural economics.

The suggested schedule for the first two years is the same as that for the agribusiness degree except that ASI 102 and a laboratory and AGRON 220 are the required agricultural science courses, and AGEC 308 Farm and Ranch Management replaces AGEC 318 Food and Agribusiness Management. The additional requirements are below.

AGEC 490 Computer Applications ................................ 2
AGEC 500 Production Economics ................................ 3
AGEC 505 Agricultural Market Structures .................... 3
AGEC 513 Agricultural Finance .................................. 3
AGEC 598 Farm Management Strategies ..................... 3

Agricultural economics electives
Select 15 credits with at least one credit above 600 from AGEC 410, 415, 416, 420, 513, 515, 520, 525, 590, 599, 605, 610, 623, 632, 680, 712, and ECON 631.

◆ ACCGT 241 Accounting for Investing and Finance ..... 3
AGRON 305 Soils ................................................. 4
ECON 510 Intermediate Macroeconomics ................. 3
Statistics ................................................. 3-6
Advanced agricultural science electives (approved list available from department) ................................................. 9
Free electives ................................................................... 9-12
Total including first two years ...................................... 127

Specialty option
By combining agricultural economics with another degree, minor, or pre-professional program, students can develop a program that fits their interests and career goals. Students have combined agricultural economics with political science, computer science, nutrition, journalism, grain science, accounting, and business.

Requirements for the first two years are the same as for the agribusiness degree. Additional requirements are below.

AGEC 490 Computer Applications ............................. 2
AGEC 500 Production Economics ............................. 3
AGEC 505 Agricultural Market Structures ................. 3
◆ ACCGT 241 Accounting for Investing and Finance ... 3
ECON 510 Intermediate Macroeconomics .................. 3
Statistics ................................................. 3-6

Agricultural economics electives
Select 21 credits with at least two credits above 598 from AGEC 308, 318, 410, 415, 416, 420, 513, 515, 520, 525, 590, 599, 605, 610, 623, 632, 680, 712 and ECON 631.

Specialization in a second department or field, at least 6 credit hours at 500 level or higher .............................................. 15
Free electives ................................................................... 14-17
Total including first two years ...................................... 127

Two of the possibilities requiring very careful coordination are:

Specialty in pre-veterinary medicine
Designed to give an understanding of the roles a veterinarian plays—such as doctor, manager, and consultant—this specialty also prepares students with all the biological science requirements needed to be admitted to veterinary school.

Requirements for the first two years are much the same as for the agribusiness degree. Students take Chemistry I in place of general chemistry and genetics as one of the technology courses. Additional requirements are below.

◆ ACCGT 241 Accounting for Investing and Finance ..... 3
AGEC 416 Agricultural Law and Economics .............. 3
AGEC 490 Computer Applications ............................. 2
AGEC 500 Production Economics ............................. 3
AGEC 505 Agricultural Market Structures ................. 3
ECON 510 Intermediate Macroeconomics .................. 3
AGEC 513 Ag Finance ......................................... 3
AGEC 515 Food and Agribusiness Marketing .............. 3
AGEC 599 Food and Agribusiness Management Strategies .................................................. 3
BIOCH 521 General Biochemistry ............................ 3
BIOCH 522 General Biochemistry Laboratory ............ 2
BIOL 455 Microbiology (with lab) ............................. 4
BIOL 510 Embryology .......................................... 3
BIOL 511 Embryology Laboratory ............................ 1
CHM 230 Chemistry II ....................................... 4
CHM 350 General Organic Chemistry ...................... 3
CHM 351 General Organic Chemistry Laboratory ..... 2
PHYS 113 General Physics I .................................. 4
PHYS 114 General Physics II .................................. 4
Statistics ...................................................... 3
Agricultural economics electives ................................ 6
Free electives ...................................................... 2
Total including first two years ...................................... 127

Specialty in natural resources
This secondary major focuses on environmental issues and agricultural economics. Courses in this 15-hour option include resource management and conservation. Refer to the Secondary Majors section of this catalog. Refer to the Secondary Majors section of this catalog.

Quantitative option
This program allows students to pursue mathematics and statistics along with the agricultural economics curriculum. With these advanced quantitative skills students will be well prepared for M.S. and Ph.D. studies in agricultural economics and will have excellent opportunities in future employment, especially as an economic analyst or consultant.

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.

AGEC 490 Computer Applications ............................. 2
AGEC 500 Production Economics ............................. 3
AGEC 505 Agricultural Market Structures ................. 3
◆ ACCGT 241 Accounting for Investing and Finance ... 3
CIS 200 Fundamentals of Computer Programming .... 3
CIS 203 Fundamentals of Computer Programming Laboratory .............................................. 1
◆ STAT 350 Business and Economic Statistics I or STAT 351 Business and Economic Statistics II .... 3
or STAT 350 Business and Economic Statistics I or STAT 351 Business and Economic Statistics II .... 3
MATH 551 Applied Matrix Theory ............................ 3
ECON 510 Intermediate Macroeconomics .................. 3

Agricultural economics electives
Select 15 credits with at least one credit above 598 from AGEC 308, 318, 410, 415, 416, 420, 513, 515, 520, 525, 590, 599, 605, 610, 623, 632, 680, 712 and ECON 631.

Quantitative electives (see department list) ..................... 9
Electives ...................................................................... 13
Total including first two years ...................................... 127

Denotes university general education courses.

Agribusiness minor
Prerequisites (in addition to any prerequisites required for specific AGEC courses taken):
MATH 205 Calculus and Linear Algebra
ECON 110 Principles of Macroeconomics
AGEC 120 Agricultural Economics and Agribusiness or ECON 120 Principles of Microeconomics
ACCTG 231 Accounting for Business Operations

Required:
AGEC 500 Production Economics
AGEC 505 Agricultural Market Structures
AGEC 318 Food and Agribusiness Management
AGEC 513 Agricultural Finance

At least 3 credit hours below:
AGEC 420 Commodity Futures Markets
AGEC 515 Food and Agribusiness Marketing

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 Macroeconomics
AGEC 120 Agricultural Economics and Agribusiness or ECON 120 Principles of Microeconomics

Required:
AGEC 500 Production Economics
AGEC 505 Agricultural Market Structures
Select 9 credits with at least 3 credits above 510 AGEC 308 or 318, 410, 415, 416, 420, 513, 515, 520, 598, 599, 605, 610, 623, 632, 680, 712, ECON 510 and 631.

Agricultural economics courses
AGEC 105 Agricultural Economics and Agribusiness Orientation. (1-1) 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. (3) I II. A course suggested for all students interested in the agricultural economy. A study of economic principles, with emphasis on their application to the solution of farm, agribusiness, and agricultural industry problems in relationship to other sectors of the United States economy and foreign countries. No prerequisite. Three hours lec. a week.


AGEC 220. Grain and Livestock Marketing Systems. (3) II. Survey of the institutions and mechanisms that facilitate and regulate the sale and marketing of grain and livestock commodities. Topics include the physical and informational flows in the commodity supply chains, cash pricing, commodity grades to improve market efficiency and the governmental regulations and agencies influencing commodity trading. Pr.: AGEC 120. Not available for agricultural economics elective.

AGEC 308. Farm and Ranch Management. (3) 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. (3) II. A study of marketing, production, risk, human resource management, and financial management in agribusiness firms. Particular attention is given to the application of economic principles to the management of marketing and farm supply firms. Pr.: AGEC 120 or ECON 120.
### Agricultural Policy

- (3) I. Institutional and analytical treatment of historical and current economic problems, public policies and government programs affecting agriculture and rural America. Pr.: AGEC 120 or ECON 120 or ECON 110 and Junior Standing.

### Agricultural Law and Economics

- (3) I, II. The legal framework for decision making by farm businesses, families, and individuals; liabilities, real and personal property, contracts, uniform commercial code, organization of farm businesses, intergovernmental 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 AGEC 120 or ECON 120.

### Agricultural Law and Economics Seminar

- (3) 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 markets exist; (2) understand and be able to forecast basis; (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.

### 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 or competitive teams qualifying for academic credit.

### Agribusiness Internship

- (1–3) I, II. S. Approved and supervised work-study programs in various areas of agribusiness. Project reports required. Pr.: Junior standing and prior departmental approval.

### Agricultural Economics and Agribusiness Problems

- (Var) I, II. S. Pr.: Consent of the instructor.

### Computer Applications in Agricultural Economics and Agribusiness

- (2) I, II. Applications of microcomputers to problems in agricultural economics and agribusiness. Emphasis on budgeting, cash flow, record keeping, financial analysis, statistical analysis, linear programming, and data analysis. Two hours rec. a week. Pr.: AGEC 105, AGEC 120 or ECON 120, and MATH 100.

### Production Economics

- (3) I. II. Application of economic principles to problems of agricultural production, analysis of consumer demand for agricultural products, and input and output decisions of the agricultural firm. AGEC 505 is a continuation of this course and they are intended to be taken in consecutive semesters. Pr.: AGEC 120 or ECON 120; and MATH 205.

### Agricultural Markets

- (3) 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 costs and price structure. Three hours rec. a week. Pr.: ECON 110 and AGEC 500.

### Agricultural Finance

- (3) I, II. Analysis of capital investments, interpretation of financial statements, capital structure considerations for agricultural firms, and farm real estate pricing. Three hours rec. a week. Pr.: AGEC 308 or AGEC 318 and ACCTG 231.

### Food and Agribusiness Marketing

- (3) I, II. A broad view of marketing; food markets and consumption; marketing functions and institutions; prices, competition, and marketing costs; functional and organizational issues; food marketing regulations; commodity marketing. Three hours rec. a week. Pr.: AGEC 120 or ECON 120.

### Market Fundamentals and Futures/Options Trading

- (3) I. This is an experiential course in the trading of commodity futures and options. Attention is focused on the study of market price determination, the implications of market efficiency, forecasting of futures and options. Students invest in a commodity educational trading fund. Class approves recommendations by vote, orders are placed with a broker, and the class monitors open trades. The pool balance at the end of the semester is redistributed to the students. Three hours rec. a week. Pr.: AGEC 420.

### Natural Resource and Environmental Economics

- (3) I. Emphasis on the application of demand, supply, and price concepts in the study of natural resource use, policies, and management. Interdependencies between environment and economic actions are examined through discussion of property rights, economic incentives, externalities and economic components of environmental policies. Pr.: ECON 120 or AGEC 120 and junior standing.

### Agricultural Economics and Agribusiness Honors Seminar

- (Var.) Seminars of special interest will be offered upon sufficient demand in selected areas relating to agricultural economics and agribusiness.

### Agricultural Economics and Agribusiness Honors Problems

- (2) I, II. S. Pr. College of Agriculture honors projects. Pr.: College of Agriculture honors program participant and consent of honors project advisor.

### 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 500 and AGEC 513.

### Food and Agribusiness Management Strategies

- (3) I. 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 be taught, and how these models are used in the production and marketing of food commodities. Three hours lec. a week. Pr.: AGEC 318, AGEC 500, AGEC 513 or FINAN 450, AGEC 515.

### Price Analysis and Forecasting

- (3) I. 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.

### Current Agricultural and Natural Resource Policy Issues

- (3) I, II. Current issues in agricultural and natural resource policy from divergent perspectives. Classroom discussion, debate, reading 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.

### International Agricultural Trade

- (3) I. Applied economics of agricultural trade. Emphasis on why trade occurs, current international agricultural trade patterns, the effects of agricultural policy on trade and the institutions of trade. Pr.: AGEC 505.

### 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.

### 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.

Sixteen weeks during the second semester of the senior year are devoted to full-time student teaching.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

### First semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>EDSEC 300</td>
<td>Introduction to Agricultural Education</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 302</td>
<td>Appreciation of Architecture or Other 300-level Humanities course*</td>
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<tr>
<td>MATH 100</td>
<td>College Algebra</td>
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<tr>
<td>ASI 102</td>
<td>Principles of Animal Science</td>
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<tr>
<td>GENAG 101</td>
<td>Agriculture Orientation</td>
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</tbody>
</table>
Agricultural Technology Management

Faculty—Chung, Clark, Hutchison, Koelliker, Maghirang, Mankin, Schroch, Slocombe, Spillman, Steichen, Taylor, and Zhang.

www.bae.ksu.edu

Agricultural technology management

Bachelor of science in agriculture

127 semester hours

Agricultural technology management emphasizes the application and integration of agricultural/biological 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, agribusines 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 any university-wide technology fee.

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 ........................................ 42
ENGL 100 Expository Writing I ........................... 3
ENGL 200 Expository Writing II ................................ 3
SPCH 105 Public Speaking IA .............................. 2
GENAG 101 Ag Orientation (freshmen only) ............ 1
MATH 205 General Calculus and Linear Algebra ....... 3
CHM 210 Chemistry I .......................................... 4
BIOL 198 Principles of Biology .............................. 4
PHYS 113 General Physics I .................................... 4
Communication electives (List 2) .......................... 6
Humainties and/or social sciences electives (List 3) ... 9

ATM / BAE courses ............................................ 29
ATM 020 Assembly (every semester) ......................... 0
BAE 200 Introduction to Biological and Agricultural Engineering Technology .................. 2
ATM 160 Engineered Systems and Technology in Agriculture ............................. 3
ATM 450 Sensors and Controls of Agricultural and Biological Systems ........................... 3
BAE 350 Agricultural Machinery Systems ................. 2
BAE 351 Agricultural Machinery Systems Lab ........ 1
ATM 511 Agricultural Building Systems .................. 3
ATM 558 Soil Erosion and Sediment Pollution Control ........................................... 3

ATM/BAE Electives (minimum of 12 hrs from List 4; 9 of the hours must be ATM or BAE courses) ................. 12

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Eighth semester (Block III)
EDSEC 586 Teaching Participation and Professional Development Seminar ............................. 12

TOTAL .......................... 134

*Denotes UGE courses.

1 Humanities (9 hours)

(Must include at least one course from the following three categories)

Category 1.
Any course offered in the Department of Philosophy (except PHILO 110 or 220) .......................... 3
or
SPCH 320, 330 or 434 ............................................ 3

Category 2.
Any Department of English literature course (except ENGL 355) ............................. 3
or
Department of Modern Languages literature course .......................... 3

Category 3.
Any course from the Department of History .......................... 3
Restricted social science electives ** ................................ 3

** 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 science courses ........................................... 10
AGRON 305 Soils ....................................................... 4
Agricultural science electives ......................................... 6
(minimum of 6 hrs. from List 6, 7, or 8; all 6 hrs. must be
College of Agriculture courses)
Restructured electives .................................................. 12
(Choose a minimum of 12 hours all from the same list;
the 12 hours must be 400 level or higher; may use Lists 1,
4, 5, 6, 7, or 8)
Business and management courses ................................. 18
◆ ECON 110 Principles of Macroeconomics ................. 3
◆ ACCTG 231 Accounting for Business Operations .... 3
Statistics requirement .................................................. 3
Choose one of the following courses:
STAT 320 Elements of Statistics 
or
STAT 340 Biometrics I 
or
STAT 350 Business and Economic Statistics I
Management requirement ............................................. 3
IMSE 501 Industrial Management 
or
MANGT 421 Introduction to Management Operations
Business and management elective ................................ 6
(choose a minimum of 6 hrs from List 5)
Technical courses ...................................................... 10–11
ME 212 Engineering Graphics ...................................... 2
IMSE 250 Production Processes .................................. 2
IMSE 251 Production Processes Lab ............................. 1
Computer technical elective ......................................... 2–3
(2–3 hours from List 7)
General technical elective .......................................... 3
(any course from the College of Engineering)
Free electives ................................................................ 5–6
Total credits for graduation ............................................ 127
◆ Approved UGE course.
**MATH 220 with a grade of C or better may be substi-
tuted for MATH 150 and MATH 205. Remaining two
math credit hours shall be used as technical or restricted
electives.

Lists of recommended courses
List 1: Computer technology electives
Any CIS course
AGEC 490 Computer Application in Agricultural
economics and Agribusiness ...................................... 3
◆ AGRON 655 GIS and Site Specific Agriculture 
NE 385 Computational Techniques .......................... 2
CIS 101, 102, and 104 are recommended for students with
limited proficiency in computer applications. Other com-
puter technology courses may be selected with advisor
consent.
List 2: Communications electives
◆ AGCOM 400 Agricultural Business
Communications ......................................................... 3
◆ AGCOM 410 Agricultural Student Magazine .............. 2
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 ..................................... 2
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 542 Professional Selling and
Sales Management .................................................... 3
EDNSC 706 Teaching Adults in Extension .................... 3
◆ GENAG 450 Citizenship and Ethics in Agriculture .... 3
List 3: Humanities and/or social science electives
American ethnic studies—any course
Architecture, planning, and design—any course in history
or appreciation of architecture or environmental design
Anthropology—any course
Art—course 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 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
◆ PSYCH 560 Industrial Psychology ............................ 3
◆ DEN 275 Introduction to Personal and Professional
Development .......................................................... 1

List 4: AT courses
ATM 451 Water Resources and Hydrology .................... 2
◆ ATM 460 Internship in Agricultural Technology
Management ......................................................... 1–3
◆ ATM 500 Chemical Application Systems ................... 3
ATM 540 Introduction to Food Engineering ................... 3
ATM 541 Introduction to Food Engineering
Laboratory Exercises .............................................. 1
◆ ATM 571 Mechanisms for Power Transfer and
Material Handling .................................................... 3
ATM 651 Grain and Forage Handling Systems .............. 3
◆ ATM 653 Water Management and Irrigation
Systems ................................................................. 2
ATM 654 Water Management and Irrigation
Systems ................................................................. 3
ATM 661 Water and Waste in the Environment ............... 3
Any College of Engineering course

List 5: Agribusiness and management electives
◆ ACCTG 241 Accounting for Investment 
and Financing ......................................................... 3
◆ AEC 120 Agricultural Economics and
Agribusiness .......................................................... 3
◆ AEC 525 Natural Resource and Environmental
Economics ............................................................... 3
ECON 520 Intermediate Macroeconomics ................. 3
ECON 530 Money and Banking .................................. 3
ECON 681 International Trade ...................................... 3
◆ FIN 450 Introduction to Finance ................................. 3
IMSE 501 Industrial Management ............................... 4
◆ MANGT 390 Business Law I ..................................... 3
◆ MANGT 420 Management Concepts ......................... 3
◆ MANGT 421 Introduction to Operations
Management .......................................................... 3
◆ MGMT 400 Marketing .............................................. 3
◆ MKTG 450 Consumer Behavior ............................... 3
GRSC 630 ManagementApplications in the
Grain Processing Industries ....................................... 3

*Any other agricultural economics course(s)

List 6: Biological, natural resource, and environmental
sciences electives
ATM 451 Water Resources and Hydrology .................... 2
◆ AGRON 335 Environmental Quality ........................... 3
◆ BIOL 455 General Microbiology ............................... 4
BIOL 500 Plant Physiology ........................................... 4
BIOL 529 Fundamentals of Ecology ............................. 3
BIOL 513 Physiological Adaptations of Animals ............. 3
BIOL 612 Introduction to Limnology ............................. 4
BIOL 303 Ecology of Environmental Problems ............. 3
BIOL 330 Public Health Biology .................................... 3
◆ CHEM 215 Environmental Science: A Chemistry
Perspective ............................................................. 3
ENTOM 250 Insects and People ..................................... 3
ENTOM 300 Economic Entomology ............................ 3
◆ GEOG 220 Environmental Geography I .................... 4
GEOL 305 Earth Resources ......................................... 3
◆ GEOL 506 Geology and Environment ...................... 3
HORT 201 Introductory Horticultural Science ............... 4
◆ PLTH 300 Principles of Plant Pathology ...................... 3
GENAG 582 NRES Capstone ....................................... 3
Horticulture, forestry, and recreation resources courses with
consent of advisor.

List 7: Animal sciences electives
ASI 102 Principles of Animal Science ......................... 3
ASI 300 Principles of Livestock Feeding ....................... 3
ASI 315 Livestock and Meat Evaluation ....................... 3
ASI 318 Fundamentals of Nutrition ............................. 3
ASI 320 Principles of Feeding ....................................... 3
ASI 400 Farm Animal Reproduction ............................ 4
ASI 422 Livestock Sales Management ......................... 1
ASI 450 Principles of Livestock Selection ...................... 2
ASI 470 Form and Function in Livestock ....................... 2
ASI 510 Animal Breeding Principles ............................ 3
ASI 512 Bovine Reproductive Technologies .................. 2
ASI 515 Beef Science ................................................. 3
ASI 521 Horse Science ............................................... 3
ASI 524 Sheep Science .............................................. 3
ASI 533 Anatomy and Physiology ............................... 4
ASI 534 Introduction to Pharmacology of Farm Animals ... 2
ASI 535 Swine Science .............................................. 2
ASI 620 Livestock Production and
Management ......................................................... 2
ASI 655 Behavior of Domestic Animals ....................... 2
◆ AGRON 501 Range Management ............................. 3
AGRON 550 Forage Management and Utilization ........... 3
AGRON 551 Forage Management and Utilization
Laboratory .............................................................. 1
BIOCH 265 Introduction to Organic and
Biochemistry ........................................................... 5
ENTOM 305 Livestock Entomology ............................. 2
ENTOM 306 Livestock Entomology Laboratory .......... 1

List 8: Food and feed processing electives
ASI 302 Introduction to Food Science ......................... 3
ASI 305 Fundamentals of Food Processing ................... 3
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 Management of Milk Processing .................... 2
ASI 430 Food Products Evaluation ............................... 3
ASI 605 Fresh Meat Operations ................................. 2
ASI 606 Inst. Anal. Food and Agricultural
Products ............................................................... 2
ASI 607 Food Microbiology ........................................ 4
ASI 608 Dairy Food Processing and
Technology ............................................................ 2
ASI 610 Processed Meat Operations ............................. 3
ASI 694 Food Plant Management ................................. 2
ASI 695 Quality Assurance of Food Products ............... 3
GRSC 110 Flow Sheets ................................................ 2
GRSC 500 Milling Science ........................................... 4
GRSC 510 Feed Technology I ....................................... 4
GRSC 602 Cereal Science ........................................... 3
GRSC 610 Electricity and its Control for the Grain
Process Industry ..................................................... 3
GRSC 651 Food and Feed Production Protection .......... 4
GRSC 665 Cereal Food Plant Design and
Construction .......................................................... 3

*Recommended for students in the John Deere Dealership
Management Program (advisor approval required for other
courses).
◆ Denotes UGE courses

Agricultural technology management minor
Students enrolled in any undergraduate major
will be admitted as a candidate for the ATM
minor program upon filing a notice of intent
with the Department of Biological and
Agricultural Engineering office.
Biological Systems. ATM 450. Sensors and Controls for Agricultural and Environmental Systems. Three hours lecture and three hours lab per week. Pr.: PHYS 113 or 115, BIOL 120 or CHEM 190, MA TH 210 or 205.

ATM 541. Introduction to Food Engineering Laboratory. (1) Laboratory experiments supplementing ATM 540. Three hours lab a week. Pr.: ATM 540.

ATM 558. Soil Erosion and Sediment Pollution Control. (3) Planing and analysis of production systems with respect to regulatory, environmental, and resource management. Water and wind erosion; estimating soil loss; estimating runoff rate and volume; laying out and checking terraces, waterways and farm ponds; agricultural surveying; and conservation planning. Two hours rec. and three hours lab a week. Pr.: ATM 540.

ATM 563. Water and Waste in the Environment. (2) I. Management of water in crop production systems, crop water use, and irrigation scheduling. Fundamentals of water flow in pipe networks, pumping plants, and irrigation systems. Two hours rec. a week. Pr.: ATM 160 or PHYS 113, CIS 102 and CIS 104 or AGRON 455, ATM 305, and junior standing or higher.

ATM 564. Water and Waste in the Environment. (2) II. Laboratory and hands-on activities on soil water balance characteristics, crop water use, water flow in pipe networks, pump hydraulics, sprinkler nozzles, drip irrigation systems, water filtration systems, and chemigation systems. Three hours lab each week. Pr.: Must be taken con. with ATM 653; and junior standing or higher.

ATM 651. Grain and Forage Handling Systems. (3) Principles of grain and forage conditioning and storage. Structure and equipment for quality preservation. Two hours rec. and three hours lab a week. Pr.: ATM 160 or PHYS 113 or 115 and senior standing.

ATM 653. Water and Waste in the Environment. (3) I. Principles and practices surrounding: water sources and quality; wastewater microbiology; animal, food processing plant, and domestic waste handling, treatment, and utilization; surface and groundwater contamination, protection, and treatment. Three hours rec. a week. Pr.: CHM 110 or 210 and BIOL 198.

ATM 703. Topics in Agricultural Technology Management. (Var.) On sufficient demand. A course reserved for the study of current topics in agricultural systems and technology. Topics announced when offered. May be repeated to a maximum of nine credit hours per year. Pr.: Six credit hours of ATM courses.

Agronomy

Agronomy Bachelor of science in agriculture 127 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 101 Expository Writing I 3
ENGL 200 Expository Writing II 3
SPCH 105 Public Speaking IA 2
MATH 100 College Algebra 3
AGRON 200 Crop Science 4
AGRON 305 Soils 4
AGRON 320 Crop Science 3
AGRON 385 Soil Fertility Lab 2
AGRON 390 Computer Applications in Agronomy 3
AGRON 450 Computer Applications in Agronomy 3
AGRON 455 Computer Applications in Agronomy 3
AGRON 470 Agronomy electives 9
AGRON 541 Introduction to Food Engineering Lab 3
AGRON 545 Food Engineering Laboratory 3
AGRON 558 Soil Erosion and Sediment Pollution Control 3
AGRON 563 Water and Waste in the Environment 3
AGRON 564 Water and Waste in the Environment 3
AGRON 571 Mechanisms for Power Transfer and Material Handling 3
AGRON 590 Crop Production Systems 4
AGRON 661 Water and Waste in the Environment 3
AGRON 681 Crop Production Systems 3
AGRON 703 Topics in Agricultural Technology Management 3
AGRON 706 Crop Production Systems 3
AGRON 798 Senior Project 3
AGRON 799 Senior Project 3
AGRON 896 Internship in Agronomy 3
AGRON 897 Internship in Agronomy 3
AGRON 899 Internship in Agronomy 3

* Agronomy majors must include 18 credit hours of university general education courses, with at least 6 credit hours numbered 200. 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

AGRC 120 Agricultural Econ/Agriculture 3
AGRC 121 Agricultural Econ/Agriculture 3
AGRON 330 Weed Management 3
AGRON 360 Crop Growth and Development 3
AGRON 375 Soil Fertility 2
AGRON 385 Soil Fertility Lab 2
AGRON 405 Internship in Agronomy 3
AGRON 420 Crop Production Systems 3
AGRON 470 Agronomy electives 3
AGRON 475 Agronomy electives 3

E-mail: agronomy@ksu.edu

www.oznet.ksu.edu/agronomy/
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<tr>
<th>Course Code</th>
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<td>AGRON 645</td>
<td>Soil Microbiology</td>
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<td>BIOL 455</td>
<td>General Microbiology</td>
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<td>Electives</td>
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</table>

### Crop consulting option

- AGRON 330 Weed Management
- AGRON 360 Crop Growth and Development
- AGRON 375 Soil Fertility
- AGRON 385 Soil Fertility Lab
- AGRON 405 Internship in Agronomy
- AGRON 716 Herbicide Interactions
- AGRON 720 Weed Ecology
- AGRON Elective

### Soil and water science option

- AGRON 330 Weed Management
- AGRON 335 Environmental Quality
- AGRON 360 Crop Growth and Development
- AGRON 375 Soil Fertility
- AGRON 385 Soil Fertility Lab
- AGRON 405 Internship in Agronomy
- AGRON 716 Herbicide Interactions
- AGRON 720 Weed Ecology
- AGRON Elective

### Soil science

- AGRON 330 Weed Management
- AGRON 335 Environmental Quality
- AGRON 360 Crop Growth and Development
- AGRON 375 Soil Fertility
- AGRON 385 Soil Fertility Lab
- AGRON 405 Internship in Agronomy
- AGRON 716 Herbicide Interactions
- AGRON 720 Weed Ecology
- AGRON Elective

### Agronomy courses

- AGRON 220 Crop Science
- AGRON 315 Properties of Soil
- AGRON 330 Weed Management
- AGRON 335 Environmental Quality
- AGRON 360 Crop Growth and Development
- AGRON 375 Soil Fertility
- AGRON 385 Soil Fertility Lab
- AGRON 405 Internship in Agronomy
- AGRON 716 Herbicide Interactions
- AGRON 720 Weed Ecology
- AGRON Elective
AGRON 560. 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 micronutrients. The influence of numerous soil biological, physical, and chemical properties on plant nutrient availability to crops will be emphasized. Three hours rec. 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. One-half laboratory exercises are designed to reinforce the theoretical principles presented in lectures. One hour lec. 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–III. 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 450. Crops Team. (2) I. Grain 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 current software in managing data and knowledge useful to crop production. Three hours lec. a week. Pr.: AGRON 220 and 305.

AGRON 501. Range Management. (3) I. 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) II. Study of the factors and processes of soil formation, classification of soils according to soil taxonomy, and use of soil survey information. Required field trips. Two hours rec. and three hours lab a week. Pr.: GEOL 100 and AGRON 305 or consent of instructor.

AGRON 520. Grain Production. (3) I, II. An upper-level course for those interested in grain production in the Central Plains. Pest control, limiting factors, and planting factors will be considered in view of climactic conditions and crop plant growth habit. From this, a crop production strategy will be developed for each crop. Pr.: AGRON 220 and 375.


AGRON 551. Forage Management and Utilization Laboratory. (1) I. 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 pasture plants through exposure to them in their natural environment. Pr.: AGRON 220 or BIOL 210 or consent of instructor.

AGRON 599. Agronomy—The Profession. (1) II. An overview of opportunities, 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 Production I, II, III. Studies may be chosen in: genetics, crop improvement, forages, ecology, weed control, plant physiology, or crop production.

AGRON 605. Soil and Environmental Chemistry. (3) I. A study of inorganic and organic chemistry of soils with a detailed examination of the solid, liquid, and gaseous phases. Includes discussions of mineral solubility, electrochemical and adsorption phenomena, acidity, salinity, and fertility. Emphasis is placed on the biogeochemical cycling of plant nutrients and important soil contaminants. Three hours rec. a week. Pr.: AGRON 375 or AGRON 305 and CHM 230.

AGRON 610. Biotechnology. (3) II. In odd years. The use of biotechnology and molecular genetic approaches in plant and animal sciences. Emphasis is on the use of molecular techniques for plant and animal improvement. Three hours lectures per week. Pr.: ASI 500. Cross-referenced as PLPTH 610.

AGRON 615. Soil Problems. (Var.) I, II. Studies may be chosen in: chemistry, physics, conservation, fertility, genesis, morphology, or classification.

AGRON 630. Principles of Crop Improvement. (3) III. Basic plant breeding techniques used to genetically improve crops for use by man and procedures to increase, distribute, and maintain breeding stocks and varieties. Two lec. and one two-hour lab a week. Pr.: AGRON 220 and ASI 500.

AGRON 635. Soil Conservation and Management. (3) I. Principles, mechanics, and prediction of water and wind erosion. Influence of soil erosion on soil productivity and environmental quality. Conservation management technologies for erosion control and sustaining 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) II. Introduction to spatial analysis and management of agricultural and environmental resources using geographic information systems (GIS) technology. Emphasis on collecting, displaying, and analyzing spatial or georeferenced soil, crop, or other land surface data. Two hours lecture, two hours lab, and one hour by appointment per week. Pr.: AGRON 220 and 305 and GEOG 508.

AGRON 660. Range Research Techniques. (3) I, in even years. Discussion of quantitative and qualitative procedures used to study vegetation. Includes application, advantages, and disadvantages of these methods. Use of statistical techniques for sampling, analysis, and presentation of data. Two hours rec. and one three-hour lab a week. Pr.: AGRON 501 and STAT 320.


AGRON 681. Range Ecology. (3) II, in even years. Application of ecological principles to range ecosystem management. Study of plant-soil-animal interactions with rangeland and discussion of plant succession, environmental influences, and ecological concepts. Two hours rec. and one lab credit consisting of field trips to representative rangeland 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 fate and 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 746. Physical Properties of Soils. (3) II. The properties of soils as affected by their physical environment, including water content, water potential, temperature, aeration, floucculation-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 characteristics. One hour rec. and two hours lab a week. Pr.: BIOL 198 or 210.

AGRON 770. Plant Genomics. (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. (1) 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, in odd years. Inventory and analysis of rangeland resources and development of detailed management plan. Emphasizes 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
Gerry L. Kuhl, State Leader Extension
David A. Nichols, Teaching Coordinator
Robert C. Cochran, Research Coordinator
Professors Aramouni, Blasi, Bolsen, Brazile, Brent, Cochran, Davis, Dikeman, Drouillard, Fung, Goodband, Hancock, Hunt, Jeon, Kastner, Kropf, Kuhl, Marsden, Martin, McKee, Minton, Nelsson, Nichols, Penner, Riley, Schafer, Schmidt, Shirley, J. Smith, Spaeth, Stevenson, Swanson, Tigemeyer, Tokach, Unruh; Associate Professors Beyer, Boyle, Grier, Hale, Herald, Marston, Phebus, Rozell, Schaae, and S. Smith; Assistant Professors Brouk, De Rouchez, B. Johnson, S. Johnson, Kouba, Moser, Thippareddi; Instructors Jackson, Lee, Pope, Wolf; Assistant Instructors Marple, McClure, Scheele; Emeriti Professors Adams, Bassette, Call, Corah, Craig, Cunningham, Drake, Dunham, Francis, Good, Harbers, Henderson, Hines, Kiracofe, Koch, Michaels, Morrill, Norton, Roberts, Schalles, Simms, Ward, Wheat, and Zoellner

www.ozen.ksu.edu/ansi/welcome.htm

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 provide. Options of study are available in animal products, business, communications, production management, and science/pre-vet.

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**

- **ENGL 100** Expository Writing I 
- **ENGL 200** Expository Writing II 
- **SPCH 105** Public Speaking IA 
- **GENAG 101** Ag Orientation 
- **ECON 110** Principles of Macroeconomics 
- **CHM 210** Chemistry I 
- **ECON 111** General Chemistry

**or**

- **CHM 110** General Chemistry 
- **CHM 111** General Chemistry Lab 
- **BIOL 198** Principles of Biology 
- **ASI 102** Principles of Animal Science 
- **ASI 105** Animal Sciences and Industry 
- **ASI 106** Dairy/Poultry Science 
- **ASI 580** Animal Sciences & Industry Seminar 
- **ACCTG 231** Accounting for Business Operations 
- **AGEC 308** Farm and Ranch Management 
- **BIOCH 265** Introductory Organic and Biochemistry 
- **PHYS 113** Descriptive Physics 
- **Agriculture electives** 4-8 
- **Agricultural economics or business electives** 4-6 
- **Communication elective** 3 
- **Mathematics/statistics/computer science electives** 6 
- **ASI 318** Fundamentals of Nutrition 
- **ASI 350** Meat Science 
- **ASI 405** Fundamentals of Milk Processing 
- **ASI 406** Food Microbiology 
- **ASI 407** Poultry Products Technology 
- **ASI 410** Beef Science 

**or**

- **ASI 405** Fundamentals of Milk Processing 
- **ASI 607** Food Microbiology 
- **ASI 640** Poultry Products Technology 
- **ASI 601** Physiology of Lactation 
- **ASI 607** Food Microbiology 
- **ASI 640** Poultry Products Technology 
- **ASI 350** Meat Science 
- **ASI 361** Conversion of Food Animals to Carcasses 
- **ASI 601** Physiology of Lactation 

**Select one of the following:**

- **ASI 515** Beef Science 
- **ASI 524** Swine Science 
- **ASI 533** Animal Breeding Principles 
- **ASI 601** Physiology of Lactation 
- **ASI 607** Food Microbiology 
- **ASI 640** Poultry Technology 
- **ASI 621** Dairy Cattle Management 
- **ASI 645** Poultry Management 
- **ASI 649** Food Plant Management

**Business option**

- **AGEC 120** Agricultural Economics and Agribusiness 
- **MATH 100** College Algebra 
- **ASI 500** Genetics 
- **ASI 533** Anatomy and Physiology 
- **BIOCH 241** Accounting for Investing and Financing

**Select three of the following:**

- **ASI 350** Meat Science 
- **ASI 361** Conversion of Food Animals to Carcasses 
- **ASI 601** Physiology of Lactation 
- **ASI 315** Livestock and Meat Evaluation 
- **ASI 405** Fundamentals of Milk Processing 
- **ASI 607** Food Microbiology 
- **ASI 640** Poultry Products Technology 
- **ASI 601** Physiology of Lactation 

**Select one of the following:**

- **ASI 350** Meat Science 
- **ASI 361** Conversion of Food Animals to Carcasses 
- **ASI 601** Physiology of Lactation 
- **ASI 315** Livestock and Meat Evaluation 
- **ASI 405** Fundamentals of Milk Processing 
- **ASI 607** Food Microbiology 
- **ASI 640** Poultry Products Technology 
- **ASI 350** Meat Science 

**Select two of the following:**

- **ASI 350** Beef Science 
- **ASI 521** Horse Science 
- **ASI 524** Swine Science 
- **ASI 353** Swine Science 
- **ASI 621** Dairy Cattle Management 
- **ASI 645** Poultry Management 
- **ASI 665** Behavior of Domestic Animals

**Science/pre-veterinary option**

- **ASI 318** Fundamentals of Nutrition 
- **ASI 320** Principles of Feeding 
- **ASI 400** Farm Animal Reproduction

**Select three of the following:**

- **ASI 350** Beef Science 
- **ASI 521** Horse Science 
- **ASI 524** Swine Science 
- **ASI 533** Anatomy and Physiology 
- **BIOL 455** Microbiology 
- **BIOL 510** Embryology 
- **BIOL 511** Embryology Laboratory

**Select 7 hours from the following:**

- **ASI 500** Genetics 
- **ASI 533** Anatomy and Physiology 
- **BIOL 455** Microbiology 
- **PHYS 113** General Physics II 
- **MC 565** Law of Mass Communications 
- **MC 510** Embryology Laboratory 
- **MC 565** Law of Mass Communications 
- **MC 550** Advanced News and Feature Writing 
- **MC 565** Law of Mass Communications 

**Select one of the following:**

- **BIOL 198** Principles of Biology 
- **ASI 320** Principles of Feeding 
- **ASI 400** Farm Animal Reproduction

**Select one of the following:**

- **ASI 350** Beef Science 
- **ASI 361** Conversion of Farm Animals to Carcasses 
- **ASI 601** Physiology of Lactation 
- **ASI 315** Livestock and Meat Evaluation 
- **ASI 405** Fundamentals of Milk Processing 
- **ASI 607** Food Microbiology 
- **ASI 640** Poultry Technology 
- **ASI 621** Dairy Cattle Management 
- **ASI 645** Poultry Management 
- **ASI 665** Behavior of Domestic Animals

**Agriculture electives** 2-3

**Select 7 hours from the following:**

- **ASI 500** Genetics 
- **ASI 533** Anatomy and Physiology 
- **BIOL 455** Microbiology 
- **PHYS 113** General Physics II 
- **MC 440** Editing and Design 
- **MC 565** Law of Mass Communications 
- **MC 550** Advanced News and Feature Writing 
- **MC 565** Law of Mass Communications 
- **MC 500** Advanced News and Feature Writing 
- **MC 565** Law of Mass Communications 
- **MC 550** Advanced News and Feature Writing 
- **MC 565** Law of Mass Communications 

**Select one of the following:**

- **ASI 350** Beef Science 
- **ASI 361** Conversion of Farm Animals to Carcasses 
- **ASI 601** Physiology of Lactation 
- **ASI 315** Livestock and Meat Evaluation 
- **ASI 405** Fundamentals of Milk Processing 
- **ASI 607** Food Microbiology 
- **ASI 640** Poultry Technology 
- **ASI 621** Dairy Cattle Management 
- **ASI 645** Poultry Management 
- **ASI 665** Behavior of Domestic Animals
Animal sciences and industry courses

ASI 102. Principles of Animal Science. (3) I, II. Basic principles which apply to animal agriculture; survey of the industry; types, purposes, and products of livestock; principles of breeding, selection, nutrition, lactation, reproduction, management, and marketing. Three hours rec. a week. ASI 105 and 106 are companion courses.

ASI 105. Animal Sciences and Industry. (1) I, II. A study of the breeding and market types and classes of livestock, including a comparison of the live animal and carcass evaluation. Two hours lab a week. Pr.: ASI 102 or consent of instructor.

ASI 106. Dairy and Poultry Science. (1) I. Introduction to the dairy and poultry industries. Two hours lab a week.

ASI 110. Bovine Artificial Insemination. (1) I.大大大choose to make student proficient in artificially inseminating the cow.

ASI 300. Principles of Livestock Feeding. (3) II. Practical application of nutritional principles to the feeding of livestock; feedstuff evaluation; nutritive requirements; basic ration formulation and evaluation. Not open to ASI majors other than communication option. Student cannot apply credit for both ASI 300 and 320 toward a B.S. degree. Pr.: CHM 110 and 111.

ASI 301. Farrier Science. (2) I. Application of farrier’s principles and practices. The anatomy and physiology of the lower leg and hoof are thoroughly studied and basic static and dynamic biomechanics of the horse are addressed. Corrective, therapeutic and performance, and specific shoeing and trimming techniques are practiced. One hour lecture and four hours lab a week. Pr.: Consent of instructor.

ASI 302. Introduction to Food Science. (3) I, II. This course is the beginning course in food science designed to acquaint the student with the breadth and scope of the food industry and the role of science in the preservation, processing, and utilization of foods. Three hourslec. a week.

ASI 303. History and Attitudes of Animal Use. (3) II. A short history of animal use and the livestock industry; attitudes towards animals; the symbiotic bond between humans and animals; the contributions from animals of food, fiber, work, and recreation; animal well-being; the interaction of livestock production and the environment; and ethical issues about using animals for research, food, and recreation. Three hourslec./rec. a week. Interactive discussion will be emphasized, no prerequisites.

ASI 304. Companion Animal Management. (3) I. An appreciation of the value and use of companion animals in society. General biology and management requirements of pets in zoos, kennels, and at home. Interactive discussion and written skills will be emphasized. Three hourslec./rec. a week. Pr.: Junior standing.

ASI 305. Fundamentals of Food Processing. (3) II. The study of some basic principles used in food processing, principles of preserving and processing of foods, and food packaging. Food science and industry majors should take before the senior year. Taught in cooperation with the Departments of Horticulture, and Grain Science and Industry. Pr.: A course in chemistry.

ASI 307. Applied Microbiology for Meat and Poultry Processors. (3) I, II. An introduction to basic food microbiology and food safety concepts with application and integration of principles to the meat and poultry processing industry. Microbiological techniques for products and environmental samples, antimicrobial intervention strategies, employee hygiene, Good Manufacturing Practices (GMPs), food plant sanitation, and introduction to Hazard Analysis Critical Control Points (HACCP) programs.

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 on their exterior, interior, and 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 and NOT ONLY屠杀 livestock in evaluating. Introduction 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 hourlec. and four hours lab a week. Pr.: ASI 102 and 105; or consent of instructor.

ASI 318. Fundamentals of Nutrition. (3) I, II. Elementary principles 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) II. Evaluation of conformation and athletic performance of market and breeding animals. Four hours lab a week. Pr.: ASI 318.

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 hourlec. 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 and techniques 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 hoursrec. and two hours lab a week. Pr.: BIOL 198.

ASI 361. Conversion of Food Animals to Carcasses. (2) I, II. A student participation course in processing live animals into meat and by-products. Interrelates all phases of modern slaughter and 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. (2) I. A study of factors determining the commercial grades and the desired fleece 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 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) I. An introduction to the principles of evaluating dairy cattle on the basis of their physical characteristics. Interpretation of the official dairy cow unified 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 Quadrathalon. (0–1) II. Active participation in the ASI Quadrathalon involving oral presentations, written exams, practical applications of 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 toward graduation.

ASI 400. Farm Animal Reproduction. (4) I. Basic reproductive anatomy and physiology of cattle, horses, 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 rec. and one-three hours 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) II. 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 examination and its application to the food processing industry. Introduction to sensory testing methods, including sampling techniques and test forms. Two hourslec. 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 electronic communication with agriculture computer services. Practical training in farm computer use (hardware and software) will also be covered. Two hours lec. and two hours a lab a week. Pr.: Junior standing.


ASI 504. Equine Reproduction Management. (2) II. Theory and practice in reproductive management and breeding techniques of the horse. Includes basic reproductive physiology of the stallion and mare, demonstration and practice in semen collection and processing, teasing systems for artificial and natural breeding techniques, management, and record keeping. Six hours lab a week. Pr.: ASI 400 and senior standing.


ASI 512. Bovine Reproductive Technologies. (2) I. Reproductive technologies used in management of cattle including the physiology of the estrus 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, II. 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 sheep industry. Breeding, reproduction, nutrition, health, facilities, and economic aspects as related to sheep production. Two hours lec. and two hours lab a week. Pr.: Junior standing.

ASI 533. Anatomy and Physiology. (4) II. General anatomy and physiology of the domestic animals. Three hours rec. and three hours a lab a week.

ASI 534. Introduction to Pharmacology of Farm Animals. (2) II, in even years. The study of the basic principles of pharmacology as related to the proper and safe use of drugs and chemicals by the livestock industry. Pr.: ASI 533.

ASI 535. 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) II. A study of the factors affecting animal health and disease control. For students majoring in agriculture and other fields. Three hours lec. a week. Pr.: ASI 533.

ASI 580. 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: (1) how do issues develop; (2) the political aspects of issues; and (3) the development of expertise based on objective assessment. Current issues such as animal welfare/rights, environment, genetic engineering, and human food product standards with practical learning experiences. Pr.: Junior standing.

ASI 599. Animal Science Internship. (1–6) I, II. 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, II. 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, costs, quality assurance, packaging, marketing, 3D printing, and refrigeration. 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 food and food processing. Effects of food preservation agents on microbial communities 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 treatment, and pressure technologies. Changes in milk chemistry, microbiology, and structure will be emphasized during the processing of butter, soft and hard cheeses, concentrated milk, ice cream, and yogurt. Two hours lec. and one three-hour lab a week. Pr.: BIOL 455.

ASI 610. Processed Meat Operations. (2) I. 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) I, 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) I. Integration of biologic and economic aspects of dairy production with dairy farm organization, planning, operation, and analysis. Field trips, dairy farm analysis and case studies will be used to supplement lec. material. Two hours rec., two hours lab a week. Pr.: ASI 102 and 106, senior standing.

ASI 640. Poultry Products Technology. (3) II. In even years. Emphasis on the technical problems that exist between production and consumption during the processing and marketing of poultry meat and egg products. A study of the microbiology of shell 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) 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 environment, and developmental stage on social organization, 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 661. Animal Sciences and Industry Problems. (Var.) I, II. S. Independent guided studies in any of the many fields associated with animals and animal products. Pr.: Consent of instructor.

ASI 671. Meat Selection and Utilization. (2) I. Emphasis on meat cut selection criteria and identification, grades, fabricated meat, institutional cuts, and labeling, curing, preservation, and meat preparation. One hour lec.-rec. and two hours a lab a week. Pr.: CHM 110 and CHM 111.

ASI 675. Monogastric Nutrition. (1) I. An overview of the nutritional principles involved with feeding monogastric animals. Topics will include digestive anatomy and physiology, the utilization of carbohydrates, lipids, amino acids, vitamins, and minerals. Three hours lec. a week for 5 weeks. Pr.: ASI 320.

ASI 676. Avian Nutrition. (1) I, in even years. Nutritional requirements of game birds, caged birds, exotics, and commercial poultry. Three hours lec. a week for 5 weeks. Pr.: ASI 675.

ASI 678. Equine Nutrition. (1) I, 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. Practical feeding considerations and current equine nutrition research will be reviewed. Three hours lec. a week for 5 weeks. Pr.: ASI 675.

ASI 679. Swine Nutrition. (1) I. A study of the nutrient requirements of swine for various stages of production. Discussion of the interrelationships of nutrition and other factors (environment, management, and health) that affect performance. Three hours lec. a week for 5 weeks. Pr.: ASI 675.

ASI 680. Ruminant Nutrition. (1) I. 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. Pr.: ASI 320.


ASI 682. Formulation of Livestock and Poultry Diets. (1) I. Diet formulation for the major species of livestock and poultry. Major topics include hand formulation of diets; ingredient/nutrient cost comparisons; dry matter manipulation; computerized diet formulation; developing specifications for diets, supplements, base feeds, and premixes; projecting animal performance; feed labeling. Three hours lec. per week for 5 weeks. Pr.: ASI 675 or ASI 680.


ASI 684. Nutrition of Feedlot Cattle. (1) I. 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 5 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 accepted within the silage literature. Three hours lec. a week for 5 weeks. Pr.: ASI 680.

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. A comprehensive course covering all aspects of quality assurance practices in the food industry. Emphasis is placed on interrelations of food chemistry, microbiology, sanitation, processing, and laws and regulations. Three hours lec. a week. Pr.: One course in microbiology.

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 intercession. 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) I. 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 product 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 EN 501.


ASI 740. Research and Development of Food Products. (4) I. All aspects of new food product development from concept to store shelves will be covered, including market screening: focus groups; idea generation; prototype development; ingredient functionality and interactions; statistical designs for product development; processing; packaging; scale-up of operations; regulatory issues; labeling; physical, chemical, microbiological, and sensory evaluations; quality control procedures; and HACCP plans. Two hours lec. and six hours lab a week. Pr.: ASI 302 and ASI 501.


ASI 777. Meat Technology. (4) I. 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.

Communications

R. R. Furbee, Head

Professors Atkinson, Erpelding, Frank, and Terry; Associate Professors Baker, Boone, Furbee, and Ward; Assistant Professor Rutherford; Coordinators Jackson, Peadler, Melgares, and Morgan; Specialists Baldwin, Bale, Ballou, Dunn, Hackenberg, Hartman, Havenstein, Holcombe, Kepka, Knapp, Kowalik, Miller, Peter, Peterson, Pryor, Rhodenbaugh, Schwartz, Sheldon, Snyder, Spencer, Springer, Stadtlender, Staggengren, Wear, and Wright; Emeriti Professors Brandsberg, Burke, Graham, Medlin, Thomas, Titus, and Unruh; Associate Professors Buchanan, Jorgenson, McGlashon, and Peck; Assistant Professors Kuehn 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 related to agricultural and environmental areas. Careers can be targeted in public relations, newspaper, magazine, radio-television, advertising, marketing, and agricultural/environmental 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 can follow the agriculture or environmental options.

Agriculture option

General requirements:

ENGL 100 Expository Writing I ......................... 3
ENGL 200 Expository Writing II ....................... 3
SPCH 105 Public Speaking 1A .......................... 2
GENAG 101 Ag Orientation .............................. 1
MATH 100 College Algebra .............................. 3
ECON 110 Principles of Macroeconomics .......... 3

ASI 791. Advanced Application of HACCP Principles. (3) II. Evaluation of control parameters and methodology at critical control points, validating and auditing the effectiveness of critical control points, critical limits, monitoring tools, corrective action procedures, recordkeeping and verification procedures in addressing biological, chemical, and physical hazards that may be present in food products. Three hours lec. a week. Pr.: BIOL 455 and ASI 690.

ASI 799. Graduate Internship in Animal Sciences and Industry. (1–4) 1. 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.

Select any four required courses from the following:

AGRON 305 Soils ............................................. 4
HORT 201 Introductory Horticultural Science .... 4
AGRON 220 Crop Science .................................. 4
AGEC 120 Agricultural Economics and Agribusiness ........................................ 3
ENTOM 300 Economic Entomology .................. 2
ENTOM 305 Livestock Entomology ...................... 2
ENTOM 320 Horticultural Entomology ............... 2
ENTOM 312 General Entomology ...................... 3
PLPHT 500 Principles of Plant Pathology ........... 3
FOR 375 Introduction to Natural Resource Management ........................................ 3
ASI 302 Introduction to Food Science ............... 3
FOR 285 Introduction to Forestry ....................... 3
ATM 160 Engineering Systems and Techniques in Agriculture ..................................... 3
BAE 350 Ag Machinery Systems ....................... 3

Any course in animal sciences and industry

Agricultural specialization

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).

Agricultural electives

Students may choose any other courses in the College of Agriculture to complete the 33 hours of agriculture.

Journalism

Students must complete a minimum of 27 hours in journalism and mass communications courses. Maximum journalism hours allowed is 33.

Journalism core

These 18 hours are required of all students. Enrollment in all skills courses requires completion of a composition test administered by the School of Journalism and Mass Communications.

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 565 Law of Mass Communications .......... 3
MC 595 Mass Communications Research ......... 3

Journalism electives

The remaining 9 to 15 hours in journalism may be chosen by the students in consultation with the faculty advisor.

Biological sciences

Required:

BIOL 198 Principles of Biology ....................... 4
BIOL 210 General Botany ............................... 4

One of the following:

ASI 500 Genetics .............................................. 3
BIOL 201 Organismic Biology ......................... 3
BIOL 303 Ecology of Environmental Problems .... 3
BIOL 320 Economic Botany ........................... 3
Select one of the following:

- CIS 101–104 Introduction to Personal Computing .......................... 3
- CIS 200 Fundamentals of Computer Programming ........................... 2

Computer language lab (200 level) ........................................ 2

- STAT 340 Biometrics I ...................................................... 3
- STAT 350 Business and Economic Statistics I .................. 3
- STAT 330 Elementary Statistics for the Social Sciences ........ 3

- ASI 490 Microcomputer Applicators in Animal Science and Industry ........ 3
- MATH 205 General Calculus and Linear Algebra ................ 3

Physical science

Select one course from the following:

- BIOCH 110 Biochemistry and Society ........................................ 3
- BIOCH 265 Introduction to Organic and Biochemistry ..................... 5
- BIOCH 521 General Biochemistry ........................................... 3
- CHM 230 Chemistry II .................................................. 4
- CHM 350 General Organic Chemistry ................................... 3
- CHM 531 Organic Chemistry I .................................................. 3
- GEO 100 Earth in Action ......................................................... 3
- GEO 220 Environmental Geography ...................................... 4

- AGRON 335 Environmental Quality ........................................... 3

Business administration and agricultural economics

 Required:

- ACCTG 231 Accounting for Business Operations .......................... 3

One of the following:

A course in business or AGEC with a 300 or higher course number.

- Denotes university general education courses.

Environmental option

May be combined with NRES secondary major.

General requirements

- ENGL 100 Expository Writing I .............................................. 3
- ENGL 200 Expository Writing II ............................................... 3
- SPCH 105 Public Speaking IA .................................................. 2
- GENAG 101 Ag Orientation .................................................... 1
- MATH 100 College Algebra .................................................... 3
- ECON 110 Principles of Macroeconomics .................................. 3
- CHM 210 Chemistry I ............................................................ 4
- CHM 110 General Chemistry .................................................. 3

Humane and/or social sciences

- ECON 527 Environmental Economics
- ENGL 680 Environment in American Literature
- GEOG 718 Geography of Public Lands
- GEOG 720 Geography of Land Use
- GEOG 725 Geography of Water Resources
- GEOG 730 World Agricultural Systems
- GEOG 760 Human Impact on Environment
- GEOG 770 Perception of Environment
- HIST 511 Environmental History
- HIST 563 Global Environmental History
- LAR 322 Environmental Issues and Ethics
- LAR 720 Public Lands and Natural Resource Law
- LAR 741 Environmental Law
- LAR 758 Land Resource Information Systems
- LAR 759 Land Resource Evaluation
- PHIL 595 Environmental Ethics
- PLAN 315 Introduction to Planning
- PLAN 590 Problems Planning: Solid Waste Management
- SOCIO 536 Environmental Sociology
- SOCIO 701 Environmental and Development in Latin America

Specialization

- GENAG 382 NRES Capstone ...................................................... 3
- AGEC 525 Natural Resources and Environmental Economics ........... 3

Math, statistics, and computer science

- GEOL 100 Earth in Action
- GEOL 105 Oceanography
- GEOL 115 Environmental Geology
- GEOL 125 Natural Disasters

Physics

- PHYS 113 General Physics or Descriptive Physics or The Physical World with Lab
- BIOS 198 Principles of Biology .............................................. 4
- BIOL 210 General Botany ......................................................... 4
- BIOL 303 Ecology of Environmental Problems ................................ 3

Math, statistics, and computer science

(3 hours or more required)

- CIS 101–104 Introduction to Personal Computers
- CIS 200 Fundamentals of Computer Programming

Computer language lab

- STAT 330 Elementary Statistics for Social Sciences
- STAT 340 Biometrics I
- STAT 350 Business and Economic Statistics I
- ASI 490 Microcomputer Applications in ASI
- MATH 205 General Calculus and Linear Algebra

Business administration and ag economics

- ACCTG 231 Accounting for Business Operations .......................... 3

Plus 3 more hours

Agriculture requirements

33 or more hours

- AGCOM 110 Introduction to Agricultural Communications .................. 3
- AGCOM 410 Ag Student Magazine ............................................. 3
- AGCOM 510 Capstone in Agricultural Communications .................. 3

Four intro courses

- AGR 305 Soils ................................................................. 3
- AGEC 120 Ag Economics and Agribusiness .................................. 3
- FOR 375 Introduction to Natural Resource Management .................. 3
- FOR 265 Forest Resource Management ........................................ 3

Select one from the following list:

- ATM 160 Engineering Systems in Agriculture ................................ 3
- HORT 201 Introduction to Horticultural Science ........................... 4
- AGR 220 Crop Science ......................................................... 3
- ASI 102 Principles of Animal Science ........................................ 3
- ENTO 300 Economic Entomology ............................................. 3
- ENTO 305 Livestock Entomology ................................................ 2
- HORT 310 Horticultural Entomology ........................................... 3
- PLTH 500 Principles of Plant Pathology ..................................... 3
- ASI 302 Introduction to Food Science ........................................ 3
- FOR 265 Forest Resource Management ........................................ 3
- FOR 375 Introduction to Natural Resource Management .................. 3

Agriculture requirements

33 or more hours

- AGCOM 110 Introduction to Agricultural Communications .................. 3
- AGCOM 410 Ag Student Magazine ............................................. 3
- AGCOM 510 Capstone in Agricultural Communications .................. 3

Four intro courses

- AGR 305 Soils ................................................................. 3
- AGEC 120 Ag Economics and Agribusiness .................................. 3
- FOR 375 Introduction to Natural Resource Management .................. 3
- FOR 265 Forest Resource Management ........................................ 3

Select one from the following list:

- ATM 160 Engineering Systems in Agriculture ................................ 3
- HORT 201 Introduction to Horticultural Science ........................... 4
- AGR 220 Crop Science ......................................................... 3
- ASI 102 Principles of Animal Science ........................................ 3
- ENTO 300 Economic Entomology ............................................. 3
- ENTO 305 Livestock Entomology ................................................ 2
- HORT 310 Horticultural Entomology ........................................... 3
- PLTH 500 Principles of Plant Pathology ..................................... 3
- ASI 302 Introduction to Food Science ........................................ 3
- FOR 265 Forest Resource Management ........................................ 3
- FOR 375 Introduction to Natural Resource Management .................. 3

Specialization

- AGEC 525 Natural Resources and Environmental Economics ........... 3
- AGR 330 Weed Management
- AGR 335 Environmental Quality
- AGR 501 Range Management
- AGR 515 Soil Genesis and Classification
- AGR 635 Soil Conservation and Management
- AGR 645 Soil Microbiology
- AGR 746 Physical Properties of Soil
- ATM 558 Soil Erosion/Sedimentary Pollution
- ATM 653 Irrigation Practices
- ATM 661 Water and Waste in the Environment
Entomology

Sonny Ramaswamy, Head

Professors Baker, Bauernfeind, Beeman, Broce, Brooks, Hagstrum, Harvey, Higgins, Howard, Kambhampati, Marsh, Mullenn, Nechols, Reese, Sloderbeck, Smith, Throne, and Wilde; Associate Professors Arthur, Buschman, Charlton, Finn, Lord, and Zhu; Assistant Professors Campbell, Oppert, Whiles, Wright de Malo, and Zolnerowich; Emeriti: Professors Blocker, Cress, Elzinga, Depew, Gates, Hopkins, Horber, Mills, Mock, and Thompson.

E-mail: entomology@ksu.edu
www. oznet.ksu.edu/entomology/

Entomology is the study of insects and related arthropods. Applied entomology stresses their relation 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 provide 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTOM 710 Insect Taxonomy</td>
<td>3</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTOM 312 General Entomology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 313 General Entomology Lab</td>
<td>1</td>
</tr>
<tr>
<td>ENTOM 300 Economic Entomology</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 320 Horticultural Entomology</td>
<td>3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTOM 620 Insecticides: Property. and Law</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 692 Insect Ecology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 706 External Insect Morphology</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 767 Insect Pest Management</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 799 Problems in Entomology:</td>
<td>1-3</td>
</tr>
</tbody>
</table>

Insect Behavior | 3 |
Insect Ecology | 3 |
Insect Genetics | 3 |
Insect Physiology | 3 |
Biological Control | 3 |
Insect Control by Host Plant Resistance | 3 |
Insects of Stored Products | 3 |
Seminar: Special Topics | 1 |

Block B: Courses offered by other departments

The following, or other minor advisor-approved courses may count toward the minor.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 455 General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 529 Fundamentals of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 612 Introductory Limnology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 625 Animal Parasitology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 515 Behavioral Ecology</td>
<td>3</td>
</tr>
<tr>
<td>GRSC 651 Food and Feed Plant Sanitation</td>
<td>4</td>
</tr>
<tr>
<td>HORT 582 Horticultural Pest Management</td>
<td>3</td>
</tr>
<tr>
<td>PLPTH 500 Principles of Plant Pathology</td>
<td>3</td>
</tr>
<tr>
<td>PLPTH 585 Crop Diseases</td>
<td>2</td>
</tr>
<tr>
<td>PLPTH 590 Landscape and Turf Diseases</td>
<td>2</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTOM 305 Livestock Entomology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 306 Livestock Entomology Lab</td>
<td>1</td>
</tr>
<tr>
<td>ENTOM 313 General Entomology Lab</td>
<td>1</td>
</tr>
</tbody>
</table>

At least 6 hours of approved electives from the courses listed below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTOM 612 Insect Pest Diagnosis</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 710 Insect Taxonomy</td>
<td>3</td>
</tr>
</tbody>
</table>

At least 6 hours of approved electives from the courses listed below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTOM 692 Insect Ecology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 706 External Insect Morphology</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 767 Insect Pest Management</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 799 Problems in Entomology</td>
<td>1–3</td>
</tr>
</tbody>
</table>

* See under General Requirements for complete course listing.

Grain science and industry

Entomology minor

In addition to fulfilling the requirements for undergraduate students majoring in grain science and industry, students receiving a minor in entomology must take the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTOM 312 General Entomology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 313 General Entomology Lab</td>
<td>1</td>
</tr>
<tr>
<td>ENTOM 710 Insect Taxonomy</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 799 Problems in Entomology:</td>
<td>1–3</td>
</tr>
</tbody>
</table>

* 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTOM 320 Horticultural Entomology</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 312 General Entomology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 313 General Entomology Lab</td>
<td>1</td>
</tr>
<tr>
<td>ENTOM 710 Insect Taxonomy</td>
<td>3</td>
</tr>
<tr>
<td>PLPTH 500 Principles of Plant Pathology</td>
<td>3</td>
</tr>
</tbody>
</table>

At least 4 hours of approved electives from the courses listed below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLPTH 590 Landscape and Turf Diseases</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 692 Insect Ecology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 706 External Insect Morphology</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 767 Insect Pest Management</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 799 Problems in Entomology</td>
<td>1–3</td>
</tr>
</tbody>
</table>

* See general requirements for complete course listing.

Entomology courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 455 General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>ENTOM 620 Insecticides: Properties and Laws</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 692 Insect Ecology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 706 External Insect Morphology</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 767 Insect Pest Management</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 799 Problems in Entomology</td>
<td>1–3</td>
</tr>
</tbody>
</table>

Crop consulting option in agronomy

Entomology minor

In addition to fulfilling the requirements for undergraduate students in the Crop Consulting Option of Agronomy, students receiving a minor in Entomology must take the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTOM 312 General Entomology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 313 General Entomology Lab</td>
<td>1</td>
</tr>
</tbody>
</table>

At least 5 hours of approved electives from the courses listed below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 455 General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>ENTOM 620 Insecticides: Properties and Laws</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 692 Insect Ecology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 710 Insect Taxonomy</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 799 Problems in Entomology</td>
<td>1–3</td>
</tr>
</tbody>
</table>

* See General Requirements for complete course listing.

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. (2 or 3) II. Classifications, habits, and principles of control of important economic insects. For agriculture majors. Two hours lec. and two hours lab a week. For the 2 credit option, students must have completed ENTOM 305 or 312 or 320 for full credit, and must receive permission from the instructor. Students who take the course for two credits will only have to meet during approximately weeks 6 through 16 of the semester, which covers strategies of control and pests of commodities. The 3-credit option is available to students who wish to take the entire course for credit.
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, feedlot management, 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) II. I. A basic study of insects and related arthropods, their structure, physiology, behavior, and relations to plants and animals, including man. Two hours lecture and one lab a week.

ENTOM 313. General Entomology Laboratory. (1) I. II. Identification, food preferences, and habitat preferences of the common insects. Two hours a week.

ENTOM 320. Horticultural Entomology. (2 or 3) I. Biological principles and management considerations for insects and related arthropods affecting horticulture. Practical applications of insect behavior and life history to information for accurate recognition, monitoring, and pest management decisions. Control tactics and conservation of beneficial species. Two hours lecture and two hours lab a week. For the 2-credit option, students must have completed ENTOM 300 or 305 or 312 for full credit, and must receive permission from the instructor. Students who take the course for two credits will only have to meet during approximately weeks 4 through 16 of the semester, which covers general pest management concepts and procedures and specific applications for horticultural entomology. The 3-credit option is available to students who wish to take the entire course for credit.

Undergraduate and graduate credit
ENTOM 612. Insect Pest Diagnosis. (2) I. 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 lecture and two hours lab a week. Pr.: ENTOM 314 or 710.

ENTOM 620. Insecticides: Properties and Laws. (2) II. 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 regulations that regulate the development, sale, use, and storage of insecticides. Two hours lecture 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 lecture and discussion 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 lecture and two hours lab a week. Pr.: ENTOM 312 and 313, or BIOL 201.

ENTOM 692. Insect Ecology. (3) II. In even years. Abiotic and biotic factors underlying the distribution, abundance, and dynamics of insects. How to measure these factors, how they affect insect population processes, interactions, and community structure, especially in agricultural systems. Emphasis on basic concepts and their application, experimental methods, and field techniques. One hour lecture and two two-hour labs a week. Pr.: BIOL 303, BIOL 529, or ENTOM 312.

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. Theories of the evolution of structure from the ancestral to the derived state including, where possible, successive evolutionary stages. Differences between leading theories are discussed. Designed for beginning graduate students and advanced undergraduates. One hour lecture and six hours lab a week. Pr.: ENTOM 300 or 312 and 313.

ENTOM 710. 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 systematics, legal principles of nomenclature, and the phylogeny of insects and their near relatives. For beginning graduate and advanced undergraduate students. One hour lecture and six hours lab a week. Pr.: ENTOM 300 or 312 and 313; ENTOM 706 recommended but not required; insect collection desirable.

ENTOM 745. Plant Resistance to Insects. (2) I. Even years during second half of semester. Plant resistance in crop plants including transgenic plants. Insect behavior, physiology, and ecology as affected by resistance. Discussion of methods of assessing and quantifying plant resistance. Pr.: ENTOM 635 or PLPTH 635.

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 lecture and one lab a week. Pr.: ENTOM 300 or ENTOM 312.


Food Science and Industry

Melvin C. Hunt, Chair of Interdepartmental Program
E-mail: hhunt@oznet.ksu.edu
www.oznet.ksu.edu/foodscience/welcome.htm

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.
Graduates are needed to manage and supervise sophisticated food manufacturing industries that produce poultry, fresh and processed meat, dairy products, bakery goods, frozen and canned fruits and vegetables, confections, and snack foods.

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 curriculums 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ENGL 100</td>
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<td>SPCH 105</td>
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<td>ASI 305</td>
<td>Fundamentals of Food Processing</td>
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<td>ASI 302</td>
<td>Introduction to Food Science</td>
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<tr>
<td>ASI 305</td>
<td>Fundamentals of Food Processing</td>
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<tr>
<td>ASI 607</td>
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<tr>
<td>ASI 400</td>
<td>Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
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</tr>
<tr>
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<td>ASI 607</td>
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<tr>
<td>GENAG 500</td>
<td>Food Science Seminar</td>
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</table>

Options

Science option

Additional requirements:

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<tr>
<th>Course Code</th>
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<tr>
<td>MATH 205</td>
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<td>Business Economic Statistics I</td>
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<tr>
<td>STAT 341</td>
<td>Biometrics II</td>
<td>3</td>
</tr>
</tbody>
</table>
Grain Science and Industry

Brendan Donnelly, Head

Professors Behnke, Donnelly, Eustace, Fairchild, Hae, MacRitchie, Seib, Walker, and Wetzel; Adjunct Professors Chung, Koeltzow, Lookhart, and Smith; Associate Professors Bhadravati, Hahn, and Sun; Adjunct Associate Professors Seitz; Assistant Professors Gwirtz, Okot-Kober, Tilley; Adjunct Assistant Professor Rogers; Instructor Willard; Emeriti: Professors Balding, Deyoe, Hahn, Hoseney, Klopfenstein, McEllhiney, Ponte, Schoeff, and Wilcox; Associate Professor Wingfield; Instructor Pudden.

www.oznet.ksu.edu/dp_gssi/

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 bakery science curriculum, options are available in cereals, chemistry, or production systems.

In the milling science curriculum, students may choose to major in feed science and industry or agricultural technology management. Students must complete a petition for admission into the minors program and work with a food science and industry advisor to tailor courses to meet their individual needs.

Grain Science and Industry
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

<table>
<thead>
<tr>
<th>Foundation course requirements</th>
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</thead>
<tbody>
<tr>
<td>◆ ACCTG 231</td>
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<tr>
<td>◆ BIOL 198</td>
<td>Principles of Biology</td>
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<td>◆ CHEM 210</td>
<td>Chemistry I</td>
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<td>and</td>
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<tr>
<td>◆ CHEM 230</td>
<td>Chemistry II</td>
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<tr>
<td>or</td>
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<tr>
<td>CHEM 220</td>
<td>Chemical Principles I</td>
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<tr>
<td>and</td>
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<td>CHEM 250</td>
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<td>◆ ECON 110</td>
<td>Principles of Macroeconomics</td>
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<td>ENGL 516</td>
<td>Written Communication for the Sciences</td>
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<td>or</td>
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<tr>
<td>AGCOM 400</td>
<td>Agricultural Business Communication</td>
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<tr>
<td>GENAG 101</td>
<td>Agricultural Orientation</td>
</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking I</td>
</tr>
</tbody>
</table>

### Basic and applied sciences [60–62](#)

| 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 |
| BIOL 455 | General Microbiology | 4 |
| ASI 607 | Food Microbiology | 4 |
| ATM 540 | Introduction to Food Engineering Technology | 3 |
| ◆ BIOCH 265 | Introductory Organic and Biochemistry | 5 |
| or | |
| BIOCH 521 | General Biochemistry | 3 |
| BIOL 455 | General Microbiology | 4 |
| CHM 371 | 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 214 | Engineering Physics I | 5 |
| PHYS 214 | Engineering Physics II | 5 |
| ◆ STAT 320 | Elements of Statistics | 3 |
| or | |
| ◆ STAT 340 | Biometrics I | 3 |

### Departmental courses [30](#)

| GRSC 100 | Principles of Milling | 3 |
| GRSC 405 | Grain Analysis Techniques | 2 |
| 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 | 3 |
| GRSC 635 | Baking Science I | 2 |
| GRSC 636 | Baking Science Lab | 2 |
| GRSC 651 | Food and Feed Product Protection | 5 |
| GRSC 670 | Bakery Layout | 1 |
| GRSC 701 | Practicum in Bakery Technology | 2 |
| GRSC 737 | Baking Science II | 2 |

### Free and university general education electives [3–7](#)

- ◆ ACCTG 241 Accounting and Investment Finance
- ACCTG 331 Accounting Processes and Controls
- ECON 530 Money and Banking
- FINAN 450 Introduction to Finance
- FINAN 470 Financial Analysis and Valuation
- IMSE 501 Industrial Management

### Notes
- 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

<table>
<thead>
<tr>
<th>Foundation course requirements</th>
<th>37</th>
</tr>
</thead>
<tbody>
<tr>
<td>◆ ACCTG 231</td>
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<td>Principles of Biology</td>
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<td>◆ CHEM 210</td>
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<tr>
<td>◆ CHEM 230</td>
<td>Chemistry II</td>
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<tr>
<td>◆ ECON 110</td>
<td>Principles of Macroeconomics</td>
</tr>
<tr>
<td>◆ AECG 120</td>
<td>Agricultural Economics and Agribusiness</td>
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<td>or</td>
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<tr>
<td>◆ ECON 120</td>
<td>Principles of Microeconomics</td>
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<tr>
<td>ENGL 100</td>
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<td>Expository Writing II</td>
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<td>GENAG 101</td>
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<tr>
<td>MANGT 420</td>
<td>Management Concepts</td>
</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking I</td>
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</tbody>
</table>

### 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 |
| BIOL 455 | General Microbiology | 4 |
| ASI 607 | Food Microbiology | 4 |
| ATM 540 | Introduction to Food Engineering Technology | 3 |
| ◆ BIOCH 265 | Introductory Organic and Biochemistry | 5 |
| or | |
| BIOCH 521 | General Biochemistry | 3 |
| BIOL 455 | General Microbiology | 4 |
| CHM 371 | 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 214 | Engineering Physics I | 5 |
| PHYS 214 | Engineering Physics II | 5 |
| ◆ STAT 320 | Elements of Statistics | 3 |
| or | |
| ◆ STAT 340 | Biometrics I | 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](#)

- ◆ ACCTG 241 Accounting and Investment Finance
- ACCTG 331 Accounting Processes and Controls
- ECON 530 Money and Banking
- FINAN 450 Introduction to Finance
- FINAN 470 Financial Analysis and Valuation
- IMSE 501 Industrial Management

### Notes
- 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 |
| or | |
| ◆ CHM 210 | Chemistry I | 4 |
| ENGL 100 | Expository Writing I | 3 |
| MATH 100 | College Algebra | 3 |

#### Spring semester

| ◆ CHM 230 | Chemistry II | 4 |
| ◆ BIOL 198 | Principles of Biology | 4 |
| MATH 150 | Plane Trigonometry | 3 |
| SPCH 105 | Public Speaking I | 2 |
| or | |
| Social science electives | 3 |

#### Sophomore

#### Fall semester

| ENGL 200 | Expository Writing II | 3 |
| ◆ AECG 120 | Agricultural Economics and Agribusiness | 3 |

#### Required courses*[ ] 9

#### Spring semester

| GRSC 110 | Flow Sheets | 2 |
| ◆ ECON 110 | Principles of Macroeconomics | 3 |
| or | |
| 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 405 | Grain Analysis Techniques | 2 |
| GRSC 651 | Food and Feed Product Protection | 4 |
| GRSC 510 | Feed Technology I | 4 |

#### Required courses*[ ] 17
### Senior

**Fall semester**
- GRSC 591 Commercial and Food Technology .......................... 3
- GRSC 750 Food 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
- ACCTG 231 Accounting for Business Operations ..................... 3
- BIOL 265 Introduction to Organic Biochemistry ....................... 3
- ASI 318 Fundamentals of Nutrition ........................................... 3

### Specialization and unrestricted electives (14 hours)**

- 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 .................................................... 3
- AGEC 515 Food and Agribusiness Marketing .......................... 3
- AGEC 632 Agribusiness Logistics ............................................. 3
- ECON 631 Principles of Transportation .................................. 3
- ASI 320 Principles of Feeding .................................................. 3
- ACCTG 241 Accounting for Investment and Finance ............... 3
- ACCTG 331 Accounting and Finance ......................................... 3
- FINAN 450 Introduction to Finance .......................................... 3
- MANGT 390 Business Law I ...................................................... 3
- MANGT 420 Management Concepts ......................................... 3
- MANGT 530 Industrial and Labor Relations ................................. 3
- MANGT 531 Management ......................................................... 3
- MANGT 630 Labor Relations Law ............................................... 3
- IMSE 501 Introduction to Industrial Management .................... 3

Unrestricted electives (maximum) ........................................... 6
- Social science electives ............................................................ 9

*Includes university general education courses.

### 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 ............................................................ 4
- ENGL 100 Expository Writing .................................................. 3
- ECON 110 Principles of Macroeconomics .................................. 3
- SPCH 105 Public Speaking 1A .................................................. 2

**Spring semester**

- CHM 230 Chemistry II ........................................................... 4
- Social science elective ............................................................. 3
- Option A, B, or C electives ..................................................... 4

### Sophomore

**Fall semester**

- ENGL 200 Expository Writing II ............................................. 3
- Option A, B, or C electives ..................................................... 6
- Social science elective ............................................................. 3
- ACM 120 Agricultural Economics and Agribusiness ................. 3

**Spring semester**

- GRSC 405 Grain Analysis Techniques ........................................ 2
- GRSC 500 Milling Science I ...................................................... 4
- BIOL 455 General Microbiology ............................................... 4
- Option A, B, or C electives ..................................................... 6

### Junior

**Fall semester**

- AGRON 340 Grain Grading ...................................................... 2
- Option A, B, or C electives ..................................................... 9
- 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 Lab .................................................. 2
- Option A, B, or C electives ..................................................... 12

**Spring semester**

- Option A, B, or C electives ..................................................... 13
- GRSC 734 Mill Processing Technology Management .................. 3

### Options

**Management option (A)**

- ACCTG 231 Accounting for Business Operations ..................... 3
- ACCTG 241 Accounting for Investment and Finance .................. 3
- AGEC 318 Food and Agribusiness Management ......................... 3
- AGEC 420 Commodity Futures ................................................ 3
- AGEC 520 Marketing Fundamentals and Futures/Options Trading ... 3
- BIOC 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
- SPECH 311 Business and Professional Speaking ....................... 3
- Free electives ................................................................. 6

Select 9 hours from the following:

- ACCTG 331 Accounting Processes and Controls ........................ 4
- AGEC 515 Food and Agribusiness Marketing .......................... 3
- AGEC 562 Agronomy Business Logic ....................................... 3
- ENGL 516 Written Communication for the Sciences ................. 3
- GENAG 390 Agricultural Employment ....................................... 1
- MANGT 390 Business Law ....................................................... 3
- MANGT 420 Management Concepts ........................................ 3
- MANGT 530 Industrial and Labor Relations ............................... 3
- MANGT 531 Personnel and Human Resources ........................... 3
- MANGT 630 Labor Relations Law .............................................. 3
- SPECH 311 Business and Professional Speaking ....................... 3
- Free electives ................................................................. 6

### 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 Dough Testing ......................................... 3
- GRSC 635 Baking Science I .................................................... 2
- GRSC 636 Baking Science Lab .................................................. 2
- GRSC 737 Baking Science II ................................................... 2
- GRSC 738 Baking Science II .................................................... 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 and Construction ............... 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 405 Grain Analysis Techniques ........................................ 2
- GRSC 602 Cereal Science ..................................................... 3
- GRSC 625 Flour and Dough Testing ......................................... 3

Plus 4 to 5 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 Contemporary Chromatograph ................................ 1
- Analysis of Food ............................................................ 1
Grain science and industry courses

GRSC 100. Principles of Milling. (3) I. Introduction to grain and feed milling processes. Two hours lec. and three hours lab a week. Pr.: MATH 100 or conc.

GRSC 110. Flow Sheets. (2) I, II. Information gathering techniques and drawing skills needed for the construction of process flow diagrams identifying process machinery and process flow and electrical control. Two hours lec. and two hours lab a week. Pr.: GRSC 100.

GRSC 405. Grain Analysis Techniques. (2) II. Principles and instrumentation available for testing cereal and other grains and their food and feed products. Two hours lec. a week. Pr.: CHEM 230, BIOCH 265 or equiv., and STAT 320.

GRSC 500. Milling Science I. (4) I. Principles and practices of wheat flour milling with full-scale equipment including grain cleaning, storage, cleaning, conditioning plant, and a modern pneumatic 240,000 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 510. Feed Tech 1. (4) I. Introduction to feed manufacturing, including principles of conveying, grinding, mixing, pellleting, 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 500 or 650.

GRSC 602. Cereal Science. (3) I. 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 application of electricity to machinery for grain processing and electrical control. Two hours lec. and three hours lab a week. Pr.: GRSC 500 or 635 or consent of instructor.

GRSC 625. Flour and Dough Testing. (3, I) 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. This course deals with management principles and their specific application to the grain processing industries. Industry and allied trade personnel in management positions will give a number of lectures in their field of expertise. Special emphasis is placed on 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 635. Baking Science I. (2) I. Introduction to chemical and physical properties of flour and other principal ingredients used in production of yeast-leavened and chemical-leavened baked products. Study of mixing methods for making yeasted doughs such as breads, rolls, sweet goods, frozen 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.: BIOC 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) II. Design of flow diagrams for dry milling processes. Uses a combination of methods that lead to practical applications and analytical techniques. Six hours lab a week. Pr.: GRSC 500 or 510.

GRSC 651. Food and Feed Production Protection. (4) II. Sanitation in relation to processing, handling, and storage of human and animal foods. Emphasis on contami-

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.: BIOC 120.

GRSC 670. Bakery Layout. (1, I) I. The layout of facilities to produce baked goods are studied. Students prepare their own bakery layout. Current problems in a bakery production setting in the baking industry are discussed. Two hours lab. Pr.: MATH 100, PHYS 113, and GRSC 636.

GRSC 701. Practical Bakery Technology. (Inter-

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 Chemometrics. (1–2) I, II. Infrared and particularly modern near-infrared spectroscopic “as is” analysis of foods, nutri-

GRSC 713. Contemporary Chromatographic Analysis of Food. (1) 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 techniques. Students with a background in analytical chemistry, including various cakes, cookies, doughnuts, bagels, icings, and fillings. Three hours of lab a week. Pr.: GRSC 730 or conc. enrollment.

GRSC 730. Milling Science II. (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. Procedures for other cereal grains and oil seeds are covered as well as general 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, and barley are studied. Students familiarize stu-

GRSC 740. Milling Processing Technology Management. (3) I. A capstone course for milling science and management students. The objectives for familiarizing 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 technolo-

GRSC 747. 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, specialty starches, and colors used in baking. Types of fillings and icings for bakery products. Formulation of low-fat and low-calorie baked products. Quality factors, total quality programs, and nutri-

GRSC 748. Baking Science II Laboratory. (1) I. A laboratory course to accompany Baking Science II (GRSC 747). Exercises and experiments in production of chemically-leavened and yeast-leavened bakery foods including various cakes, cookies, 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 Flour and Feed Technology. (3) I, II. Design and use of exhaust systems, pneumatic convey-

GRSC 786. Particle Technology for Grain Processing Industries. (3) I. Properties of cereals in particulate state, such as flour, starch, and feeds. Technology of particle size designation and particle statistics, particle size distributions, particle rheology, measurement methods, and size analysis. Three hours lec. a week. Pr.: STAT 320, GRSC 500, or graduate student status.

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 II. (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. Procedures for other cereal grains and oil seeds are covered as well as general 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, and barley are studied. Students familiarize stude...
GRSC 790. Grain Science Problem. (Var.) I, II, S. Prz.: 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, Fry, Geyer, Marr, Mattson, Rajashekar, and Warner; Associate Professors Barden, Carey, Davis, Cast, Janke, Khatamian, Kimmins, Lynch, Morgan, Reid, Shoemaker, Stevens, Stevenson, and Williams; Assistant Professors Becker, Bremer, Fargerness, Keeley, and Schroeder; Instructor Lavis;Emeriti Professors Clayberg, Keen, Leuthold, Morrison, and van der Hoeven.

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The Department of Horticulture, Forestry, and Recreation Resources is a multi-disciplinary department offering undergraduate programs in horticulture, horticulture science, horticultural therapy, and park management and conservation. 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 interdepartmental 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 arboretas, garden center operations, 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

130 semester hours

Advisors: Bremer, Davis, Fry, Keeley, Khatamian, Kimmins, Lavis, Schroeder, 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

ENGL 100 Expository Writing I .............. 3

ENGL 200 Expository Writing II .............. 3

SPCH 105 Public Speaking 1A ............... 2

Communications elective .................. 3

Foreign language elective ................. 3-5

14-16

Humanities/social sciences

PSYCH 110 General Psychology .............. 3

or

SOCI 211 Introduction to Sociology .......... 3

or

GEOG 100 World Regional Geography ... 3

Elective ........................................ 6

Quantitative sciences

CHM 210 Chemistry I ......................... 3-5

Organic chemistry elective ................ 3-5

MATH 100 College Algebra ................. 3

Math/physics/computer science elective .... 3

Statistics elective .......................... 3

16-18

Agriculture/biological sciences

AGRON 305 Soils ................................. 4

ASE 500 Genetics ............................... 3

BIOL 210 General Botany .................... 4

BIOL 500 Plant Physiology ................... 4

Entomology elective ....................... 3

GENAG 101 Ag Orientation .................. 1

HORT 201 Introduction to Horticultural Sciences .... 4

PLPTH 500 Principles Plant Pathology .... 3

26

Ag economics/business

ACCTG 231 Accounting for Business Operations .... 3

ECON 110 Principles of Macroeconomics ...... 3

or

ECON 120 Principles of Microeconomics ...... 3

Ag economics/business electives .......... 9

15

Horticulture requirement

HORT 350 Plant Propagation ................... 3

or

HORT 520 Fruit Production .................... 3

HORT 560 Vegetable Crop Production ........ 3

HORT 190 Pre-Internship in Horticulture .... 1

HORT 590 Horticulture Internship ............ 2 or 5

Pest management elective ............... 2-3

Environmental science elective .......... 3

14-18

Horticulture specialization electives

Select an area of horticulture specialization and complete 27–31 hours of specialization courses, chosen in consultation with the advisor.

Fruit/vegetable specialization

AGRON 330 Weed Management .............. 3

ENTOM 612 Insect Pest Diagnosis ............ 2

or

ENTOM 620 Insecticides: Properties and Laws .. 2

HORT 376 Herbaceous Ornamental Plants ...... 3

HORT 520 Fruit Production .................... 3

HORT 560 Vegetable Crop Production ....... 3

HORT 570 Greenhouse Operations Management .. 3

HORT 575 Nursery/Garden Center Operations .. 3

Specialization electives from list below ....... 10

AGRON 330 Weed Management .............. 3

AGRON 375 Soil Fertility ....................... 3

HORT 210 Concepts of Floral Design ........ 3

HORT 275 Concepts of Horticulture Design .. 4

HORT 374 Woody Plant Materials I .......... 3

HORT 375 Woody Plant Materials II ......... 3

HORT 508 Landscape Maintenance .......... 3

HORT 515 Turf Management .................. 3

HORT 585 Arboriculture ....................... 3

HORT 706 Turfgrass Science .................. 3

HORT 775 Plant Nutrition/Nutrient Management .. 27

Greenhouse management specialization

HORT 376 Herbaceous Ornamental Plants ..... 3

HORT 377 Plants in the Interior Environment .. 3

HORT 570 Greenhouse Operations Management .. 3

HORT 575 Nursery/Garden Center Operations .. 3

HORT 625 Floral Crops Production and Handling . 4

Specialization electives: Choose four courses from list below

AGRON 330 Weed Management .............. 3

HORT 210 Concepts of Floral Design ........ 3

HORT 275 Concepts of Horticultural Design .. 4

HORT 374 Woody Plant Materials I .......... 3

HORT 375 Woody Plant Materials II ......... 3

HORT 508 Landscape Maintenance .......... 3

HORT 515 Turf Management .................. 3

HORT 585 Arboriculture ....................... 3

HORT 775 Plant Nutrition/Nutrient Management .. 3

28-29
Agriculture

Landscape design specialization
HORT 275 Concepts of Horticultural Design ........... 4
HORT 374 Woody Plant Materials I ..................... 3
HORT 375 Woody Plant Materials II .................... 3
HORT 376 Herbaceous Ornamental Plants ............. 3
HORT 308 Landscape Maintenance ...................... 3
HORT 510 Horticulture Design ............................ 3
HORT 551 Landscape Contracts and Construction 3

Specialization electives from list below ............. 6
HORT 515 Turf Management ............................... 3
HORT 545 Computer Applications in Horticultural Design ........... 3
HORT 580 Advanced Horticultural Design .......... 3
HORT 385 Arboriculture ..................................... 3
Design elective ................................................... 3

Landscape and turf management specialization
AGRON 375 Soil Fertility ..................................... 3

HORT 706 Turfgrass Science ............................... 3
HORT 374 Woody Plant Materials I ..................... 3
HORT 375 Woody Plant Materials II .................... 3
HORT 376 Herbaceous Ornamental Plants ............. 3
HORT 308 Landscape Maintenance ...................... 3
HORT 515 Turf Management ............................... 3
HORT 551 Landscape Contracts and Construction 3
HORT 385 Arboriculture ..................................... 3
Specialization elective ....................................... 3

Nursery management specialization
AGRON 330 Weed Management .......................... 3
HORT 375 Woody Plant Materials II .................... 3
HORT 376 Herbaceous Ornamental Plants ............. 3
HORT 307 Greenhouse Operations Management 3
HORT 357 Nursery/Garden Center Operations 3

Specialization electives: Choose four courses from list below ....................................... 12–13
HORT 275 Concepts of Horticulture Design ........... 4
HORT 376 Herbaceous Ornamental Plants ............. 3
HORT 308 Landscape Maintenance ...................... 3
HORT 515 Turf Management ............................... 3
HORT 385 Arboriculture ..................................... 3
HORT 595 Landscape Irrigation Systems ................ 3
HORT 625 Floral Crops Production and Handling 4
HORT 775 Plant Nutrition/Nutrient Management 3

Free electives .................................................... 2–12
Total credits for graduation ............................... 130

Golf course management specialization
Technical core
BIOL 198 Principles of Biology ........................... 4
or
BIOL 210 General Botany .................................... 4
CHEM 210 Chemistry I ......................................... 4
Computer science elective .................................... 3
MATH 100 College Algebra ................................ 3
MATH 205 General Calculus and Linear Algebra 3
Statistics elective ................................................ 3

Communications/interpersonal relations
ENGL 100 Expository Writing I .......................... 3
ENGL 200 Expository Writing II .......................... 3
SPCH 105 Public Speaking IA ............................. 2
Communications electives ................................... 9

Internship
HORT 190 Pre-Internship in Horticulture .......... 1
HORT 590 Horticulture Internship ........................ 2
 Hermione 495/GENBA 495 Golf Course Internship in Business/Hospitality Management 3

Humanities/social sciences
ECON 110 Principles of Macroeconomics ............. 3
ECON 120 Principles of Microeconomics ............. 3
or
AGEC 120 Agricultural Economics and Agribusiness
Humanities/social sciences electives ................. 3
Foreign language elective .................................. 3–5

Business management
ACCTG 231 Accounting for Business Operations ..... 3
ACCTG 241 Accounting for Investing and Finance 3
FINA 450 Principles of Finance ........................... 4
MKTG 420 Management Concepts ......................... 3
MKTG 400 Marketing ......................................... 3

Turf management
GENAG 101 Ag Orientation .................................. 1
AGRON 305 Soils .................................................. 4
AGRON 335 Environmental Quality ..................... 3
or
FR 375 Introduction to Natural Resource Management 3
AGRON 375 Soil Fertility ...................................... 3
ATM 653 Water Management and Irrigation Systems 3

or
HORT 595 Landscape Irrigation Systems ................ 3
HORT 201 Introduction to Horticultural Science ....... 4
HORT 374 Woody Plant Materials I ..................... 3
HORT 375 Woody Plant Materials II .................... 3
HORT 515 Turf Management ............................... 3
HORT 517 Golf Course Operations ......................... 3
HORT 706 Turfgrass Science ................................ 3
PLPHT 500 Principles of Plant Pathology .............. 3
Horticulture elective .......................................... 3
Post management elective .................................. 3

Hospitality
Select 12 hours from the following list:
HRIMD 120 Survey of the Hospitality Industry ....... 3
HRIMD 220 Environmental Issues in the Hospitality Industry

HRIMD 230 Issues in Tourism ............................... 2
HRIMD 340 Contemporary Issues: Controlled Beverages .......................... 2
HRIMD 341 Principles of Food Product Management 3
HRIMD 342 Food Product Management ................ 3
HRIMD 361 Principles of Lodging ........................... 2
HRIMD 421 Hospitality Service Systems ............... 3
HRIMD 422 Cost Controls in Hospitality Operations 3
HRIMD 424 Hospitality Marketing and Sales .......... 3
HRIMD 621 Hospitality Law ................................... 3
ASJ 302 Introduction to Food Science .................... 3
ASJ 690 Principles of HACCP .............................. 2

Free electives ............................................... 7–9
Total credits for graduation ............................... 130

Horticulture science
Bachelor of science in agriculture 130 semester hours
The horticulture science program has similar requirements to the other horticulture programs with the following modifications (modifications are given in italics), deletions and additions.

Students must complete the university general education requirements specified by the College of Agriculture. See the College of Agriculture General Requirements section.

Communications
Speech elective .................................................. 3
Writing elective ................................................. 3

Quantitative sciences
CHM 230 Chemistry II ....................................... 4
CHM 350 General Organic Chemistry .................. 3
MATH 205 General Calculus and Linear Algebra 3
PHYS 115 Descriptive Physics ............................. 5

Total credits for graduation ............................... 130

Horticulture therapy
Bachelor of science in agriculture 130 semester hours
Advisors: Mattson and Shoemaker
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 requirements
ENGL 100 Expository Writing I .......................... 3
ENGL 200 Expository Writing II .......................... 3
SPCH 105 Public Speaking IA ............................. 2
Communications electives ................................... 9

Internship
HORT 190 Pre-Internship in Horticulture .......... 1
HORT 590 Horticulture Internship ........................ 2
Hermin 495/GENBA 495 Golf Course Internship in Business/Hospitality Management 3

Horticulture and agriculture requirements
GENAG 101 Ag Orientation .................................. 1
HORT 201 Introductory Horticultural Science ....... 4

Total credits for graduation ............................... 25
HORT 210 Concepts of Floral Design .......................... 3
HORT 256 Human Dimensions of Horticulture ............ 3
HORT 350 Plant Propagation .................................. 3
HORT 374 Woody Plant Materials 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
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 Croppings/Handling ......................... 4
AGRON 105  Soils ............................................ 4
PLPTH 500 Principles of Plant Pathology ..................... 3
ENTM 520 Horticultural Entomology .......................... 3

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Humanities and/or social science requirements
PSYCH 110 General Psychology ................................ 3
PSYCH 505 Abnormal Psychology ............................. 2
SOCIO 211 Introduction to Sociology .......................... 3

9

Educational psychology elective
Select 3 credits from the following:
PSYCH 280 Psychology of Childhood and Adolescence ....... 3
EDCEP 315 Educational Psychology I ........................... 3
HDFS 110 Introduction to Human Development .............. 3

3

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 following:
ACCTG 231 Accounting for 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 ........... 3

6

Free electives .................................................................. 10

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
HORT 201 Introductory Horticultural Science .................... 4
HORT 350 Plant Propagation .................................... 3

Select three courses from the following:
HORT 256 Human Dimensions in Horticulture ................. 3
HORT 374 Woody Plant Materials I ............................. 3
HORT 375 Woody Plant Materials II ............................. 3
HORT 376 Herbaceous Ornamental Plants ...................... 3
HORT 515 Turf Management .................................... 3
HORT 520 Fruit Production .................................... 3
HORT 560 Vegetable Production ................................ 3
HORT 570 Greenhouse Operations Management .............. 3
HORT 575 Nursery/Garden Center Management ............... 3

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 locus of recreation and park professionals is the supply of quality leisure opportunities that lead to an enhanced “quality of life.” A four-year program in park management and conservation is offered with options in administration, interpretation, law enforcement, and park management 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.

Communications requirements
ENGL 100 Expository Writing I .................................... 3
ENGL 200 Expository Writing II .................................... 3
SPCH 106 Public Speaking I ....................................... 3

9

General agriculture requirement
GENAG 101 Ag Orientation ......................................... 1

1

Natural sciences requirements
BIOL 210 General Botany ........................................... 4
GEOL 100 Earth in Action ......................................... 3
CHM 110 General Chemistry ................................. 3
CHM 111 General Chemistry Lab ................................ 1
PHYS 101 The Physical World I ................................. 3
PHYS 103 The Physical World I Lab ............................ 1

15

Social systems requirements
ECON 120 Principles of Microeconomics ....................... 3
PSYCH 110 General Psychology ................................ 3
SOCIO 211 Introduction to Sociology ........................... 3

9

Mathematics and statistics requirements
MATH 100 College Algebra ...................................... 3
STAT 330 Elementary Statistics for Social Sciences .......... 3
or
STAT 340 Biometrics .............................................. 3

6

Recreation resources requirements
FOR 285 Forest Resource Management .......................... 3
FOR 375 Introduction to Natural Resource Management ....... 3
FOR 330 Dendrology I ............................................ 2
FOR 340 Dendrology II ........................................... 2
FOR 385 Computer Applications in NRM ...................... 2
LAR 322 Environmental Issues and Ethics ................... 3
RRES 210 Introduction to Park and Recreation Management .................. 3
RRES 350 Parks and Recreation Praxisicum ................... 2
RRES 310 Outdoor Recreation Leadership ..................... 3
RRES 440 Outdoor Recreation Policy .......................... 3
RRES 475 Natural History for Park Managers .................. 3
RRES 489 Programming and Event Planning .................... 3
RRES 490 Parks and Recreation Administration I ............. 3
RRES 492 Internship in Parks and Recreation .................. 6
RRES 575 Management of Water Resources for Leisure .... 3
RRES 580 Park Operations and Facilities Management .......... 4
RRES 635 Methods of Environmental Interpretation .......... 3
RRES 675 Dimension of Recreation Behavior .................. 3
RRES 699 Parks and Recreation Administration II .............. 3

55

Park management and conservation specialization electives
Select an area of specialization and complete 20–23 credit hours of specialization courses, in consultation with the advisor.

Park manager
AGRON 305 Soils ............................................. 4
FOR 285 Forest Resource Management .......................... 3
or
RRES 375 Introduction to Natural Resource Management ........... 3

Plus choose 15 hours from the following:
AGEC 525 Natural Resources and Environmental Economics ................... 3
ASI 303 History and Attitudes of Animal Use .................. 3
BIOL 433 Wildlife Conservation ................................ 3
ENTM 312 General Entomology ................................ 2
or
ENTM 313 General Entomology Lab ......................... 1
GEOG 508 Fundamentals of Geographic Information Systems ................... 3
GEOG 705 Remote Sensing of the Environment .............. 3
HORT 508 Landscape Maintenance ............................. 3
HORT 585 Arboriculture ........................................... 3
LAR 756 Design of Park and Recreation Areas ................. 3
PLPTH 500 Principles of Plant Pathology ...................... 3

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Interpretation
AGRON 305 Soils ............................................. 4
BIOL 222 Field Ornithology ..................................... 1
ENTM 312 General Entomology ................................ 2
ENTM 313 General Entomology Lab ........................... 1
FOR 285 Forest Resource Management .......................... 3
or
FOR 375 Introduction to Natural Resource Management ........... 3
RRES 640 Advanced Environmental Interpretation .............. 3

Plus one additional communications course from the following:
ACCOM 712 Environmental Communications ................ 3
MC 325 Fundamental of Public Relations ...................... 3
SPCH 320 Theories of Human Communication ............... 3
SPCH 526 Persuasion ............................................. 3

Plus one additional biology/history course from the following:
BIOL 433 Wildlife Conservation ................................ 3
BIOL 544 Mammalogy ........................................... 3
BIOL 551 Taxonomy of Flowering Plants ....................... 4
BIOL 542 Ichthyology ............................................ 3
BIOL 612 Limnology ............................................ 4
HIST 251 History of U.S. to 1877 ............................... 3
HIST 252 History of U.S. Since 1877 ............................ 3
HIST 511 Environmental History ................................ 3
HIST 558 History of Kansas .................................... 3

20–21

Law enforcement
AGRON 305 Soils ............................................. 4
FOR 285 Forest Resource Management .......................... 3
or
FOR 375 Introduction to Natural Resource Management ........... 3


Horticulture courses
HORT 190. Pre-Internship in Horticulture. (1) I. Introduction to the internship program in horticulture; planning for a rewarding internship experience; requirements for completing an internship; how to prepare an oral presentation using video and other participation in presentations by previous year’s interns. Course designed to be taken the first fall semester on campus, or as early as possible in the academic career. One hourlec. per week. For department majors only.

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 foliage plants in the interior environment. Two hours rec. and two hours lab a week. Pr.: BIOL 198, BIOL 210, or HORT 201.

HORT 250. Landscaping Maintenance. (3) I. Fundamentals of maintaining ornamental plant materials such as trees, shrubs, turf, annual color, perennials, vines, and roses in residential, commercial, and golf course landscapes. Two hours rec. and two hours lab a week. Pr.: BIOL 210 and HORT 201.

HORT 375. Woody Plant Materials I. (3) I. Identification, ornamental characters, and requirements for use of woody ornamental conifers, broadleaf evergreens, vines, ground covers, deciduous flowering shrubs, and small-to-medium-size flowering trees. Weekly labs consist of lengthy walking campus tours to identify plant specimens. Two hours rec. 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 440. Horticultural Therapy. (3) I. Designed to develop proficiency 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 535. Horticultural Therapy Field Techniques. (3) II. Students under supervision will plan, conduct, and evaluate horticultural therapy activities at Manhattan institutional sites 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 cr.) I. Students will receive clinical instruction in horticultural therapy programs to gain experience in the application and use of horticultural activities for special populations. Six months (1,000 hours) continuous internships required in psychiatric and correctional programs. Two 3-month (500 hours) internships may be completed at two different sites. Students are required to complete 6 credits of field experience before graduation. Pr.: HORT 535.

HORT 545. Computer Applications in Horticultural Design. (3) I. Introduction to a variety of computer software systems for the nursery/garden center environment. These include planning, routing, and estimating packages. One hour rec. and four hours lab per week. Pr.: HORT 510 or instructor permission.

HORT 551. Landscape Contracting and Construction. (3) II. The use, interpretation, and development of planting plans (including contracting, cost estimation, 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 rec. and two hours lab or field trips a week. Pr.: HORT 201 and HORT 374 and/or 375.

HORT 570. Nursery and Garden Center Operations. (3) I. A study of the various practices and methods of operating a commercial nursery for the production of ornamental woody plants used for landscaping purposes. Two hours rec. and three hours lab a week. Pr.: BIOL 210, HORT 350 and AGRON 305.

HORT 580. Advanced Horticultural Design. (3) II. Emphasis is on horticultural design projects with clients, working with the design process, design articulation, and communication with the clients. By appointment. Pr.: HORT 510.

HORT 582. Horticultural Pest Management. (3) II. Strategies involved in horticultural pest management, including types, calibration and operation of application equipment, pesticides, legal and safety issues, and non-pesticide control methods. Two hours rec. 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. (2–5) I, II. S. 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 190, 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, hydraulics, 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. One Saturday field trip will be taken. Pr.: BIOL 500, HORT 350 and 570.

HORT 640. Horticulture Problems. (Var.) II. S. Problems and reports in floriculture, olericulture, ornamental horticulture, pomology, turfgrass, and horticultural therapy. Pr.: Consent of instructor.

HORT 706. Turfgrass Science. (3) 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, II. 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 and 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 lect. and two hours discussion a week. Pr.: AGRON 305 and BIOL 500.

Forestry courses

FOR 285. Forest Resource Management. (3) I. An examination of forest management including: forest heritage in the U.S., influences of forest types, management systems, silvicultural practices, and the profession of forestry. Three hours lec. a week.

FOR 330. Dendrology I. (2) I. Identification, classification, silvical 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) I. Identification, classification, silvical characteristics, distribution, and economic significance 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 Management. (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 philosophy on the management and use of our natural resources will also be examined. Three hours lec. a week.

FOR 385. Microcomputer Applications in Natural Resource 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 information, word processing, and graphic information, record keeping, decision making, budgeting, and investment analysis. Two hours lec. and two hours lab a week. Pr.: FOR 285 or 375.

FOR 641. Forestry Problems. (1–3) 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 management systems used in much of the world. Topics will include international agriculture and forestry covering the interrelationships of crops, livestock, and woody plants. The agroforestry concept, classification of systems, practices used worldwide, and the contribution of agroforestry to local economies of lesser developed countries will be examined. Two hours lec. a week. Field trip required. Pr.: BIOL 201 or BIOL 210 or HORT 201.

Recreation resources courses

RRES 200. Topics in Recreation Resources. (1–3) I, II. 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. (3) I. Coverage of the parks and recreation profession to include, federal, state, county, and local agencies and positions. Private sector careers including those in travel and tourism will also be examined. Three hours lec. a week.

RRES 310. Outdoor Recreation Leadership. (3) I. This course will help students effectively communicate the importance of outdoor recreation and natural resource conservation to the public. Students will gain experience in group dynamics and a variety of leadership approaches involving nationally recognized environmental education programs. Some local field trips are required. Three hours lec. a week. Pr.: Sophomore standing.

RRES 350. Parks and Recreation Practicum. (2) I, II. Required professional employment (240 hours, 6 weeks); a survey and application of the principles of park and recreation administration resources. Students select 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 recreation policy in America. Three hours lec. a week.

RRES 475. Natural History for Park Managers. (3) I. Natural history of North American vertebrate fauna including identification, management, and ecology of selected fish, amphibians, reptiles, birds, and mammals. Three hours rec. a week.

RRES 489. Program and Event Planning. (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. Focus on basic skills specific to the management of public recreation and park agencies. Includes special emphasis on finance and budgeting, organizational structure, risk management, and an introduction to policy formulation. Three hours lec. a week.

RRES 492. Internship in Parks and Recreation. (6) I, II. S. An intensive, paid practical experience with an approved agency, extending over a 10-week, 400-hour span. For seniors only.

RRES 575. Management of Water Resources for Leisure. (3) II. 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 formulation, legal rights, use conflicts, and use valuation are covered. Three hours lec. a week.

RRES 580. Park Operations and Facilities Management. (4) I. A focus on basic principles and practices of operating and maintaining park and recreation areas and facilities. Special emphasis will be given to the operation of community parks, campgrounds, trails and OHV areas, marinas, zoos, shooting ranges, aquatic facilities, and multipurpose sports complexes and recreation centers. Three hours lec. and two hours lab a week.

RRES 635. Methods of Environmental Interpretation. (3) II. This course focuses on principles and techniques necessary to communicate environmental and cultural values to visitors in park areas. The philosophy, theory, design, and application of interpretive media to communicate information about the environment is studied. Two hours rec. and three hours lab a week. Field trips required. Pr.: FOR 375 and RRES 440.

RRES 640. Advanced Environmental Interpretation. (3) II. This course builds on the philosophical and interpretive techniques which are introduced in RRES 635. Specifically, labs emphasize development of personal interpretive skills and students are introduced to interpretive media not covered in RRES 635 (e.g., video equipment, computers, etc.). The lecture and readings focus on the philosophy of interpretation and the theoretical framework for designing and evaluating interpretive strategies. One hour lec. and four hours lab a week. Field trips required. Pr.: RRES 635.


RRES 699. Parks and Recreation Administration II. (3) I. A focus on personnel management, liability and political issues and funding options for park or recreation agencies. Three hours rec. a week. Field trips required. Pr.: RRES 490.

RRES 795. Parks and Recreation Theory and Policy. (3) II. On sufficient demand. An analysis of the values, principles, theories, and processes of public policy development as it applies to the park and recreation profession. Three hours lec. a week. Pr.: RRES 489.

RRES 799. Problems in Parks and Recreation. (Var.) I–3 I, II. S. A special investigation of a problem in parks and recreation normally requiring a combination of experiential work, research, and writing. Pr.: RRES 520 or 590.

Plant Pathology

Robert S. Zeigler, Head

Professors Bockus, Claflin, Gill, Hubert, Jardine, Johnson, Leach, Leslie, Schwenk, Stuteville, Tisserat, Valient, White, and Zeigler; Research Professor Friebe; Associate Professors Bowden and Heaton; Assistant Professors Garrett, Nelson, Tang, Trick, and Zhou; Instructors O’Mara and Todd; Adjunct Professors Burgess and Marasses; Adjunct Associate Professor Leung; Adjunct Associate Professors Appel, Fellers, and Sim; Emeriti: Professors Browder, Eversmeyer, Sauer, and Willis.

E-mail: plantpath@ksu.edu

www.oznet.ksu.edu/planpath

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, development, and teaching.

Plant pathology minor

Students interested in the study of plant diseases should consider the plant pathology minor. The minors program in plant pathology requires a minimum of 15 semester hours.

Required courses (8 hours):

PLPTH 500 Principles of Plant Pathology .............. 3
PLPTH 585 Crop Diseases .................................... 2

or

PLPTH 590 Landscape and Turf Diseases .............. 2
Plus one additional course in plant pathology, such as:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLPTH 300</td>
<td>Microbes, Plants, and the Human Pers.</td>
<td>3</td>
</tr>
<tr>
<td>PLPTH 610</td>
<td>Biotechnology</td>
<td>2</td>
</tr>
<tr>
<td>PLPTH 730</td>
<td>Plant Nematology</td>
<td>3</td>
</tr>
</tbody>
</table>

At least 7 additional hours from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRON 645</td>
<td>Soil Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 455</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 604</td>
<td>Biology of the Fungi</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 300</td>
<td>Economic Entomology</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 312</td>
<td>General Entomology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 313</td>
<td>General Entomology Lab</td>
<td>1</td>
</tr>
</tbody>
</table>

Any other course in plant pathology

Plant pathology courses

**PLPTH 300. Microbes, Plants, and the Human Perspective.** (3) I. The relationship of the biological world (specifically microbes) to our personal and cultural perceptions 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 context of germ theory, symbiosis as biological phenomenon 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. 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 landscape 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 676. Fusarium Laboratory Workshop.** (1) S. A one-week laboratory/lecture course on the identification, systematics, physiology, mycotoxicoology, genetics, and molecular biology of fungi in the genus Fusarium. Students should not be enrolled in any other class while attending this workshop. Pr.: BIOL 455 or 604, and consent of instructor. Credit/No Credit.

**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 750. Problems in Plant Pathology.** (1–3) I, II, S. Work is offered in general plant pathology, plant virology, plant nematology, disease physiology, epidemiology, and disease diagnosis. Pr.: Background of courses needed for the problem undertaken.

**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 (NASAD). 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, regional and community planning, and environmental planning and management.

Admission Policies and Procedures

High school applicants

In addition to meeting the university’s admission requirements, first-year admission to the College of Architecture, Planning, and Design is based upon the review of high school course work in mathematics, English, science, social studies/history, and foreign language; ACT or SAT scores; and class rank.

Emphasis is placed upon performance in academic course work. The college can admit up to 225 new freshman and transfer students each year. It is important to apply by the deadline stated below because of the limited number of students admitted into the program. The college does not admit freshman students for the spring semester.

Application materials and deadline

1. Application for undergraduate admission
2. Official 6th- or 7th-semester high school transcript
3. Official ACT or SAT scores
4. $20 application fee

Application materials must be sent directly to:
Office of Admissions
Kansas State University
119 Anderson Hall
Manhattan, KS 66506-0102.

To ensure consideration, application materials must be submitted and processed no later than February 1.

College preparatory curriculum

Students are advised to take a full academic course load each year of high school to meet requirements for the recommended college preparatory curriculum. If honors courses and advanced placement courses are available, students are encouraged to take them. In particular, advanced placement courses in calculus and English are helpful. Courses that are helpful in developing creative abilities should be taken if time permits. With respect to drawing, the faculty strongly recommends taking a course in freehand drawing. If a choice must be made between technical drawing, CADD, or freehand drawing, the faculty prefers freehand drawing.

The following high school curriculum is highly recommended:

<table>
<thead>
<tr>
<th>Subject</th>
<th>units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>3–4</td>
</tr>
<tr>
<td>Algebra I, geometry, Algebra II, and trigonometry (pre-calculus or calculus is highly recommended)</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>4</td>
</tr>
<tr>
<td>Emphasis on critical thinking, reading, and writing</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>3–4</td>
</tr>
<tr>
<td>Physics, chemistry, and biology</td>
<td></td>
</tr>
<tr>
<td>Social studies</td>
<td>3–4</td>
</tr>
<tr>
<td>Foreign language</td>
<td>2–4</td>
</tr>
</tbody>
</table>

College Algebra or Calculus: 3 units
W e s t e r n  C i v i l i z a t i o n I : 3 units
W e s t e r n  C i v i l i z a t i o n I I : 3 units
S u r v e y  o f  A r t  H i s t o r y  I : 3 units
S u r v e y  o f  A r t  H i s t o r y  I I : 3 units
S c i e n c e  I : 3 units
S c i e n c e  I I : 3 units
F o r e i g n  L a n g u a g e  I : 3 units
F o r e i g n  L a n g u a g e  I I : 3 units
E x p o s i t o r y  W r i t i n g  I : 3 units
E x p o s i t o r y  W r i t i n g  I I : 3 units
F r e e h a n d  D r a w i n g : 3 units
T o t a l  17

Transfer applicants

Because of the diversity of applicants’ backgrounds and previous educational preparation, individual transcripts are evaluated before determining placement in college programs. Transfer students are placed in either the first or second year. Students who have attended another accredited architecture, interior architecture, or landscape architecture program may be considered for advanced placement in the third, fourth, or fifth year. Academic success in the College of Architecture, Planning, and Design program rests, in part, with a placement that reflects previous academic experience.

A student’s academic performance in college-level course work is an important indicator of future academic performance. Students with a college grade point average below 2.7 are rarely admitted to the college, and the GPA may affect the level of placement. Please note that all placement decisions are contingent upon maintaining or exceeding placement standards. Students who do not continue to meet or exceed the stated expectations may have their placement status changed.

Students must have completed the following high school mathematics courses prior to arriving at Kansas State University:

- Two units of algebra
- One unit of geometry
- One-half unit of trigonometry

Mathematics courses not taken in high school may be taken at other universities, community colleges, correspondence schools, night schools, or with a private tutor.

Students should contact the College of Architecture, Planning, and Design’s Office of Student Services at 785-532-5047 for advice about the transfer process. It is a good idea to establish contact with the associate dean before enrolling in college courses.

First-year placement

Students who have attended a community college or university and who have not completed the transfer program of study will be considered for admission to the first year. Students admitted to the first year will enroll in the one-year Environmental Design Studies Program, which begins in the fall semester.

Students will enroll in design studio and any other courses that they have not previously taken and are required to complete the 31-credit-hour Environmental Design Studies program. The college does not admit transfer students for the spring semester.

Second-year placement transfer program of study

Fall semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expository Writing</td>
<td>3</td>
</tr>
<tr>
<td>Survey of Art History I</td>
<td>3</td>
</tr>
<tr>
<td>Western Civilization I</td>
<td>3</td>
</tr>
<tr>
<td>College Algebra or Calculus</td>
<td>3</td>
</tr>
<tr>
<td>Freehand Drawing</td>
<td>3</td>
</tr>
<tr>
<td>Oral Communication</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>18</td>
</tr>
</tbody>
</table>

Spring semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>Survey of Art History II</td>
<td>3</td>
</tr>
<tr>
<td>Western Civilization II</td>
<td>3</td>
</tr>
<tr>
<td>General or Descriptive Physics</td>
<td>4-5</td>
</tr>
<tr>
<td>Architectural Graphics</td>
<td>3</td>
</tr>
<tr>
<td>Architectural Drafting</td>
<td>3</td>
</tr>
<tr>
<td>Basic 2D or 3D Design</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16-17</td>
</tr>
</tbody>
</table>
Students who will have completed the transfer program of study by the start of classes (August) will be considered for admission to the second year of the architecture, interior architecture, or landscape architecture programs. It is important to apply for admission prior to February 1 as there are a limited number of second-year transfer spaces available. Admission to a professional program is also affected by college GPA. Typically, successful second-year transfer students have GPAs of 3.0 and higher.

Students admitted to one of the degree-granting programs will generally be enrolled in the same second-year course work as students who began their studies as freshmen at Kansas State University.

Third-, fourth-, or fifth-year placement
Students who have attended another National Architectural Accrediting Board (NAAB), Landscape Architectural Accreditation Board (LAAB), or Foundation for Interior Design Education and Research (FIDER) -accredited program can be considered for placement in either the third, fourth, or fifth year of one of our degree programs. Transfer students should follow the procedures described in this document and submit course descriptions for all the professional program courses and a portfolio of work completed in design studio. Studio placement will be determined by means of individual portfolio reviews by the faculty. Portfolios must be sent to the associate dean immediately following submission of the official Kansas State University application.

For more information
For more information about College of Architecture, Planning, and Design programs, write or call:
Associate Dean
College of Architecture, Planning, and Design
Kansas State University
212 Seaton Hall
Manhattan, KS 66506–2902
785-532-5047
Fax: 785-532-6722
E-mail: archdesstuserv@ksu.edu
http://aalto.arch.ksu.edu

For more information about admission to Kansas State University, write or call:
Office of Undergraduate Admissions
Kansas State University
119 Anderson Hall
Manhattan, KS 66506–0102
785-532-6250 (out-of-state)
1-800-432-8270 (toll free in Kansas)

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, UGE courses are marked with •. For more information about UGE requirements, see the Degrees section of this catalog. For a current list of approved UGE courses:
www.ksu.edu/registrar/enroll/gened.html

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 or digital files of project work for their portfolios.

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, Australia, Finland, 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
Maureen Herspring, Academic Advisor
aalto.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 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.

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.

Additional Information

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.
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

100 ENVD
The curriculum for the first year forms the foundation of the five-year accredited professional programs in architecture, interior architecture, and landscape architecture.

First semester

- DSPN 201 Environmental Design Studio I ...... 4
- MATH 100 College Algebra ...................................... 3
- ENVD 250 History of the Designed Environment I ... 3
- ENFD 203 Survey of the Design Professions .......... 1
- ENGL 100 Expository Writing I ............................. 3

Total: 14 hours

Second semester

- DSPN 202 Environmental Design Studio II ........... 4
- PHYS 115 Descriptive Physics ................................. 5
- ENVD 251 History of the Designed Environment II ... 3
- University general education elective ........................ 3
- SPCH 105 Public Speaking IA ................................. 2

Total: 17 hours

High school mathematics prerequisites: Entering freshman or transfer students must have fulfilled the minimum high school 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

100 ENVD 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. 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.

ENVD 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, and planner.

ENVD 205. Graphies I. (2) I, II, S. Instruction in instrument-aided drawing as a basic tool for communicating information about environmental subjects. Four hours of studio a week.

ENVD 206. Graphies 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 259. History of the Designed Environment I. (3) I. The history of the designed environment from ancient times to the 12th century.

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, Condia, Hoag, Jones, Kremer, Norris–Baker, Seamon, Shapiro, C. Watts, and D. Watts; Associate Professors Arens, Charney, Knox, Krstic, Mayo, McNamara, Ornelas, Sachs, Selfridge, Siepl–Coates, Simic, Simon, and Streeter; Assistant Professors Lee, Miller, Norheim, Pecar, Purvis, and Wolf; Instructors Goldstein, Quiros, and Spaw; Adjunct Professors Baruchieri, Bowman, Hoffman, Nelson, Singleton, and Seligson; Emeriti: Professors Christensen, Ernst, Fischer, Foester, Krider, Sanner, Slack, and Wendt.

E-mail: jsmuel@ksu.edu

alto.arch.ksu.edu/arch

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 Technical University in Prague. In the past students have studied in Finland, Denmark, Australia, and Britain, and the department actively explores new opportunities for study abroad.

Each spring third-year students spend a week in Chicago or Los Angeles studying those cities’ 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. Fifth-year students may spend a year of academic study in Kansas City focusing on urban design in context.

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 architecture 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 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 .......................... 166
(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.
### 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 or 113.
- **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. Pr.: ARCH 303, ARCH 403, and admission to a professional program in the college. Three hourslec. per week.
- **ARCH 343. Building Construction Systems in Architecture I.** (3) Pr.: ARCH 248, ARCH 449, and admission to a professional program in the college. Six hours of studio 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 subsystems integrity required to achieve a variety of building forms. Instruction in strategies for the use of approximation in the manipulation of key quantitative properties of whole systems and major subsystems in building design. 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/test each week. Pr.: ARCH 452.
- **ARCH 472. Computer Applications in Architecture.** (3) 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, and a variety of computer applications. Students are strongly encouraged to provide their own portable computers and software. Two hours oflec. and two hours of lab per week. Pr.: Enrollment in one of the degree-granting programs of the college.
- **ARCH 477. 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 journal 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.

### Third semester

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ARCH 302</td>
<td>Architectural Design Studio I</td>
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| or
| ARCH 303** | Architectural Design Studio IA | 6 |
| ARCH 248    | Building Science | 3 |
| ARCH 348    | Structural Systems in Architecture I | 3 |
| ARCH 350    | History of the Designed Environment | 3 |
| ENGL 200    | Expository Writing II | 3 |

### Fourth semester

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<td>ARCH 449</td>
<td>Structural Systems in Architecture II</td>
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<tr>
<td>ARCH 325</td>
<td>Environmental Design and Society</td>
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<td>ARCH 413</td>
<td>Environmental Systems in Architecture I</td>
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<tr>
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<td>ARCH 452</td>
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<td>ARCH 433</td>
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<td>ARCH 434</td>
<td>Building Construction Systems in Architecture II</td>
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<td>ARCH 453</td>
<td>Structural Systems in Architecture III</td>
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<tr>
<td>ARCH 514</td>
<td>Environmental Systems in Architecture II</td>
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<td>LAR 500</td>
<td>Site Planning and Design</td>
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<td>ARCH 605</td>
<td>Architectural Design Studio V</td>
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<td>ARCH 515</td>
<td>Environmental Systems in Architecture III</td>
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<tr>
<td>ARCH 650</td>
<td>Architectural Programming</td>
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<td>ARCH 705</td>
<td>Project Programming</td>
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<tr>
<td>ARCH 753</td>
<td>Professional Practice</td>
<td>3</td>
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<td>University general education electives (300 level +)</td>
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### Tenth semester

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<td>Architectural Design Studio VIII</td>
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<tr>
<td>Professional support electives*</td>
<td></td>
<td>12</td>
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*A minimum of university 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.

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.
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 lec. a week.

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. (3) 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 350 or approval of instructor.

ARCH 605. Architectural Design Studio V. (5) I, II. Problem analysis, computer-aided design development, generalization of alternate 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. 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.

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 instructor.

ARCH 656. Preservation Documentation. (3) I, II. Investigation of existing buildings and their settings; documenting design qualities, history, materials, systems, construction techniques, landscape, and physical and functional changes over time, using Historic American Building Survey Standards. Pr.: Senior standing and proficiency in drafting.

ARCH 657. Preservation Principles. (3) I. Examination of theoretical and practical aspects of preservation; background and current issues; design considerations. 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 1800s. Pr.: ENV 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.: ENV 250 and 251 or approval of the instructor.

ARCH 689. 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 needed, financial incentives for investors, and feedback into the design process. Pr.: Approval of the professional program.

ARCH 703. Environmental Aesthetics. (3) I, II. Problems involving aesthetics in design 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. Examination of specific architectural problems under the direction of a faculty member. Pr.: ARCH 505/506, 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.: ARCH 605 or 506; and 506; ARCH 434, ARCH 515, and ARCH 452, and not more than one D in an architectural design course.

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.: ARCH 605 or 506 and ARCH 515, and ARCH 452, and not more than one D in an architectural design course.

ARCH 709. Problems in Architecture. (Var) I, II. Study of the relationship of conceptual and/or technological factors of structure to architectural design in more depth, or in a broader context of form-determining interactions than that presented in ARCH 452 and ARCH 453. Pr.: ARCH 453.

ARCH 753. Professional Practice. (3) I. 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. S. 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
Judy Roland, Academic Advisor
Administrative Assistant

Professors Dubois, Haycock, and Murphy; Associate Professors Borchers, Brown, Bullock, Hastings, Hussein, Thompson, and Troyer; Assistant Professors Davidson and Hubbell; Instructor Lewis; Emeritus Professors Durgan and McGraw; Adjunct Professors Pauli Barucchiere, Castiglion Fiorentino, Italy; Franz Puschough, 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 focus placed upon the department’s educational programs in interior architectural space planning, furniture, and product design. After an introduction to basic interior space planning, students undertake studio exercises that include programming and designing of spaces. Special emphasis is placed on spatial organi-
ization, behavior analysis, space component design, furniture design and construction, product and exhibit design, the integration of environmental systems, building rehabilitation, and the preparation of working drawings and contract documents.

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 all the departmental 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.

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 Italian studies program; the university’s student exchange program with Prague, in the Czech Republic; and with several universities in Australia. 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

| Third semester | IAR 301. Interior Architecture Design Studio I | 3
| IAR 304. Interior Architecture Design Studio I Lecture | 1
| IAR 248. Building Science | 3
| University general education elective | 3
| IAR 430. Visual Communication | 2
| ARCH 348. Structural Systems in Architecture I | 3

| Fourth semester | IAR 302. Interior Architecture Design Studio II | 3
| IAR 305. Interior Architecture Design Studio II Lecture | 1
| IAR 416. History of Furniture | 2
| ARCH 413. Environmental Systems in Architecture I | 4
| ARCH 449. Structural Systems in Architecture II | 3
| IAR 390. The Contemporary Interior | 2

| Fifth semester | IAR 404. Interior Architecture Design Studio III | 4
| IAR 409. Materials and Finishes | 2
| IAR 413. Materials and Finishes Lab | 1
| IAR 410. Interior Architecture Microcomputers | 2
| ARCH 433. Building Construction Systems in Architecture I | 3
| IAR 420. Theory of Furniture Design | 2
| IAR 456. Theory of Product Design | 2

| Sixth semester | IAR 403. Product Design Studio I | 3
| IAR 400. Product Design Studio I Lecture | 1
| IAR 455. Product Design Illustration | 1
| ARCH 514. Environmental Systems in Architecture II | 3
| IAR 407. Design Workshop I | 3
| AT 260. Textiles | 3

| Seventh semester | IAR 600. Interior Architecture Design Studio IV Lecture | 1
| IAR 602. Interior Architecture Design Studio IV | 4
| ARCH 515. Environmental Systems in Architecture III | 3
| ENGL 200. Expository Writing II | 3
| IAR 408. Design Workshop II | 3
| University general education elective | 3

### Architecture, Planning, and Design

| Eighth semester | IAR 606. Interior Architecture Design Studio V Lecture | 1
| IAR 607. Interior Architecture Design Studio V | 4
| Free electives | 10

| Ninth semester | IAR 705. Interior Architecture Design Studio VI | 4
| IAR 708. Interior Architecture Design Studio VI Lecture | 1
| IAR 714. Furniture Design Workshop Lecture | 3
| IAR 753. Professional Practice | 3
| IAR 760. Interior Architecture Seminar | 3
| University general education elective | 3

### Undergraduate credit

IAR 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 lec. and one rec. per week. Pr.: Second-year standing and PHYS 115 or 113.

IAR 301. Interior Architecture Design Studio I. (3) I. Design vocabulary, abstract design, form and space generation, use of light and color theory, application of design process, idea generation, creativity, and diagramming are all general topics that underpin the second year. These concepts are necessary to reinforce graphic development, typography, presentation, and layout carried over from previous semesters. Projects that utilize these topics will include an introduction to human scale and anthropometry, perspective as applied to small scale spaces, environmental analysis, and introduction to structure in design. Pr.: DSFN 202 and admission to professional program in interior architecture.

IAR 302. Interior Architecture Design Studio II. (3) II. Continuation of topics covered in previous semesters will allow for more proficiency through multiple projects that include signage, model building, rendering and color media presentations, indoor/outdoor site relationships, continuation of environmental studies, contextual issues, various architectural scales, and analysis of product types with linkages to lighting design and building systems. Pr.: IAR 301.
IAR 303. Interior Architecture Design Studio IA. (6) I. This course integrates material from Environmental Design Studio I and II with ADS I, IAD I, LADS I. Twelve hours of studio a week. Pr.: For transfer students: 9 or more credit hours of graphic design and/or architectural design and admission to a department in the College of Architecture, Planning, and Design.

IAR 304. Interior Architecture Design Studio II Lecture. (1) I. Lecture component taken concurrently with IAR 301 Design Studio I. See IAR 301 for course description.

IAR 305. Interior Architecture Design Studio II Lecture. (1) II. Lecture component taken concurrently with IAR 302 Design Studio II. See IAR 302 for course description.

IAR 390. The Contemporary Interior: Ideas and Examples. (2) II. A visual survey of selected works of current interior architecture, which illustrate principles and practical concerns that motivate design. Required of interior architecture as a prerequisite for IAR 404, but open to nonmajors from any discipline.


IAR 403. Product Design Studio I. (3) I, II. Analysis, synthesis, and design of various types of products associated with the interior environment, integrating such human factor determinants as anthropometrics and ergonomics. Construction of prototype products associated with the human environment developed concurrently within the design studio. Pr.: IAR 202; not more than one D in an interior architecture design studio course.

IAR 404. Interior Architecture Design Studio III. (4) I, II. This course will build upon and extend the knowledge and skill base gained by students in studios I and II. This course will include the introduction of programming methodology and its relationship to the design and organization of interior space. Emphasis will be placed on the appropriate selection of furniture, finishes, fixtures, and equipment within the context of their relationships to form, function, task, and users’ needs. Pr.: IAR 202; not more than one D in an interior architecture design studio course.

IAR 406. Problems in Interior Architecture. (Var.) I, II. Study of specific interior architectural problems under direct supervision of a member of the department. Pr.: Approval of instructor.

IAR 407. Design Workshop I. (3) I, II. An introduction to shop procedures, equipment, design materials, joinery, and elementary design experiences in turning 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 finished products. Pr.: Admission to the professional program of interior architecture.

IAR 408. Design Workshop II. (3) I, II. Design Workshop is intended to further develop the student’s understanding of the three-dimensional design process through research, design, prototype construction, evaluation, and redesign. Enhance and increase the student’s understanding of the structural characteristics of materials and increase their proficiency at communicating ideas through working and presentation drawings. Pr.: IAR 407

IAR 409. Materials and Finishes. (2) I. Introduction to materials and finishes specific to interior applications. Criteria for evaluation, selection, and application of interior materials and finishes with the building fabric and their impact on building design. Preparation of written and graphic communications to illustrate and direct the construction process. Two hours lecture a week. Pr.: Admission to the professional program in interior architecture.

IAR 410. Interior Architecture Microcomputer Applications. (2) I. Instruction in microcomputer operating procedure, general terminology, programming concepts for microcomputer, and use of appropriate word-processing specification writing and computer-aided design software as it relates to the interior architecture profession. Four hours a week. Pr.: Enrollment in the interior architecture program.

IAR 411. Drawing in Black and White. (3) II. Freehand representational drawing of architectonic space using graphite pencil and ink pen. Emphasis is on the development of the visual perception of space and the communication of the perceived space through drawings that are clear and expressive. 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, aesthetic, and spatial influences on product and furniture design in Italy, France, and England 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 with contemporary larscale office space planning. Pr.: IAR 306; not more than one D in an interior architecture design studio course.

IAR 430. Visual Communication. (2) I. Students will be challenged to visually communicate in a three-dimensional way using constructed perspective, computer generated perspective with rendering and animation techniques, and constructed models as tools of the profession. Rapid graphic visualization using various media will be studied enabling quick exploration of multiple design options in a spatial environment. Graphic arts including photography, typesetting, 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, 2) I, II. Exercises in various rendering techniques and involvement in different media presentations associated with product design. Pr.: IAR 420.


IAR 520. Design Graphics Workshop. (3) I. A course in the use of colored pencils to render and present form and space using different techniques. Emphasis on the visual perception and composition of elements in design drawings and presentation. Pr.: Sophomore standing.

IAR 600. Interior Architecture Design Studio IV Lecture. (1) I. Lecture component taken concurrently with IAR 602 Design Studio IV. See IAR 602 for course description.

IAR 602. Interior Architecture Design Studio IV. (4) I. This course is specifically directed towards the unique design and design-related issues and conditions associated with the use of contemporary furniture in a multi-purpose environment. Emphasis is placed on the nature of the office work environment and the linking together of various architectural systems in support of users’ needs. Students will be required to have their own personal computer for this course. Pr.: IAR 404 Studio III, and IAR 403 Product Design Studio I; not more than one D in an interior architecture design studio course.

IAR 606. Interior Architecture Design Studio V. (4) I, II. This semester of study provides an option for an interdisciplinary collaborative studio course oriented towards replicating the learning experience and interactive activities that takes place in the modern multidisciplinary professional office. Students enrolled in this studio can be from architecture, interior architecture, and landscape architecture. Pr.: IAR 602; not more than one D in an interior architecture design studio course.


IAR 644. Interior Architecture Internship. (12) II, S. Thirty weeks off-campus work study in professional offices specializing in interior architecture: field and office experience. Pr.: IAR 603, ARCH 433, not more than one grade of D in an interior architecture design studio, and approval by the internship coordinator.

IAR 645. Interior Architecture Internship Report. (3) II, S. Taken in conjunction with IAR 644. The purpose is to develop the student’s communication skills and awareness of the importance of written communication and record keeping in interior architecture practice. The required report will provide a detailed documentation of the student’s experiences encountered during internship. Pr.: Conc. enrollment in IAR 644.

IAR 646. Interior Architecture Foreign Studies. (12) II, S. This course allows the student to study outside of the United States for one semester. The semester will expand their global perspective of design professions and cultural, political, and economic views. One semester studying interior architecture in a foreign university. Pr.: IAR 603, ARCH 433; not more than one D in an interior architecture design studio and approval by the foreign studies coordinator.

IAR 647. Interior Architecture Foreign Studies Reports. (3) II, S. Taken in conjunction with IAR 646. The purpose is to develop the student’s written communication skills as well as increase awareness of written communication and record keeping in interior architecture office practice. The report will provide detailed documentation of the student’s experiences during the foreign studies program. Pr.: Conc. enrollment in IAR 646.

IAR 705. Interior Architecture Design Studio VI. (4) I, II. This design studio pursues and extends the architectural knowledge gained in all previous studies. Emphasis is on understanding large-scale buildings in terms of structure, systems, materials, and environment. Pr.: IAR 645; not more than one D in an interior architecture design studio course.


IAR 714. Furniture Design Workshop. (3) I, II, S. Design, construction, and finishing of contemporary furniture and accessories. Pr.: IAR 608; not more than one D in an interior architecture design studio course.


IAR 730. Facility Management. (2) I, II. A survey of the methods of managing the physical assets of large facilities—corporate, institutional, and governmental—through a review of current literature, presentations by professionals active in the field, and case studies.

IAR 740. Advanced Design Workshop. (1–4) I, II. Advanced instruction in the design, construction, and finishing of contemporary furniture and accessories. The course involves the development of a concept for a complex furniture prototype and includes research, program development, design development, criteria examination and determination, design development, working drawings, complete prototype development, and presentation drawings. Pr.: IAR 714 or equivalent.

IAR 753. Professional Practice. (3) I. Studies of conventional and newly developing modes of professional design practice. Presented are the relationships of interior architects, architects, and landscape architects and other design professionals to users, clients, building industry, society, government, and one another. Pr.: Fifth-year standing.
Landscape
Architecture
and Regional and
Community Planning

Dan Donelin, Head
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 Chelz, Clement, Ewanow, Kean,
Rolley, and Wigfall; Assistant Professors
Bernard and Lawhon; Adjunct Professors
McGraw, Seaman, D. Watts and Wilhm;
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 profes-
sion. Special emphasis is placed on site analy-
sis, land planning, arrangement and organiza-
tion 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 pro-
gram 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 pro-
vide information about appropriate hardware
and software.

Landscape architecture

180 LAR

University general education and professional electives
To fulfill curriculum requirements, 32 elective credit hours
are taken. Of the 32 elective credits, the curriculum main-
tains 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 edu-
cation or professional electives.

A listing of both university general education and profes-
sional electives can be found in the Bachelor of Landscape
Architecture Handbook. A copy of the handbook may be
purchased at the Engineering Copy Center, 1104 Fiedler
Hall.

It is expected that all students, prior to participating in
LAR 400 Computer Applications in Landscape Architec-
ture, 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
student for the summer and credited in the next fall
semester.

The curriculum is subject to regular review and revision.
Students are advised to obtain a copy of the current curricu-
lum when they are admitted to the program. All required
courses taught in LAR/RCP must be passed with a grade of
C or better.

Community planning minor

The minor in community planning is for stu-
dents 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 plan-
ing 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 710 Urban Visual Analysis ...................... 3
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
Studio .......................................................... 4
PLAN 747 Urban Design and Preservation Field
Study ......................................................... 1–3
PLAN 752 Physical Process of Plan
Implementation ........................................... 2
PLAN 753 Planning Law .................................. 3
PLAN 754 Fiscal Process of Plan Implementation ... 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 320. 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 ENVD 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 lec. and four hours studio a week. Pr.: ENVD 202.

LAR 320. Landscape Architectural Design Studio II. (4) II. Two hours lec. and six hours design studio a week. Pr.: LAR 220.

LAR 322. 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. Three hours lec. 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 lec. 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 lec. 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 rec. 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 lec. 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 lec. 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 lec. and six hours of 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 development plans. Two hours lec. and two hours studio a week. A general service course for majors outside the College of Architecture, Planning, and Design.

LAR 460. Computer Applications in Landscape Architecture. (3) II. Introduction of uses of computers in typical landscape architectural practice; function, operation characteristics, and applications of computer software and hardware. Two hours lec. and two hours lab a week. It is expected that all students prior to participating in LAR 460 will have completed a computer class, emphasizing fundamentals of computer applications.

LAR 500. Site Planning and Design. (3) II. Theory, principles, and techniques of site planning and design. Lectures, readings, short problems, and site visits dealing with site analysis, ecological consideration, grading, drainage, circulation and parking, lighting, planting design, materials and details, management and maintenance, and cost factors. Pr.: ARCH 401 or conc. with ARCH 401.

LAR 501. Landscape Architecture Seminar I. (2) I. Required of all fifth-year landscape architecture majors. Discussion of current trends in landscape architecture and related fields by students, faculty, and invited speakers.

LAR 502. Landscape Architecture Seminar II. (2) II. Required of all fifth-year landscape architecture majors. Discussion of current trends in landscape architecture and related fields by students, faculty, and invited speakers.

LAR 635. Golf Course Planning and Design. (1–4) I, II. Fundamentals of golf course planning and design, including history, management, design, facilities, aesthetic, and technical development. One hour lec. and three hours lab a week. Pr.: Junior standing within landscape architecture.

LAR 645. Professional Internship. (Var. I) II, S. Confirmed employment in a professional physical planning office subject to the approval of the departmental faculty, for a period of eight weeks, documented by the employer and written and oral reports by the students. Pr.: LAR 444.

LAR 646 and LAR 648. Landscape Architecture Design Studio V and VI. Design of the outdoor environment for human needs and activities; ecological considerations; project program, site selection, analysis concept, design communication, specification, construction, planting, and maintenance.

LAR 646. Landscape Architectural Design Studio V. (4) I. Twelve hours design studio a week. Pr.: LAR 442, LAR 438, and LAR 439.

LAR 648. Landscape Architectural Design Studio VI. (4) I. Twelve hours design studio a week. Pr.: LAR 646, 647.

LAR 647. Land Construction III. (4) I. Continuation of LAR 439 to include large-scale site design, road alignment, large-area grading, soils and excavation methods, storm drainage, and utilities routing. Three hours lec. and five hours studio a week. Pr.: LAR 439.

LAR 652. The Small Community in the Plains States. (3) I, II, S. An overview of the diverse nature of small communities in the Plains states, with an emphasis on the forms and patterns in the existing physical environment. Instruction in various methods of survey and analysis at the regional and community-specific scales, and application of these techniques to a different community each semester. Pr.: Fourth-year standing.

LAR 660. Landscape Rehabilitation of Disturbed Lands. (3) I. Planning rehabilitation of lands disturbed by mining and construction. Review of mining procedures, ecological systems, slope rehabilitation, and revegetation techniques. Three hours lec. a week. Pr.: Junior standing.

LAR 703 and LAR 704. Landscape Architecture Design Studio VII and VIII. Design of the outdoor environment for human needs and activities; ecological considerations; project program, site selection, analysis, concept, design, communication, specification, construction, planting, and maintenance.

LAR 703. Landscape Architectural Design Studio VII. (5) I. Fifteen hours design studio a week. Pr.: LAR 648, 647.

Criteria for admission
Undergraduate students may apply for admission to the minor by contacting the departmental offices and completing an enrollment form at least one year prior to graduation.

Students will be assigned an academic advisor for the minor program from faculty within the program in regional and community planning. While the elective options listed above are generic to the minors program, other acceptable substitutes may be negotiated based on interest and background.

Completion requirements
Only courses with grades of C or better count toward the minor. Students must earn a cumulative 3.0 GPA (on a 4.0 scale) in the minor course work to successfully complete the minor.

Ungraded course work taken for pass/fail does not qualify for inclusion in the minors program. The Department of Landscape Architecture and Regional and Community Planning will award a certificate in community planning to those students who successfully complete the minor program upon graduation from K-State.

For more information
Department of Landscape Architecture and Regional and Community Planning
College of Architecture, Planning, and Design
785-532-5961
LAR 704. Landscape Architectural Design Studio VIII. (5) II. Capstone project. Individual studies approved by departmental faculty. Fifteen hours design studio a week. Pr.: LAR 703 and LAR 647.

LAR 709. Computer Applications in Landscape Architecture. (3) II. Introduction to computer-aided design and related applications. Focus will be on three-dimensional problem-solving design visualization and communication. Using word processing and spreadsheets in the CAD environment. One hour of thelec. and three hours of lab per week. Pr.: Operational knowledge of DOS and Windows-based systems is expected.

LAR 710. Microcomputer Applications in Landscape Architecture II. (3) I. Examination of the application of microcomputer technology in the decision-making processes in the advanced practice and research of landscape architecture. Two hours lec. and two hours lab a week. Pr.: LAR 460.

LAR 720. Public Lands and Natural Resources Law. (3) I, II. Legal aspects of land use and natural resource management on the federal public lands. A brief history of the acquisition and disposition of the public domain and a review of a legal authority on the public lands are followed by an examination of key legal issues concerning the resources of water, minerals, timber, range, wildlife, recreation, and wilderness. Pr.: Advanced standing.

LAR 735. Advanced Golf Course Planning and Design. (1–4) I, II, S. Specific problems and/or reports in the area of landscape architecture. Pr.: Advanced undergraduate or graduate standing.

LAR 744. Community Site Planning. (4) I, II. Growth and development of cities and towns; land subdivision. Two hours lec. and nine hours studio a week. Pr.: Senior standing.

LAR 758. Land Resource Information Systems. (3) II. Introduction to computer-aided design and related applications. Focus will be on three-dimensional problem-solving design visualization and communication. Using word processing and spreadsheets in the CAD environment. One hour of the lec. and three hours of lab per week. Pr.: Senior standing.

LAR 747. Problems in Landscape Architecture. (Var.) I, II. Specific problems and/or reports in the area of landscape architecture. Pr.: Advanced undergraduate or graduate standing.

LAR 748. Community Site Planning. (4) I, II. Growth and development of cities and towns; land subdivision. Two hours lec. and six hours studio a week. Pr.: PLAN 315 or consent of instructor.

LAR 749. Professional Practice. (3) I, II. Studies of conventional and newly developing methods of professional practice. Instruction in the relationships of architects, landscape architects, interior architects, and other professional to users, clients, construction industry, society, government, and one another. Two hours lec. and one hour rec. Pr.: Fifth-year standing.

LAR 746. Urban Design Studio I. (4) An interdiscipliinary design studio involving large-scale designs; projects with extensive time implementation sequence; responses to socioeconomic, cultural, environmental, and technical needs; and implementation strategies. Design methods are applied to selected sites in the Midwest. Pr.: PLAN 315 or equiv.; and conc. enrollment in PLAN 745.


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) I. 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. Three hours lec. and nine 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 conditions and projections 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. The planning process and its relationship to the design professions and the social and behavioral sciences. Three hours recitation a week. Pr.: Sophomore standing.

PLAN 605. Planning Communication. (1–3) I. 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 report preparation, and public hearings. Pr.: Senior standing. 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 emphases are on the evolving physical form of the city and the impact of the political, social, and economic processes and decisions that helped shape the American city within the last 100 years. Pr.: Junior standing or instructor permission.

PLAN 620. Urban America. (1) II, in even years. A visual depiction of the American landscape as chronicled in film and discussion. The focus of the material is on students’ reaction to the urbanization process and the impacts the process leaves in its wake. Pr.: Junior standing.

PLAN 630. Computer Applications in Planning and Design. (1–3) I, II, 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. (1) 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. Included are elements of producing video and 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) I, 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 are reviewed and applied to the contemporary city. Pr.: PLAN 315.

PLAN 650. Housing and Development Programs. (2) II. 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 topical issues 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 710. 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 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) I, 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 design, and presentation of 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 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.
Arts and Sciences

Stephen E. White, Interim Dean
Gerald R. Reeck, Associate Dean
Shirley L. Olsen, Assistant to the Dean
117 Eisenhower Hall
785-532-6900
www.ksu.edu/artsci

The College of Arts and Sciences is the home of a wide range of disciplines that, together, offer a liberal education to our students. These disciplines include the arts and humanities, the social sciences, and the natural sciences. These areas embody the core studies of a university education.

A liberal education seeks to develop intellectual skills such as critical analysis, effective communication, and creativity. Majors offered by the college range from those related to specific jobs and professions to those related to vocation in a more general.

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 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.  Applied anthropology
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.  Clinical laboratory science (medical technology), B.A or B.S.  Economics, B.A. or B.S.  English, B.A.  Creative writing  Literature  Teaching certification  Fisheries and wildlife biology, B.A. or B.S.  Fisheries biology  Wildlife biology  Natural history  Geography, B.A. or B.S.  General  Pre-planning  Geology, B.A. or B.S.  History, B.A. or B.S.  Departmental office

Sociology, Anthropology, and Social Work
Art
Biochemistry
Biology
Chemistry
Chemistry
Dean’s office
Economics
English

Interdisciplinary

Humanities, B.A.  Life science, B.A. or B.S.  Physical science, B.A. or B.S.  Social science, B.A. or B.S.  Mass communications, B.A. or B.S.  Advertising  Electronic journalism  Print  Public relations  Radio-Television

Kinesiology, B.A. or B.S.  Nutrition and Exercise Science  Mathematics, B.A. or B.S.  Medical technology, (see Clinical laboratory science)

Microbiology, B.A. or B.S.  Modern languages, B.A.  Music, B.A. or B.M.  Music education, B.M.E.  Philosophy  Interdisciplinary, B.A. or B.S.  Pre-business, B.A. or B.S.  Pre-law, B.A. or B.S.  Pre-ministry, B.A.  Traditional, B.A.

Physics, B.A. or B.S.  General, B.S. only  Political science, B.A. or B.S.  Pre-dentistry, (advising program)  Pre-health information management (advising program)  Pre-law (advising program)  Pre-medicine, (advising program)  Pre-nursing (advising program)  Pre-occupational therapy (advising program)  Pre-optometry (advising program)  Pre-pharmacy (advising program)  Pre-physical therapy (advising program)  Pre-respiratory care (advising program)  Pre-veterinary medicine*  Psychology, B.A. or B.S.  Social work, B.A. or B.S.  Sociology, B.A. or B.S.  General  Criminology  Speech, B.A. or B.S.  German  Linguistics  Statistics, B.A. or B.S.  Theatre, B.A. or B.S.  Dance


*Students who complete pre-veterinary medicine requirements in the College of Arts and Sciences will be eligible for the bachelor of science degree from the College of Arts and Sciences upon completion of the second professional year in the College of Veterinary Medicine.

Minors

Contact the appropriate department on these minors:
American ethnic studies, anthropology, biology, chemistry, dance, economics, English, French, geography, geology, German, history, Japanese, military leadership, music, philosophy, physics, political science, rhetoric/communication, Russian, Spanish, statistics, theatre, and women’s studies.

Degree Requirements

At least 120 credit hours are 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.

Common degree requirements

(Three courses, 8 credit hours minimum)

Purpose: to give students practice in oral presentation and in writing and analyzing expository and argumentative prose.

ENGL 100 Expository Writing I ........................................ 3
ENGL 200 Expository Writing II ...................................... 3
SPCH 105 Public Speaking I ........................................... 2
or
SPCH 106 Public Speaking I ........................................... 3

University general education requirements

As required by the university, students must complete at least 18 credit hours of approved UGE courses, at least 6 credit hours of which must be at the 300 level or above. Except for students in the college’s interdisciplinary majors (humanities, life sciences, physical science, and social science) courses used for UGE 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 UGE courses offered by any college at Kansas State University may be used to satisfy these requirements. UGE courses approved as basic requirements in the College of Arts and Sciences (see Bachelor of Arts and Bachelor of Sciences following this section) may be used to satisfy simultaneously both UGE and College of Arts and Sciences basic requirements. Students should consult their advisors for up-to-date lists of approved courses.

In course descriptions, UGE courses are marked with a ◆. For more information about UGE requirements, see the Degrees section of this catalog. For a current list of approved UGE courses: www.ksu.edu/registrar/enroll/geden.html.
Bachelor of Arts and Bachelor of Sciences

College of Arts and Sciences

basic requirements

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. Basic requirements are to be fulfilled with courses chosen by students in consultation with their advisors.

The aim of the requirement in the arts and 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 nonliterary 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
Theatre—THTRE 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, 320, 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 614, 615, or 799
English—ENGL 230, 231, 233, or 234 (Western Humanities)
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 (crosslisted with KIN 515)
Kinesiology—KIN 515 (crosslisted with HIST 515)
Music—MUSIC 245
Political thought—POLSC 301, 661, 663, 667, 671, 675, or (SOCIO) 709
Sociology—SOCIO 507
Speech—SPECH 460
Women’s studies—WOMST 105, 205, 410, 500, 510, or 610

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 except 300, 400, 415, 420, 430, 455, 476, 490, 492, 499, 516, 560, 601, 602, 605, 604, 757, or 759
Polish—literature courses including literature in translation
Speech—SPECH 325, 480
Theatre—THTRE 562 or 764
History of rhetoric—SPECH 330, 331, 430, 432, 434, 460, 725, 730, 732, or 733
Women’s studies: WOMST 205, 550
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—any course except GEOG 220, 221, or 535
History—any course

Mass communications—MC 235, 300, 305, 530, 565, 595, 612, 710, 715, 720, or 725
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
Criminology—CRIM 315, 600, or 615
Kinesiology—KIN 320, 340, 345, or 354
Linguistics—any course except LG 601
Speech—SPECH 323, 326, 425, 435, 526, 720, or 726
Women’s studies—WOMST 105, 205, 450 (ENGL 450), 500, 510, or 610

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—GEOG 581 or 704
Physical anthropology—ANTH 280, 281, 680, 684, 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:

Biochemistry—BIOCH 255 to 799
Chemistry—any course
Environmental geography—GEOG 220, 221, 535, or 735
Geology—any course except GEOG 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:

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, 536, 681, or 682
English—ENGL 580
Geography—GEOG 100, 200, 201, 505, 506, 620, 640, 650, or 715
History—HIST 112, 230, 303, 330, 505, 506, 509, 510, 514, 543, 545, 560, 561, 562, 576, 577, 578, 591, 592, 593, or 598
Journalism and mass communications—MC 725
Management—MANG 690
Marketing—MKTG 544
Modern languages—RUSS 250, 504, 508, or 552
FREN 503
Political science—POLSC 333, 505, 506, 511, 541, 543, 545, 622, 623, 624, 626, 627, 629, 642, 645, 647, 651, 652, 653, or 655
Sociology—SOCIO 363, 505, 506, 507, 535, 618, or 742
Women’s studies—WOMST 380, 580
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 bachelor 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, 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—CIS 200 level or above
   - Mathematics—MATH 100 level or above
   - Philosophy—PHIL 110, 112, 320, 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—SO 520 or 725 (with STAT 330)
   - Social work—SOWK 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—PHIL 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—PHIL 701
       - Statistics—STAT 341, 351, 704, or 705

Bachelor of Fine Arts

120 hours required for graduation

The bachelor of fine arts degree is a professionally oriented undergraduate degree in art. Emphasis is on actual practice in creative art disciplines. The degree is considered 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, illustration, digital arts, ceramics, graphic design, printmaking, metalsmithing 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 (43 hours)

- ENGL 100 Expository Writing I ......................... 3
- ENGL 200 Expository Writing II ........................ 3
- or ENGL 110 English Honors Composition I ........ 3
- ENGL 125 English Honors Composition II .......... 3
- SPCH 106 Public Speaking I ........................... 3
- Any Department of English literature course (except ENGL 355 or 345) or Department of Modern Languages literature course ................................................................. 3
- Any course offered in the Department of Philosophy (except PHIL 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.

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.
Associate of Arts at Fort Riley

60 hours including the following general requirements:

English—ENGL 100 and 200
Speech—SPECH 105 (or one course), courses subject to approval by Department of Speech
Modern languages—two years in one language or equivalent

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—SPECH 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, 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.

Dean of Arts and Sciences Courses

DAS 001. Medical Technology Clinical Semester. (Var.) I, II, S. Enrollment in this course allows students attending a hospital-based clinical program to complete the 30 credit hours of clinical work required for the bachelor’s degree in medical technology. Pr.: Completion of the 90 credit hours of undergraduate course work required for the medical technology degree.

DAS 010. Physical Sciences Enrichment. (Var.) I, II, S. This program is designed to enrich the curriculum for students majoring in the physical sciences. Pr.: Permission of the instructor.

DAS 025. 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.

DAS 045. Honors Colloquium. (3) An interdisciplinary colloquium in which topics vary by semester. Consistently incorporates perspectives from more than one discipline and area among the arts, humanities, social sciences, and sciences. Pr.: Membership in the honors program; one honors course in addition to introduction to the honors program in the College of Arts and Sciences.

DAS 048. Physical Sciences Senior Report. (1) I, II. Individual exploration of an area of physical sciences culminating in a final formal written report. Pr.: Completion of 15 hours of approved courses in NRES secondary major. Cross-listed with GENAG 582 and DEN 582.

DAS 050. 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 Communications courses required for major. Pr. or conc.: 15 hours of approved courses in NRES secondary major. Cross-listed with GENAG 582 and DEN 582.

Program Options

Honors program

The honors program offers challenging experiences of unusual breadth in the arts and humanities and in the social-behavioral and natural sciences. 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 both broad and focused 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 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 and ENGL 110 Honors English I. 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.

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.

A student 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.

Certificate in the study of the arts and sciences through primary texts

Laurie M. Bagby, Director
226 Waters Hall
785-532-0441
E-mail: lauriej@ksu.edu
www.ksu.edu/artssci/primary/

This program of study provides students with an opportunity to take part in a conversation with some of the best thinkers humankind has produced. The study of primary texts or origi-
nal works in areas such as philosophy, politics, literature, and the sciences encourages critical thinking. In addition, there is a growing acknowledgment among employers that the type of training this certificate provides develops lifelong learners and future leaders. This program also gives students who want to pursue graduate education early experience in grappling with original works such as they will inevitably encounter in graduate school.

The certificate is an 18-hour program of study that students can tailor to their interests and needs. At least nine hours must be at the 500 level or above. Selected courses must cover at least three academic disciplines. Transfer courses that can be documented to have substantial primary text content may be accepted for the program, but at least half of the courses must be completed at K-State.

Students must submit to the director an essay on a question listed on the certificate website and/or approved by a participating professor. This essay will be kept on file until students are taking or have completed their final course in the program, whereupon they will be asked to revisit the question and improve the essay as a capstone assignment. In order to receive the certificate, students must have a minimum 2.75 GPA in the program at the time they graduate.

Students can count certificate courses towards the fulfillment of other College of Arts and Sciences requirements. As long as they are also designated as university general education in the line schedule, courses taken for the certificate can also be counted toward the 18 hours of UGE needed to graduate. Certificate courses that also fit the basic or distribution requirements of the College of Arts and Sciences can be used to fulfill those requirements. Certificate courses that also happen to be a part of a student’s major or minor can be counted for fulfillment of the requirements of both the certificate and the major or minor.

Since many courses that can be used to fulfill the certificate requirement are already being offered, some students may have already made progress toward fulfilling the requirements before the program was formally approved in spring 2001. If they are currently enrolled at K-State such students will be given full credit for those courses. Students who think they have fulfilled part or all of the requirements for this certificate are urged to contact the director.

Students should notify the director of their interest in the program as soon as possible in their college career. The director will provide advising and provide information on scholarships, groups, and activities and events of interest. The director and participating faculty will keep a list of courses for the next semester available for students. Students will also be able to find a list of applicable courses and other information on the certificate website.

**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 Student Exchange Program it is possible to study for a semester or a year at one of 100 colleges and universities outside the U.S. for the same cost as tuition, room, and board at K-State. Financial aid from almost every agency is applicable to all credit-earning programs.

**Cooperative education**

Cooperative education is the integration of academic experience with planned, paid employment experiences related to a student’s academic major or career goals. Check with Career and Employment Services for eligibility requirements, available opportunities, and faculty contacts.

**Secondary teacher certification**

An arts and sciences major may apply some elective hours toward the requirements for secondary teacher certification. In most arts and sciences departments, students can complete an academic major and earn certification within the 120 hours of course work required for a degree. Because the teacher training courses are offered through the College of Education, students who choose to combine these two programs are entitled to two advisors, one in the major field of study, the other in secondary education.

By combining a traditional academic major with teaching certification, students can be assured of varied choices after graduation. By pursuing an arts and sciences major, students also have the option of working toward a bachelor of arts degree and studying a foreign language. In addition, the teaching certification will qualify graduates to teach in a public secondary school. For specific certification requirements in secondary education, see the College of Education section of this catalog.

**Women in engineering and science program**

The Women in Engineering and Science Program at Kansas State University is jointly administered by the Colleges of Arts and Sciences and Engineering. WESP has a two-fold 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 wesp@ksu.edu. More information about WESP is available at www.ksu.edu/wesp.

**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 curricula 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.
Open option: Advising for undeclared students

Students in the university undergraduate studies major may declare one of the interdisciplin-ary options upon entering the major or they may enter in the open option. Students in the open option must declare one of the interdisciplin-ary 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 interdisciplin-ary 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 interdisciplin-ary 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 interdisciplin-ary 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.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 198 Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 201 Organismic Biology</td>
<td>5</td>
</tr>
<tr>
<td>BIOCH 265 Introductory Organic and Biochemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHM 350/351 General Organic Chemistry and Lab</td>
<td>5</td>
</tr>
<tr>
<td>CHM 455 Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>ANTH 200 Introduction to Physical Anthropology</td>
<td>4</td>
</tr>
<tr>
<td>Electives with prerequisite</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives ........................................................................ 14*

14* The 14 elective hours must be at or above the 300 level and may be selected from among courses normally counted toward a major in the field. Courses in the psychology discipline must have prerequisite psychology course with prerequisite. No more than 12 credit hours may be counted toward both the general requirements and the major.

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 social science advisor in the College of Arts and Sciences for approval. This proposal must include a rationale or thematic design for the interdisciplinary degree and a tentative listing of courses. The theme or rationale should run through a minimum of 12 hours of courses in the major. One course outside the stipulated social science disciplines may be used to count toward the major if the course fits the student’s theme. More than one course may be used unless more seem to be necessary to fulfill a student’s theme.

The student’s social sciences advisor may encourage him or her to confer with other social science faculty members who have special expertise in the area of the student’s interest. This procedure should be accomplished before or during the semester in which the student completes 60 hours of university credit.

<table>
<thead>
<tr>
<th>Degree</th>
<th>Degree(s)</th>
<th>Credit hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities B.A. only</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Life science B.S. or B.A.</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Physical science B.S. or B.A.</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Social science B.S. or B.A.</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Degree option</th>
<th>Degree(s)</th>
<th>Credit hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities B.A. only</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Life science B.S. or B.A.</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Physical science B.S. or B.A.</td>
<td>37</td>
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<tr>
<td>Social science B.S. or B.A.</td>
<td>36</td>
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<td></td>
</tr>
<tr>
<td>Social science B.S. or B.A.</td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>
A total of 36 credit hours must be completed with at least 3 credits being completed in each of four different social science disciplines. At least 9 credit hours must be completed in one social science discipline, including at least one course at the 500–699 level. At least 15 credit hours must be completed in social science disciplines at the 500–699 level. 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 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 considering law school. Pre-law students select majors in any college on campus. Students who are undecided as to major should explore curriculum options with an Open Option advisor in the College of Arts and Sciences.

While the Association of American Law Schools does not prescribe a particular pre-law curriculum, it emphasizes 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 law school should consult with the pre-law advisor in the College of Arts and Sciences dean's office early in their undergraduate career. Additional information about pre-law can be found on the pre-law website at www.ksu.edu/artsci/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.

Clinical laboratory science (medical technology)

The clinical laboratory science 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**

One course in statistics ..... 3
MATH 100 College Algebra ..... 3
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
BIOCH 522 General Biochemistry Laboratory ..... 2
or
CHM 371 Chemical Analysis ..... 4
BIOL 198 Principles of Biology ..... 4
BIOL 455 Microbiology ..... 4
BIOL 670 Immunology ..... 4
Select two of the following courses:
BIOL 530 Pathogenic Microbiology ..... 3
BIOL 340 Human Body ..... 8
BIOL 545/546 Parasitology and Lab ..... 5
Internship in affiliated school of clinical laboratory science ..... 30

**DAS 001. Clinical Laboratory Science (Medical Technology).** (Var.) I, II, S. Enrollment in this course allows students attending a hospital-based clinical program to complete the 30 credit hours of clinical work required for the bachelor's degree in clinical laboratory science (medical technology). Pr.: Completion of the 90 credit hours of undergraduate course work required for the clinical laboratory science (medical technology) degree.

Clinical courses (taken during internship)

DAS 401. Clinical Microbiology. (6–8) II. The theory and laboratory study of pathogenic bacteria, viruses, ricketsiae, fungi, and parasites. Includes morphology, physiology, taxonomy, and medical significance.

DAS 402. Clinical Chemistry. (6–8) I. Theory and laboratory study of analytical biochemistry, incorporating both routine and special chemical procedures.

DAS 403. Clinical Hematology. (4–6) S. Study of blood cell derivation, maturation, and function, principles of hemastasis, and blood coagulation. Methodology used in routine and special hematology studies.

DAS 404. Clinical Immunology. (2–6) I. Immunohematology, the study of fundamentals of antigen-antibody reactions, blood groups and types, crossmatches, blood components, and the laboratory methods used in immunohematology studies; and serology, the theory of immunologic responses and procedures used in determination of serological studies.
DAS 405. Topics in Clinical Laboratory Science (Medical Technology). (3–6) II. Basic principles and practices of the medical laboratory, techniques and special projects.

Contact the College of Arts and Sciences dean’s office for more information.

Pre-dentistry

U.S. dental schools require applicants to satisfactorily complete a specified set of courses and to present acceptable scores on the Dental Admission Test. The majority of entrants earn bachelor’s degrees prior to matriculating. The courses listed below satisfy the admission requirements for most dental schools.

- PHYS 113 General Physics I 4
- PHYS 114 General Physics II 4
- CHM 230 Chemistry II 4
- CHM 350 General Organic Chemistry 3
- CHM 351 General Organic Chemistry Laboratory 2

or

- CHM 531 Organic Chemistry I 3
- CHM 532 Organic Chemistry Laboratory 2
- CHM 550 Organic Chemistry II 3
- BIOL 198 Principles of Biology 5
- Biology courses above the 400 level 8

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.

- CHM 210 Chemistry I 4
- CHM 230 Chemistry II 4
- CHM 331 Organic Chemistry I 3
- CHM 332 Organic Chemistry Laboratory 2
- CHM 530 Organic Chemistry II 3
- MATH 220 Analytic Geometry and Calculus I 4
- PHYS 114 General Physics I 4
- BIOL 198 Principles of Biology 4
- Biology electives (with lab) at least 4

Requirements for some medical schools vary, so consultation with the pre-medical advisor is recommended.

Contact the College of Arts and Sciences dean’s office for more information.

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:

- MATH 100 College Algebra 3
- MATH 150 Plane Trigonometry 3
- MATH 220 Analytic Geometry and Calculus I 4
- PHYS 114 General Physics I 4
- PHYS 115 General Physics II 4
- BIOL 200 Organismic Biology 5
- 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 3
- CHM 351 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 College of Veterinary Medicine.

- ENGL 100 Expository Writing I 3
- ENGL 200 Expository Writing II 3
- SPCH 101 Public Speaking I 3
- CHM 210 Chemistry I 4
- CHM 230 Chemistry II 4
- CHM 350 General Organic Chemistry 3
- MATH 150 Plane Trigonometry 3
- PHYS 114 General Physics I 4
- BIOL 198 Principles of Biology 4
- BIOL 455 Animal Genetics 3
- BIOL 450 Modern Genetics 4
- Social sciences and/or humanities 12
- Electives 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. 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 530 Organic Chemistry I 3
- CHM 552 Organic Chemistry Laboratory 2
- CHM 550 Organic Chemistry II 3
- CHM 554 Advanced Organic Chemistry Laboratory 2
- MATH 205 General Calculus and Linear Algebra 3

or

- MATH 220 Analytic Geometry and Calculus I 4
- BIOL 198 Principles of Biology 4
- BIOL 340 Structure and Function of the Human Body 8
- BIOL 455 General Microbiology 4
- PHYS 115 Descriptive Physics 4
- PHYS 101 Physical World 3
- SPCH 106 Public Speaking 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 bachelor of science in nursing (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 210/211 General Chemistry and Lab 4
- BIOL 198 Principles of Biology and Lab 4
- MATH 100 College Algebra 3
- BIOL 455 General Microbiology 4
The number of additional specific courses and elective hours vary with each BSN program. Prerequisites change frequently.

Individual advising is strongly recommended.

Contact the College of Arts and Sciences dean’s office for more information.

**Pre-physical therapy**

The state’s two physical therapy education programs, which are located at the University of Kansas and Wichita State University, require completion of a bachelor’s degree. The following are core requirements needed for most physical therapy education programs:

<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>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>PSYCH 110</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOCO 211</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 150</td>
<td>Plane Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Analytical Geometry and Calculus</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Introduction to Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 340</td>
<td>Structure and Function of the Human Body</td>
<td>8</td>
</tr>
<tr>
<td>BIOL</td>
<td>One additional course with a lab, microbiology recommended</td>
<td>4</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>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>
</tbody>
</table>

Additional humanities, social sciences, and other electives are required and vary with each program. Many programs, including the program at the University of Kansas, require satisfactory scores on the Graduate Record Exam.

Individual advising is strongly recommended.

Contact the College of Arts and Sciences dean’s office for more information.

**Pre-occupational therapy**

Students entering the pre-occupational therapy curriculum take the necessary courses and electives for transferring to a professional program in occupational therapy. There are two occupational therapy programs in Kansas, one at the University of Kansas and one at Newman University. The number and types of courses taken will vary depending on the professional school the student wishes to attend. The following are prerequisites common to most professional occupational therapy education programs:

<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>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>PSYCH 110</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSYCH 505</td>
<td>Abnormal Psychology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 198</td>
<td>General Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 340</td>
<td>Structure and Function of the Human Body</td>
<td>8</td>
</tr>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>STAT</td>
<td>One introductory course</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 340</td>
<td>Structure and Function of the Human Body</td>
<td>8</td>
</tr>
</tbody>
</table>

Additional sciences, humanities, social sciences, and restricted and general electives are required to fulfill prerequisites for specific schools. Requirements of professional programs change frequently.

A minimum of 90 hours is required for application to KU’s master’s program in occupational therapy. Once accepted, students who successfully complete the first year of the professional program at KU earn the bachelor of occupational studies degree, which is followed by two years of graduate study leading to the master’s in occupational therapy. Newman University’s current program results in a bachelor’s degree.

Individual advising is strongly recommended.

Contact the College of Arts and Sciences dean’s office for more information.

**Pre-respiratory care**

Advising is available for two years of preparatory work for application to respiratory therapy programs. The following classes should be taken:

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>STAT</td>
<td>One introductory statistics course</td>
<td>3</td>
</tr>
<tr>
<td>CHM 110/111</td>
<td>General Chemistry and Lab</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 340</td>
<td>Structure and Function of the Human Body</td>
<td>8</td>
</tr>
<tr>
<td>BIOL 455</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 115</td>
<td>Descriptive Physics</td>
<td>4</td>
</tr>
<tr>
<td>LATIN 105</td>
<td>Latin and Greek for Scientists</td>
<td>1</td>
</tr>
<tr>
<td>Humans</td>
<td>Social science electives</td>
<td>3</td>
</tr>
<tr>
<td>Math and science electives</td>
<td>3-5</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>Additional sciences, humanities, social sciences, and restricted and general electives are required to fulfill prerequisites for specific schools. Requirements of professional programs change frequently.</td>
<td>6</td>
</tr>
</tbody>
</table>

Individual advising is strongly recommended.

Contact the College of Arts and Sciences dean’s office for more information.

**Pre-health information management**

The pre-health information management curriculum is a two-year program at Kansas State University followed by two years in the health information management program at the University of Kansas. The following course work must be completed to qualify for admission to KU’s program:

<table>
<thead>
<tr>
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</thead>
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<tr>
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<td>Expository Writing I</td>
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<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 340</td>
<td>Structure and Function of the Human Body</td>
<td>8</td>
</tr>
<tr>
<td>ACCTG 231</td>
<td>Accounting for Business Operations</td>
<td>3</td>
</tr>
<tr>
<td>PSYCH 110</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOCO 211</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>A business communications course</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Humans</td>
<td>Social science electives</td>
<td>3</td>
</tr>
<tr>
<td>Math and science electives</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>Additional sciences, humanities, social sciences, and restricted and general electives are required to fulfill prerequisites for specific schools. Requirements of professional programs change frequently.</td>
<td>24</td>
</tr>
</tbody>
</table>

There are specific course recommendations and suggestions to fulfill the humanities and general elective requirements. Prerequisites are subject to change.

Individual advising is strongly recommended.

Contact the College of Arts and Sciences dean’s office for more information.

**Aerospace Studies**

William C. Conrad, Head
Assistant Professors Ward and White
108 Military Science Hall
532-6600
E-mail: usaf@ksu.edu
www.ksu.edu/usaf

The Air Force Reserve Officer Training Corps provides the best means for undergraduate and graduate students to become officers in the United States Air Force. Upon completion of the university program, students are commissioned as second lieutenants, and then enter active duty as a pilot, navigator, or enter a technical or nontechnical career field; are deferred for graduate study, to enter active service after degree completion; or enter into Air Force-sponsored graduate study at full pay while serving as Air Force officers.

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 $250 to $400 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 bachelor’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 uniforms, texts, and other equipment needed for their AFROTC courses. Students may begin enrollment in GMC courses at any time until 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 $350 to $400 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 student’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 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 110. Aerospace Studies 1A. (1) I. A study of the mission and organization of the United States Air Force; U.S. general purpose and aerospace support forces. One hour of class a week.

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 functions, 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 AFROTC 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

Duane Noblett, Head
Professors Calluori Holcombe, Hower, Ikeda, Kren, Munce, Noblett, and Pujol; Associate Professors Andrus, Brown, Culley, Schmidt, and Shang; Assistant Professors Bookwalter, Grame, Hunt, Nellis, Routson, Swiler, and Webster; Emeriti: Professors Garzio, Larmer, and Sturr; Associate Professors Clore, Hill, Rex Replogle, Vogt, and Woodward; Assistant Professors Dollar, Love, Ogg, Renata Replogle, O’Shea, and Winegardner; Instructor Hagan.

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:

<table>
<thead>
<tr>
<th>Course (Hours)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 195</td>
<td>Survey of Art History I .......................... 3</td>
</tr>
<tr>
<td>ART 196</td>
<td>Survey of Art History II ........................ 3</td>
</tr>
<tr>
<td>ART 545</td>
<td>Twentieth Century Art History I ................... 3</td>
</tr>
<tr>
<td>ART 550</td>
<td>Twentieth Century Art History II ................ 3</td>
</tr>
<tr>
<td>ART 100</td>
<td>2D Design ........................................... 3</td>
</tr>
<tr>
<td>ART 200</td>
<td>3D Design ........................................... 3</td>
</tr>
<tr>
<td>ART 190</td>
<td>Drawing I ............................................. 3</td>
</tr>
<tr>
<td>ART 210</td>
<td>Drawing II ............................................ 3</td>
</tr>
<tr>
<td>ART 225</td>
<td>Figure Drawing I .................................... 3</td>
</tr>
</tbody>
</table>
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 master 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, metalsmithing 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 during 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 an 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 100</td>
<td>2D Design</td>
<td>3</td>
</tr>
<tr>
<td>ART 200</td>
<td>3D Design</td>
<td>3</td>
</tr>
<tr>
<td>ART 190</td>
<td>Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>ART 210</td>
<td>Drawing II</td>
<td>3</td>
</tr>
<tr>
<td>ART 225</td>
<td>Figure Drawing I</td>
<td>3</td>
</tr>
</tbody>
</table>

Two-dimensional course choice* .................................... 3

Three-dimensional course choice** ................................ 3

Additional requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 195</td>
<td>Survey of Art History I</td>
<td>3</td>
</tr>
<tr>
<td>ART 196</td>
<td>Survey of Art History II</td>
<td>3</td>
</tr>
</tbody>
</table>

20th century art history requirement (6 hours)

Art history (15 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 545</td>
<td>20th Century Art History I</td>
<td>3</td>
</tr>
<tr>
<td>ART 550</td>
<td>20th Century Art History II</td>
<td>3</td>
</tr>
<tr>
<td>ART 602</td>
<td>20th Century Art History III</td>
<td>3</td>
</tr>
<tr>
<td>ART 603</td>
<td>20th Century Art History IV</td>
<td>3</td>
</tr>
</tbody>
</table>

20th century art history requirement (6 hours)

Any two of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 490</td>
<td>B.F.A. Exhibition</td>
<td>0</td>
</tr>
<tr>
<td>Max. concentration</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Art electives</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Art electives .................................................................... 15

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. Introduction 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, II. Fundamentals of drawing 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. Lab.

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) I. Historical development of art from the Renaissance to the nineteenth century.

ART 200. 3 Dimensional Design. (3) I, II. S. Introduction to and laboratory practice in the principals and element of design. Emphasis is placed on spatial properties as related to components of threedimensional 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 practice of visual communications. Lec.

ART 205. Graphic Design Studio I. (3) I, II. Development and preparation of design concepts for application to the printing process. (Black 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 painting 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 hours lab. Pr.: ART 210.


ART 235. Printmaking I. (3) I, II. Introduction to the intaglio, lithographic, relief, and serigraphic 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. May be 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 fabrication in semi-precious metals. The techniques of centrifugal and vacuum casting of precious metals will also be
ART 425. Art for Elementary Schools. (3) I, II, S. Art methods, materials, and philosophy of children’s art at different 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 handicraft after competency has been achieved. Personal development is emphasized.

ART 440. Independent Study—Drawing. (1–5) I, II, S. Work in drawing after competency has been achieved. Personal 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. Personal development is emphasized. Permission of instructor required.

ART 460. 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. Personal development is emphasized.

ART 470. Independent Study—Water Color. (1–5) I, II, S. Work in watercolor 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 project/problem that will be solved using computers to focus on the primary tool/method. 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) I. Origins and development of twentieth century art from 1914 to 1950. Pr.: ART 195 or 196.

ART 560. Art for the Exceptional 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 lec. Pr.: PSYCH 110. Same as DECI 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 personal experience and expression. Six hours lab. Pr.: ART 245.


ART 576. Advanced Typography. (3) I, II, S. Typographic theory and use exploring formal and informal structures with an analysis of historic styles from the Dadaists to continuing through pop, op, minimal, and conceptual art movements up to 1980. Pr.: ART 195 or 196.

ART 603. Twentieth 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. Lec. Three credit hours in the relevant area.

ART 612. Renaissance Art History I. (1–6) I, II. Renaissance art of northern and southern 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. 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. 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. Directions 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.

ART 663. Metals Workshop. (1–5) I, II. A number of metalworking techniques will be explored by the upper division student. Emphasis on experimental processes and possibilities. The development of an individual viewpoint will predominate throughout the course. May be repeated twice. Pr.: ART 655.


ART 696. Advanced Independent Study Design. (Var.) I, II. Individual exploration in selected problems in art history. Pr.: Twelve hours art history.

Biochemistry

Charles Hedgcock, Head

Professors Davis, Hedgcock, Kanost, Kramer, Muthukrishnan, Reecck, Roche, D. Takemoto, Tomich, and X. Wang; Associate Professors Krishnamoorthi, Prakash, and P. Smith; Assistant Professors A. Zolkiewksa and M. Zolkiewski; Research Assistant Professor Iwamoto; Emeriti: Professors Burkhard, Koeppe, Mitchell, Nordin, Parrish, and Rullfson; Associate Professor Mueller.

E-mail: biochem@ksu.edu
www.ksu.edu/bchem

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:

- BIOCH 100 Biochemistry Orientation 1
- CMH 220/225 Chemical Principles I and II 10
- or
- CMH 210/230 Chemistry I, II, and 371 Chemical Analysis 12
- CHM 531 Organic Chemistry I 3
- CHM 550 Organic Chemistry II 3
- CHM 532 Organic Chemistry Laboratory 2
- BIOCH 290 Biochemistry Seminar 2
- BIOCH 755 Biochemistry I 3
- BIOCH 765 Biochemistry II 3
- PHYS 113 General Physics I 4
- PHYS 114 General Physics II 4
- BIOL 198 Principles of Biology 4
- Biological science electives 8

These courses satisfy the mathematics and natural science 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:

- BIOCH 100 Biochemistry Orientation 1
- CMH 220/225 Chemical Principles I and II 10
- or
- CMH 210/230 Chemistry I, II, and 371 Chemical Analysis 12
- CHM 531 Organic Chemistry I 3
- CHM 550 Organic Chemistry II 3
- CHM 532 Organic Chemistry Laboratory 2
- BIOCH 290 Biochemistry Seminar 2
- BIOCH 755 Biochemistry I 3
- BIOCH 765 Biochemistry II 3
- PHYS 113 General Physics I 4
- PHYS 114 General Physics II 4
- BIOL 198 Principles of Biology 4
- Biological science electives 8
- Biology, statistics, or computer science, analytical geometry and calculus III, or differential equations elective 3–4

These courses in this list satisfy the natural science and quantitative reasoning requirements shown in the general requirements for the B.S. degree.

- Must include at least one credit hour of BIOCH 799 Problems in Biochemistry. Up to two credit hours of Advanced Biochemistry Laboratories (BIOCH 757, 758, 766, 767) can be applied towards this requirement.

Transfer students

Community college students who plan to transfer into either of the biochemistry curricula at the junior level should take the following science courses during their first two years of college:

- A year of freshman chemistry—lecture and laboratory
- A semester of analytical chemistry—lecture and laboratory
A year of organic chemistry—lecture and laboratory
A year of analytic geometry and calculus
A year of biology—lecture and laboratory

Completion of these science courses should allow students to go directly into biochemistry and advanced biology courses upon entry into a biochemistry curriculum.

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 TELENET. Topics in biochemistry chosen to illustrate current research of scientists and methods chosen to study biological problems from a biochemical point of view. Of all offering this course of 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. Biologically oriented topics and news items related to environmental and medical aspects of daily living. Covers selected basic biochemical concepts with applications to humans: proteins as enzymes, energy from foods, biochemical communications and drug interactions, genes and heredity. Intended for non-science 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 lect. and six hours lab a week. Pr.: CHM 110.

BIOCH 290. Biochemistry Seminar. (2) II. 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 topical interest in biochemistry. Topics will vary depending on the 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. A 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, or BIOCH 755 or conc. enrollment.

BIOCH 590. Physical Studies of Biomacromolecules. (3) II. An overview of concepts and techniques of physical science used in studying the structure and function of biomacromolecules such as proteins and DNA. Applications include classical equilibrium thermodynamics and spectroscopic methods including mass spectrometry, circular dichroism (CD), and nuclear magnetic resonance (NMR). Pr.: CHM 500, MATH 221, and PHYS 114.

BIOCH 599. Research Training in Biochemistry. (1-3) I, II, S. Provides laboratory experience for majors and non-majors in research techniques contributing to ongoing biochemical research. May be repeated up to 8 hrs. 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 biochemical kinetics, 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 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 a two-semester comprehensive coverage of experiments in biochemistry. For a one-semester laboratory course, enroll in BIOCH 522. Six hours lab a week. Pr.: BIOCH 755 or conc. enrollment.

BIOCH 757. NMR Laboratory. (1) II. Basic methods and techniques of magnetic nuclear resonance used in the study of biochemical systems. Pr.: BIOCH 756; lipid chemistry and metabolism, amino acid metabolism, nutrition, nucleic acid chemistry and metabolism, integration of biochemical pathways and metabolic control mechanisms. Pr.: BIOCH 755.

BIOCH 766. Recombinant DNA Laboratory I. (1) II. Biochemical manipulation of nucleic acids. Isolation and restriction enzyme characterization of plasmid DNA, ligation of DNA fragments, protein polymerase chain reaction, Southern blot analysis, DNA sequencing and analysis. Two three-hour labs per week. Meets first half of semester. Pr.: BIOCH 522.

BIOCH 767. Recombinant DNA Laboratory II. (1) II. Approaches to study RNA and proteins using recombinant DNA techniques. RNA extraction and affinity isolation of mRNAs, Northern blot analysis, cDNA library construction and screening, and the process of site-directed mutagenesis. Two three-hour labs per week. Meets second half of semester. Pr.: BIOCH 522.

BIOCH 790. Physical Biochemistry. (3) I. A survey of biophysical methods most frequently encountered in biochemistry and related disciplines. Emphasizes principles underlying methods used in determining the molecular weight and shape of biopolymers and techniques used in detecting conformational changes in nucleic acids, proteins, and polysaccharides. Pr.: MATH 222 and BIOCH 765.

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.

Biology

Brian S. Spooner, Division Director
Larry G. Williams, Associate Director, Undergraduate Studies

University Distinguished Professors Conrad, Denell, T. Johnson, Spooner, and Takemoto; Professors Blair, Chapes, Dodds, Guikema, Hartnett, Kaufman, Knapp, Perchellet, Robel, C. Smith, Upton, Wilson, and Wong; Associate Professors Cully, Gipson, Guy, L. Johnson, Marchin, Montelone, Rintoul, A. Smith, Tomb, Urban, Welti, Williams, and With; Assistant Professors Asano, Brown, Clem, Ferguson, Gido, Herman, Jumpponen, Passarelli, Roe, Sandercock, Shah, and Todd; Instructors Hook, Horne, and Pacey; Emeriti: University Distinguished Professor Consigl; Professors Barkley, Bode, Center, Fina, Hansen, Kramer, Pady, Pittenger, Roufa, and Zimmerman; Associate Professors Klaassen and Weis; Instructors Kundiger and Paulsen. 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.

Biology degree

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

MATH 220 Analytical Geometry and Calculus I 4
MATH 221 Analytical Geometry and Calculus II 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
BIOCH 522 General Biochemistry Laboratory 2
PHYS 113 General Physics I 4
PHYS 114 General Physics II 4

Prerequisites for MATH 220 are MATH 100 and 150 or four semesters of high school algebra and one semester of trigonometry plus appropriate math placement exam scores. Upon consultation with a Division of Biology advisor a student may substitute: Biochemistry I and II for General Biochemistry; Organic Chemistry I and II for General Organic Chemistry; Organic Chemistry I Lab for General Organic Chemistry Lab; and Engineering Physics I and II for General Physics I and II.

Block B: Division of Biology courses

BOL 198 Principles of Biology 4
BOL 201 Organismic Biology 5
BOL 450 Modern Genetics 4
BOL 529 Fundamentals of Ecology 3
BOL 541 Cell Biology 3

Block C: Biology major electives

In addition to the Block B courses students must take a minimum of 15 credit hours of biology courses at the 400+ level or higher, including two courses providing a laboratory experience.

*Students who take BOL 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 15 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.

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>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</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>
</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>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>
</tr>
</tbody>
</table>

Prerequisites for MATH 220 are MATH 100 and 150 or four semesters of high school algebra and one semester of trigonometry plus appropriate math placement exam scores. Upon consultation with a Division of Biology advisor a student may substitute Biochemistry I and II for General Organic Chemistry; Organic Chemistry I and II for General Organic Chemistry; Organic Chemistry I Lab for General Organic Chemistry Lab; and Engineering Physics I and II for General Physics I and II.

Block B: Division of Biology courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 450</td>
<td>Modern Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 455</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 670</td>
<td>Immunology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 675</td>
<td>Genetics of Microorganisms</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 690</td>
<td>Microbial Physiology and Metabolism</td>
<td>2</td>
</tr>
</tbody>
</table>

Block C: Microbiology major electives

Students must take an additional 14 hours from courses listed below. At least half the 14-hour total must be laboratory courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 397</td>
<td>Biotechnology</td>
<td>1-3</td>
</tr>
<tr>
<td>BIOL 401</td>
<td>Biology of the Cancer Cell</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 530</td>
<td>Pathogenic Microbiology (lab course)</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 541</td>
<td>Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 545</td>
<td>Human Parasitology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 546</td>
<td>Human Parasitology Lab (lab course)</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 604</td>
<td>Biology of Fungi (lab course)</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 625</td>
<td>Animal Parasitology (lab course)</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 671</td>
<td>Immunology Lab (lab course)</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 676</td>
<td>Molecular Genetics Laboratory (lab course)</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 687</td>
<td>Microbial Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 698</td>
<td>Problems in Biology (lab course)</td>
<td>1-3</td>
</tr>
<tr>
<td>BIOL 705</td>
<td>Eukaryotic Genetics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 707</td>
<td>Advanced Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 720</td>
<td>Anaerobic Bacteriology</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 730</td>
<td>General Virology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 731</td>
<td>Virology Laboratory (lab course)</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 755</td>
<td>Specialized Cell Functions</td>
<td>2</td>
</tr>
<tr>
<td>ASI 607</td>
<td>Food Microbiology (lab course)</td>
<td>4</td>
</tr>
<tr>
<td>AGRON 645</td>
<td>Soil Microbiology (lab course)</td>
<td>4</td>
</tr>
</tbody>
</table>

By consultation with a Division of Biology advisor a student may choose elective courses from Block C that allow a more specific focus on interest and experience. Areas of specialization would include prokaryotic microbiology, eukaryotic microbiology, biotechnology/genetic engineering, and infectious diseases. The microbiology curriculum coupled with appropriate electives provides an excellent education base for students moving directly into the job market, for students headed toward medical, dental, medical technology, and veterinary programs, and for students going into graduate programs in the biological sciences.

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>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPCH 106</td>
<td>Public Speaking I</td>
<td>3</td>
</tr>
<tr>
<td>One math course*</td>
<td>3-4</td>
<td></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>CIS 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 be selected from among MATH 100, 150, or 220.
**To be fulfilled by CHM 210, 230, 350, and 351 or by CHM 210, 230, and BIOCHM 265.

Students who plan to proceed into graduate programs should take MATH 220; CHM 210, 230, 350, and 351; and PHYS 113 and 114.

Block B: Division of Biology courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</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 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 | 5     |

Block C: Options

Fisheries biology option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 341</td>
<td>Biometrics II</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 513</td>
<td>Physiological Adaptations of Animals</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 514</td>
<td>Physiological Adaptations of Animals Lab</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 542</td>
<td>Ichthyology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 612</td>
<td>Limnology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 682</td>
<td>Fish Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 696</td>
<td>Fisheries Management</td>
<td>4</td>
</tr>
</tbody>
</table>

Wildlife biology option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 341</td>
<td>Biometrics II</td>
<td>3</td>
</tr>
<tr>
<td>AGRON 501</td>
<td>Range Management</td>
<td>3</td>
</tr>
<tr>
<td>AGEC 525</td>
<td>Natural Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>ENTOM 312</td>
<td>General Entomology</td>
<td>2</td>
</tr>
<tr>
<td>ENTOM 313</td>
<td>General Entomology Lab</td>
<td>1</td>
</tr>
</tbody>
</table>

Natural history option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 551</td>
<td>Taxonomy of Flowering Plants</td>
<td>4</td>
</tr>
<tr>
<td>FOR 330</td>
<td>Dendrology I</td>
<td>2</td>
</tr>
<tr>
<td>FOR 340</td>
<td>Dendrology II</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 542</td>
<td>Ichthyology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 543</td>
<td>Ornithology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 544</td>
<td>Mammalogy</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 513</td>
<td>Physiological Adaptations of Animals</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 514</td>
<td>Physiological Adaptations of Animals Lab</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 500</td>
<td>Plant Physiology</td>
<td>4</td>
</tr>
</tbody>
</table>

Nine hours of biology electives (400 level or above) | 9     |

Hours from Block B may not be counted as a part of Block C electives.

Pre-professional curricula

Students preparing to seek admission to veterinary, medical, dental, optometry, physical therapy, medical technology, and other professional schools may major in biology (or another discipline) provided the specific pre-professional requirements are met. Students should work with both an appropriate pre-professional advisor in the College of Arts and Sciences dean’s office and a biology advisor 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>
<th>Course Title</th>
<th>Hours</th>
</tr>
</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>
</tbody>
</table>

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 fill 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 who are similar to their own.

Biology courses

**BIOL 198. Principles of Biology.** (4) I, II, S. An introductory survey for nonmajors focusing on plants, animals and microbes. Specific areas covered include biological molecules, cells, genetics, energy flow, physiology, ecology, and evolution. Studio format incorporating lecture, lab, and rec. elements in two two-hour sessions per week.

**BIOL 201. Organismic Biology.** (5) I, II. 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), II, in odd years. Identification of bird species in the field and the illustration of attributes of birds and their interactions with the environment. 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.** (8) I, II. Anatomy and physiology of the organ systems of the human body. Laboratory includes physiology experiments, study of anatomy from human cadavers, dissection experience, x-rays, and slide viewing. Five hours lec. and two three-hour lab sessions a week. Pr.: BIOL 198.

**BIOL 365. Practicum in Biology.** (1–4) 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 juniors and seniors 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 coverage of each system includes a review of normal structure and function, age-related diseases, and the integration of their structural systems. Two hours lec., one hour rec./studio. Pr.: BIOL 198, CHM 230, MATH 100.

**BIOL 455. General Microbiology.** (4) I, II. Microorganisms; their handling, morphoogy, 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 Honors Thesis.** (2,1), 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. Developmental Biology.** (3) II. Introduction to the stages and mechanisms of embryonic development. Integrated approach that includes classic experimental embryology and the genetic and molecular regulation of vertebrate and invertebrate animal development. Three hours lec. a week. Pr.: BIOL 450.

**BIOL 511. Embryology Laboratory.** (1) II. 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 system, parental care, sexual selection, community structure and dynamics, aggression, habitat selection, and foraging. Research project required. Pr.: BIOL 201.

**BIOL 529. Fundamentals of Ecology.** (3) II. Interdisciplinary examination of organisms and the physical environment, ecosystem structure and function, population ecology and demography, community structure and dynamics, and basic ecological principles and their relevance to contemporary environmental issues. Three hours lec. per week. Pr.: BIOL 198 and CHEM 210.

**BIOL 530. Pathogenic Microbiology.** (3) I. Etiology and descriptive study of major infectious diseases of humans within the perspective of host defenses. Two hours lec. and one laboratory-demonstration a week. Pr.: BIOL 455.

**BIOL 541. Cell Biology.** (3) I, 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 CHEM 210.

**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. 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 545. 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 will include Mendelian inheritance, DNA and chromosome structure, gene expression, mutation, recombination DNA, quantitative inheritance, population, and evolutionary genetics. Three hours lec. and one hour rec./studio. Pr.: BIOL 198, CHM 230, MATH 100.

**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) I in even years. Etiology and 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 585. Principles of Conservation Biology.** (3) II. Biological diversity and the factors contributing to loss of biodiversity. Scientific principles of biological conservation emphasizing the application of ecological theory and population genetics to the conservation of threatened populations, species, and ecosystems. Three hours lec. per week. Pr.: BIOL 450 and 529.

**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 saprobes, and in industry. Techniques of isolation, cultivation, and as experimental organisms. Two hours lec. and two hours lab a week. Pr.: BIOL 180 or 198.

**BIOL 609. Cellular and Molecular Biology of Human Diseases.** (3) I. Fundamental basis of the major common non-infectious diseases and disorders affecting our society, with emphasis on the biological and molecular biological mechanisms by which the structures and functions of specific human tissues, organs, and systems are altered. Three hours lec. per week. Pr.: BIOL 450 and BIOCH 521.

**BIOL 612. Limnology.** (4) I, in even years. Basic ecological principles of aquatic environments. Plants and animals of local streams, rivers, ponds, and reservoirs are used to demonstrate the interaction of biological processes with the chemical and physical features of natural aquatic environments. 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) II. 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 622. Cellular and Developmental Biology of the Nervous System.** (3) I, in even years. An introduction to the cellular and molecular biology and embryology of developing brains and nervous systems of vertebrates and some model invertebrates. Pr.: Two courses in biology.

**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 hours lec. and two hours lab 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) I. 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. Immunochemistry.** (2) I. Laboratory exercises in immunology. Pr.: BIOL 670 or conc. enrollment. Three hours 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 475 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) II. 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 440.

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) II. The study of structure, function, regulation, and intermediary metabolism of bacteria. Pr.: BIOL 455; and BIOCH 521 or 765.

BIOL 696. Fisheries Management. (4) I, in even years. Historical and contemporary issues in the management and conservation of exploited fish species. Methods for managing fisheries resources in streams, lakes, and ponds including estimating abundances, quantifying age and growth, manipulating populations, modeling population dynamics, cultivating fish, and improving aquatic habitat. Three hours lec. and three hours lab per week. Pr.: BIOL 450.

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 radiotrace handling, licensing procedures, and laboratory techniques. Pr.: BIOL 198 or 455; and CHM 210 or PHYS 113.

BIOL 705. Eukaryotic Genetics. (3) I. An integrated exploration of transmission genetics and molecular genetics of eukaryotic organisms. Focus on genetic model organisms and their contributions to understanding mechanisms of genetics transmission and exchange, mutation, gene expression, and regulation of cell division and development. Modern approaches to genomic analysis. Pr.: BIOL 450 and BIOCH 521.

BIOL 707. Advanced Cell Biology. (3) I. Selected current topics in cell biology reflecting recent advances in the field, including membranes and transport, protein sorting, signal transduction, cell adhesion and motility, cell cycle regulation, apoptosis, and specialized cell functions. Pr.: BIOCH 521 and BIOCH 541.

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 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, and of veterinary, medical and industrial importance. Two hours of lec. a week. Same as ASI 720. Pr.: BIOL 455 and BIOCH 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 BIOCH 521 or equiv.; consent of instructor.

BIOL 731. Virology Laboratory. (2) I. An introduction to the techniques used in virus propagation, 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; diagnosis; surgical oncology; oncologic emergencies; adverse effects of cancer therapy; and the new therapies. Pr.: BIOL 450 and BIOCH 521 or equiv.

BIOL 755. Specialized Cell Functions. (3) I, in even years. In 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 Hammaker, Hawley, Hua, A. Kelley, D. Kelley, Maatta, and Ortiz; Associate Professors Aakeröy, Buszek, Collinson, Higgins, Hollingsworth, and Warmuth; Assistant Professors Baures, Culbertson, Lenhart, and Levy; Instructors Pauketals and E. Dikeman; Emeriti: University Distinguished Professor Fately and Setser; Professors Copeland, Kruh, McDonald, Meloan, and Moser; Instructor Weyerts.

www.ksu.edu/chem

The Department of Chemistry occupies modern laboratory facilities in the Chemistry/Biochemistry Building, the H.H. King 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 40 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 environmental 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).
CHM 250 Chemical Principles II ........................... 5
or
CHM 230 Chemistry II ........................................... 4
and
CHM 210 Chemistry I ............................................ 4
or
CHM 371 Chemical Analysis .................................... 4
or
CHM 350 General Organic Chemistry I.......................... 3
or
CHM 500 General Physical Chemistry# .................... 3
or
CHM 531 Organic Chemistry I ................................. 3
or
CHM 500 Physical Chemistry I ................................. 3

Chemical science curriculum for the B.S. degree

The chemical science curriculum serves students who want a strong background in science but not as much specialization in chemistry as provided by the B.S. degree in chemistry.

Chemistry (23–25 hours)

CHM 220 Chemical Principles I ................................. 5
and
CHM 230 Chemical Principles II ................................. 5
and
CHM 210 Chemistry I ............................................ 4
and
CHM 230 Chemistry II ........................................... 4
and
CHM 371 Chemical Analysis .................................... 4

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 101 or at least one year of high school algebra.

CHM 111. General Chemistry Laboratory. (1) I, II. A laboratory course to supplement the material of CHM 110. Three hours lab 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. 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 100 (or two years of high school algebra).

CHM 211. Chemistry I Recitation. (1) I. An optional recitation class that requires conc. enrollment in CHM 210. The objective is the development of 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>
</tr>
<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>
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</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. (3,1) 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. Four hours lec. and three hours lab a week. Pr.: High school chemistry (one year) and algebra (one and one-half years).

CHM 230. Chemical Principles II. (4) I, II. S. 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 231. Chemistry II Recitation. (1) I, II. An optional recitation class that requires conc. enrollment in CHM 230. The objective is the development of skills for solving chemical problems. Instruction will be via a small class format. For credit/no credit only. Credit independent of grade for Chemistry II.

CHM 250. Chemical Principles II. (5) II. Continuation of CHM 220, covering the principles of chemistry. Laboratory has emphasis on quantitative chemical analysis. Three hours lec. and six hours lab a week. Pr.: CHM 220.

CHM 399. Honors Seminar. (3) Open to students in the arts and sciences honors program.

CHM 497. Research in Undergraduate Chemistry. (–3) I, II, S. Undergraduate research in the chemical sciences. Pr.: Consent of instructor

CHM 498. Senior Honors Thesis. (2) I, II. S. Directed research. Pr.: Consent of instructor.

CHM 499. Problems in Undergraduate Chemistry. (Var.) I, II, S. Problems may include classroom and/or lab work. Pr.: Consent of instructor. May be repeated.


Analytical chemistry courses

CHM 371. Chemical Analysis. (4) I. Principles of chemical equilibria and quantitative analysis: gravimetric, titrimetric, spectrophotometric, electroanalytical, and separations methods. Two hours lec. and six hours lab a week. Pr.: CHM 230.

CHM 545. Chemical Separations. (2) I, II. Principles of modern separation techniques. One hour lec. and three hours lab a week. Pr.: CHM 250 or 371, CHM 532 and 550.

CHM 566. Instrumental Methods of Analysis. (3,1) I. Introduction to theory and practice of electrochemical methods, molecular and atomic spectroscopy, surface science, mass spectrometry, separation methods, and electronics in analytical chemistry. Three hours lec. a week. Pr.: CHM 550 and CHM 500 or CHM 585.

CHM 567. Instrumental Methods of Analysis Laboratory. (2,3) I. Three hours lab a week. Pr.: CHM 566 or conc. enrollment.
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) II, S. A survey of types of organic reactions important to biological science, including pre-veterinary and certain agriculture and human ecology programs. Conc. enrollment in CHM 351 is urged. Three hours lec. a week. Pr.: CHM 230.

◆ CHM 351. 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. One five-hour lab and one hour of lec. a week. Pr. or conc. enrollment: CHM 350.

CHM 550. Organic Chemistry II. (3) II. 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. 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 or 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 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 230 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.

Economics
James F. Ragan, Head
Professors Babcock, Nafziger, Ragan, Thomas, and Weisman; Associate Professors Akkina, Cassou, Chang, Gormely, and Oldfather; Assistant Professors Bidarkota, Blankenau, Gayle, Li, and Turner; Instructor Trenary.
E-mail: econ@kusu.edu
www.kusu.edu/economics
Economics studies the principles guiding the best use of resources. Important topics in economics include production; consumer choice; the distribution of income; and the causes of economic growth, recessions, and inflation.

Many economists analyze data to determine underlying relationships and trends, to predict the consequences of government policy, or to develop forecasts of future activity. Such work involves mathematics or statistics and often deals with current issues.

Students may pursue specialized study in economic theory, money and banking, public finance, labor economics, international trade, economic development, transportation, econometrics, regional economics, industrial organization, and economic systems.

A student majoring in economics may earn either the bachelor of arts or the bachelor of science degree.

Requirements
Requirements for an economics major for either the B.A. or B.S. degree are:

- ECON 110 Principles of Microeconomics ............... 3
- ECON 120 Principles of Microeconomics ............... 3
- ECON 510 Intermediate Macroeconomics ............... 3
- ECON 520 Intermediate Microeconomics ............... 3
- ECON 521 Intermediate Micro Theory ............... 3
- ECON 580 Senior Seminar in Economics ............... 3

Five additional economics department courses at the 500 level or above (except ECON 505, 506, and 523).

Two courses in statistics. One course must be an introductory course: STAT 320, 330, 340, 350, 510, 702, or 703. The other course must be STAT 351, 511, or 705.

Either MATH 205 (General Calculus and Linear Algebra) or MATH 220 (Analytic Geometry and Calculus I).

To graduate, a student must receive a grade of C or higher in Intermediate Macroeconomics and Intermediate Microeconomics. In addition, a student must either (a) receive a grade of C or higher in all other 500 level or higher economics courses used to satisfy the degree requirements or (b) have a GPA of at least 2.50 in all economics courses used to satisfy the degree requirements.

Courses taken A/Pass/F may not be used to fulfill these requirements.

Students interested in graduate study in economics should take MATH 220 and 221. Additional courses in calculus, matrix algebra, and statistics are also recommended. Early counsel with an advisor is encouraged.

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 junior 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 Macroeconomics ............... 3
- ECON 120 Principles of Microeconomics ............... 3
- Four economics courses at the 500 level or higher ............... 12

ECON 505 and 506 may not be used to satisfy this requirement.

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 010.

ECON 111. Principles of Microeconomics—Honors. (3) Course description same as ECON 110. Pr.: Participation in honors program and consent of instructor.

◆ 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 010.

◆ 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.

ECON 401. Sophomore/Junior Seminar in Economics. (1). Some I. An introduction to economics as a science and a profession. The course introduces students to the skills and tools that make economics an attractive and enjoyable field as well as an overview of economic data and current...
debates. Open only to economics majors and those contemplating an economics major. Pr.: ECON 110 and ECON 120.

ECON 499. Seniors Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

ECON 505. Introduction to the Civilization of South Asia I. (3) Interdisciplinary survey of the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan; geographical and demographic context, philosophical and social concepts, economic, social and political institutions, literature and historical movements. Same as HIST 505, POLSC 505, SOCIO 505, ANTH 505.

ECON 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 recent history, current economy, religion, culture, languages and literature, geography, social and political institutions. Same as HIST 506, POLSC 506, SOCIO 506, ANTH 506.

◆ ECON 507. The Japanese Economy. (3) Analyzes Japan’s growth, productivity change, income distribution, government policies, agriculture, industrial structure, labor relations, education and technology, and international trade and finance. Emphasis will be on U.S.-Japanese competition and comparisons. Pr.: ECON 110.

ECON 510. Intermediate Macroeconomics. (3) I, II, S. An examination of the behavior of the economy as a whole, including an analysis of the national income account, consumption, investment, money, interest, the price level, the level of employment, monetary and fiscal policy, and economic growth. Pr.: ECON 110; ECON 120 or AGEC 120.

ECON 520. Intermediate Microeconomics. (3) I, II, S. An examination of the theories of consumer behavior and demand, and the theories of production, cost, and supply. The determination of product prices and output in various market structures, and an analysis of factor pricing. Introduction to welfare economics. (Students cannot receive credit for both ECON 520 and ECON 521.) Pr.: ECON 120.

ECON 521. Intermediate Microeconomic Theory. (3) A mathematical approach to intermediate microeconomics. Emphasis is placed on the use of optimization techniques to examine consumer demand, production and cost, behavior of the firm, market structure and welfare. Pr.: ECON 120; MATH 205 or 220.

◆ ECON 523. Human Resource Economics. (3) II. An introduction to the economic forces influencing wage and employment determination, income differentials, unemployment, and the production and acquisition of human capital. Emphasis on public policy, labor unions, and other relevant institutional structures. Pr.: ECON 120. May not be counted toward economics major.

◆ ECON 527. Environmental Economics. (3) II. Economics of environmental market failure and the efficient use of exhaustible and renewable resources. Topics include the application of models and government policies to greenhouse warming, air and water pollution, and recycling. Pr.: ECON 120.

ECON 530. Money and Banking. (3) I, II, S. Nature, principles, and functions of money; development and operation of financial institutions in the American monetary system, with emphasis on the processes, problems, and policies of commercial banks in the United States. Pr.: ECON 110.

ECON 532. Fiscal Operation of State and Local Government. (3) Designed for students who plan careers related to state or local government. Selected topics in state and local taxation and expenditure. Pr.: ECON 110 and permission of instructor.

◆ ECON 536. Comparative Economics. (3) The transition by Russia, Ukraine, Eastern and Central Europe, and Central Asia to market economies; economic reform in China, India, and other countries; and Marxian critiques of capitalism. Pr.: ECON 110 or 120.

ECON 540. Managerial Economics. (3) I, II, S. Microeconomic topics applicable to understanding and analyzing firm behavior: optimization, demand, estimation, production, and cost theory. Applications to business problems. Pr.: ECON 120, an introductory-level statistics course, and MATH 205.

◆ ECON 555. Urban and Regional Economics. (3) I. An examination of the determinants of the economic performance of urban and regional economies, including theory, problems, and policy. Pr.: ECON 120.

ECON 580. Senior Seminar in Economics. (3) I. Topics for class discussion include history of economic thought, research methods in economics, and current economic issues. Students will prepare and present papers written with faculty guidance. Required of all economics majors; open to others with permission of instructor. Pr.: ECON 510 and ECON 520; STAT 351, 511, or 705 or concurrent enrollment in one of the three.

ECON 595. Problems in Economics. (Var.) I, II, S. Individual study is offered in international trade, labor relations, money and banking, public finance, transportation, general economics.

ECON 599. Topics in Economics. (1–3) On sufficient demand, topics to be taught on demand. Pr.: To be set for each topics course.

ECON 620. Labor Economics. (3) I, some S. Economics of the labor market—theory and empirical evidence. Labor force composition and trends, labor supply, labor demand, human capital, wage differentials, migration, trade unions, and current issues. Pr.: ECON 520.

ECON 627. Contemporary Labor Problems. (3) Some II. Emphasis on current research and public policies dealing with such matters as full employment, poverty, discrimination, social security, unemployment insurance, health care, minimum wages, training, and education. Pr.: ECON 620 or consent of instructor.

ECON 630. Introduction to Econometrics. (3) I. An introduction to the analytical and quantitative methods used in economics. Applications to specific problems with an emphasis on computer analyses. Pr.: ECON 120; MATH 205 or 220; STAT 351, 511, or 705.

ECON 631. Principles of Transportation. (3) I, II. Examines the transportation market from the shippers’ point of view by examining the impact of transportation on business firm decisions such as location, markets, and prices. Also covers the costs, prices, and service characteristics of railroads, motor carriers, water carriers, oil pipelines and airlines. The role and impact of government in the transportation market is examined from both a pro-motion and regulation perspective. Pr.: ECON 120 or AGEC 120.

ECON 633. Public Finance. (3) II. Course seeks answers to questions such as: Which goods should be provided by the private sector and which by the public sector (government)? With what criteria are public expenditures evaluated? What is an equitable and efficient tax system? Who bears the tax burden? What aspects of existing taxes need reform? Pr.: ECON 110; ECON 120 or AGEC 120.

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

ECON 681. International Trade. (3) I, II. Some S. Principles of international trade and finance, including production, exchange, commercial policy, resource movements, balance of payments, foreign currency markets, and policies for internal and external balance. Pr.: ECON 110; ECON 120 or AGEC 120.

ECON 682. Economics of Underdeveloped Countries. (3) Some S. Factors influencing the economic modernization of the less-developed countries. Emphasis on capital formation, investment allocation, structural transformation, population growth, development planning, and the international economics of development. Pr.: ECON 110.

ECON 686. Business Fluctuations and Forecasting. (3) Some I. Types of business fluctuations; measurement of business cycles; theories of the causes of business cycles; proposals for stabilizing business activity; techniques of forecasting business activity. Pr.: ECON 110; ECON 120 or AGEC 120.

ECON 690. Monetary, Credit, and Fiscal Policies. (3) Some II. Goals of aggregate economic policy, conflicts among goals, and measures to resolve conflicts; money markets; targets of central bank control; the relative strength of monetary and fiscal policies; rational expectations hypothesis and policy ineffectiveness debate; term structure of interest rates. Pr.: ECON 530.

ECON 699. Seminar in Economics. (1–3) On sufficient demand. Seminars of special interest will be offered on demand. Pr.: ECON 120.

ECON 710. History of Economic Thought. (3) II. In even years. Development of economic ideas and doctrines and the relation of these to conditions existing when they were formulated. Pr.: ECON 510.

ECON 720. Microeconomic Theory. (3) I. Demand, cost, and production theories; price and output determination in different market structures; the theory of factor market pricing; an introduction to general equilibrium and welfare analysis. Pr.: ECON 205 or MATH 220.

ECON 735. Mathematical Economics. (3) I. Application of mathematical tools of concrete problems in micro- and macro-economics; mathematical treatment of models of consumption, production, market equilibrium, and aggregate growth. Pr.: ECON 205, MATH 205 or 220, or consent of instructor.

English

Lawrence Rodgers, Head


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 tracks: literature, literature and creative writing, or literature with teaching certification. For all three tracks, students must take at least 6 hours of American literature and 6 hours of British literature other than Shakespeare. Students also must achieve a C or better in ENGL 310 for the course to count for major credit.

Literature track

ENGL 310 Introduction to Literary Studies ....................... 3
One Shakespeare course ............................................... 3
One language course (380, 476, 490) ......................... 3
Any three of the following “survey” courses: ............... 9
361 (British I), 362 (British II), 381 (American I), 382 (American II)

Three English courses numbered 315–599 ....................... 9
Three English courses numbered 600–799 ....................... 9

At least 12 of the 18 hours in courses numbered 315 and above must be literature courses.
Literature and creative writing track
Introduction to Literary Studies (ENGL 310) ......................... 3
One Shakespeare course .................................................. 3
One language course (430, 476, 490) ............................... 3
Any two “survey” courses ................................................. 6
(ENGL 361, 362, 381, 382)
Two of the following: ......................................................... 6
Introduction to Fiction Writing (ENGL 461)
Introduction to Poetry Writing (ENGL 463)
Introduction Creative Nonfiction (ENGL 465)
Two advanced creative writing courses selected from ENGL 604, 661, 663, 761, 762, 763, and 771 .......................................................... 6
Two literature courses numbered 600 or above .................. 6
One course in literature or language numbered 315-599 .......... 3

Literature with teaching certification track
Introduction to Literary Studies (ENGL 310) ......................... 3
One Shakespeare course .................................................. 3
Advanced Expository Writing for Prospective Teachers (ENGL 400) .......................................................... 3
Linguistics for Teachers (ENGL 435) .................................. 3
Literature for Adolescents (ENGL 454) ............................... 3
Any three “survey” courses ................................................. 9
(361, 362, 381, 382)
One world language course ............................................. 3
Any one course (ENGL 315-599) ....................................... 3
Two literature courses numbered 600 or above ................. 6
Composition elective .......................................................... 3

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
Introduction to Literary Studies (ENGL 310) ......................... 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 ................................ 9
(Any of these must be a literature course numbered 600 or above) .................................................. 9

English minor with an emphasis in writing
Introduction to Literary Studies (ENGL 310) ......................... 3
One American or British survey course (choose one: ENGL 361, 362, 381, 382) ........................................... 3
Any four writing courses ENGL 300 or above (choose four: ENGL 300, 400, 415, 461, 463, 465, 510, 516, 562, 604, 661, 663, 665, 755, 761, 762, 763) (one of these courses must be numbered 600 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 outlined above, leading to the B.A. degree in English and the B.S. degree in education; 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. 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 English. (1–12) I, II. S. Topics include: reading, oral communication, or written communication.
ENGL 036. Beginning English I. (1–18) I, II. Topics include: reading, listening, speaking, written communication, or oral communication.
ENGL 038. Beginning English II. (1–18) I, II. Topics include: reading, listening, speaking, written communication, or oral communication.
ENGL 040. Intermediate English I. (1–18) I, II. Topics include: reading, listening, speaking, written communication. or oral communication.
ENGL 050. Intermediate English II. (1–18) I, II. Topics include: reading, listening, speaking, written communication, or oral communication.
ENGL 052. Advanced English. (1–18) I, II. Topics include: reading, listening, speaking, written communication, or oral communication.
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. Discussion of general aspects of the English language and culture important to the successful study of English, including social, historical and political factors. Repeatable if necessary.

Introductory courses not for major credit
ENGL 100. Expository Writing I. (3) I, II. Introduction to expository and informative writing. Frequent discussions, workshops, and conferences. Offers extensive practice in the process of writing: getting ideas, drafting, analyzing, revising, and editing.
ENGL 110. Honors English I. (3) I, II. 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. Subjects who receive A in ENGL 110 may, on the recommendation of their advisor, prepare another composition which will concentrate on themes determined by the instructor.
ENGL 125. Honors English II. (3) I, II. 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.
ENGL 150. English Studies Abroad. (2–3) Intersession only. Travel abroad, with selected readings, lectures, and discussions which explore the relationships between literary texts and their physical and cultural environments. Repeatable once with change of topic.
ENGL 200. Expository Writing II. (3) I, II. S. Introduction to writing persuasively and in response to literature. As with ENGL 100, uses discussions, workshops, and conferences, and emphasizes the writing process. Pr.: ENGL 100 or 110 and sophomore standing.
ENGL 220. Fiction into Film. (2) I, II. S. Discussions of and writing about film adaptation of works of literature.
ENGL 230, 231, 233, 234. Introduction to Western Humanities. Courses examine Western culture through literature, philosophy, religion, art, and music. The four courses may be taken individually and in any order.
ENGL 230. Classical Cultures. (3) I, II. Ancient Greek and Roman cultures.
ENGL 231. Medieval and Renaissance. (3) I, II. Middle Ages to mid 1600s.
ENGL 233. Reformation to Enlightenment. (3) I, II. Beginnings of Protestantism through the 18th century.
ENGL 234. Modern. (3) I, II. 19th century to the present.
ENGL 251. Introduction to Literature. (3) I, II. Study of fiction, poetry, drama, and nonfiction.
ENGL 261. British Literature: Medieval and Renaissance. (3) I, II. Major works to about 1700, selected for the general student, emphasizes Chaucer, Shakespeare, and Milton. Will not apply to survey requirement for English majors.
ENGL 262. British Literature: Enlightenment to Modern. (3) I, II. Major works since about 1700, selected for the general student. Will not apply to survey requirement for English majors.
ENGL 270. American Literature. (3) I, II. Selected writers from various periods in American literary history. Designed for students not majoring/minoring in English.
ENGL 287. Great Books. (3) I, II. Introduction to world classics from past to present.
ENGL 295. Selected Studies in English. (1–3) Intersession. Selected studies in literature, language, rhetoric, and cultural studies. Repeatable once with change of topic. Pr.: ENGL 100 or 110. May not be used for English major credit.
ENGL 297. Honors Introduction to the Humanities I. (3) I. Study of selected major works of history, literature, and philosophy of central importance in the Western cultural tradition. Emphasis on classroom discussion and writing interpretive essays. Limited to entering freshmen. Pr.: Consent of instructor. Same as HIST 297, MLANG 297, PHILO 297.
ENGL 298. Honors Introduction to the Humanities II. (3) I. Continuation of ENGL 297. Pr.: ENGL 297 or consent of instructor. Same as HIST 298, MLANG 298, PHILO 298.
ENGL 299. Honors Topics in English. (3) I, II. Readings and colloquia in selected topics in literature or language. Repeatable once with change of topic. Pr.: Open only to arts and sciences honors program students and to others completing ENGL 100 or 200 and 110 or 125 with a 3.5 GPA.
Courses for major and minor credit
ENGL 300. Expository Writing III. (3) I, II. 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 310. Introduction to Literary Studies. (3) I, II. Elements of literary form and style: an introduction to criticism for English majors. Intended as a first course in the analysis of form and technique, an introduction to literary terms commonly used in later courses, and practice in critical writing. Readings from a broad range: poems, plays, essays, and novels.
ENGL 315. Cultural Studies. (3) I, II. This course introduces the theories and methods of cultural studies through practical application to particular topics in culture and/or literature. An introductory class that addresses such issues as gender and sexuality, power relations among social groups, the construction, communication, and preservation of knowledge. The course typically features theoretical cultural studies material and a variety of media, including traditional and nontraditional literature, film, comics, television, the Internet, and other popular culture platforms.
ENGL 320. The Short Story. (3) I, II. Study of short stories from world literature with emphasis on American, British, and Continental.
ENGL 330. The Novel. (3) I, II. Novels selected from various periods and cultures. Concern for form and critical analysis.
ENGL 340. Poetry, (3) I, II. 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 362. British Survey II, (3) I, II. British literature from 1700 to the present. Will apply to survey requirement for English majors.

ENGL 381. American Survey I, (3) I, II. American literature from pre-colonial times to the Civil War. 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 385. Selected American Ethnic Literatures, (3) I, II. Studies in ethnic and multicultural literatures of the United States, such as African American, Asian American, Latino/a, Jewish, and Native American. May offer cross-cultural comparisons of different ethnic traditions or may focus on one tradition. Repeatable once with change of topic.

ENGL 390. Fable and Fantasy, (3) I, II. 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. Selected studies in literature and language. Repeatable once with change of topic.

ENGL 399. Honors Seminar in English, (1–3) Readings and colloquia in selected masterpieces. Pr.: Honors students only.

ENGL 400. Advanced Expository Writing for Prospective Teachers, (3) I, II. 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. 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 430. The Structure of English, (3) I, II. Systematic study of the structure of the English language and a consideration of the current theories of analysis: traditional, structural, and transformational-generative. Primarily for candidates for secondary certification in English or for elementary language arts majors. Pr.: ENGL 125 or 200.

ENGL 435. Linguistics for Teachers of English, (3) I, II. S. Pedagogical aspects of the structure, history, and use of the English language. For students seeking secondary certification in English. Pr.: ENGL 125 or 200.

ENGL 440. Themes in Literature, (3) I, II. Explores the literary treatment of important and recurring themes. Repeatable once with change of topic. Pr.: ENGL 125 or 200.

ENGL 445. Literary Kinds, (3) I, II. Examines the characteristics, the growth and development, or the uses of specified literary genres. Repeatable once with change of topic. Pr.: ENGL 125 or 200.


ENGL 461. Introduction to Fiction Writing, (3) I, II. A practical introduction to short fiction writing. Pr.: ENGL 125 or 200.

ENGL 463. Introduction to Poetry Writing, (3) I, II. A practical introduction to poetry writing. Pr.: ENGL 125 or 200.

ENGL 465. Introduction to Creative Nonfiction, (3) I, II. A practical introduction to creative nonfiction that can be called “the literature of fact.” Writers of creative nonfiction use many of the stylistic and literary tools that fiction writers and poets use, but in the service of rendering factual, literally accurate prose. Pr.: ENGL 125 or 200.

ENGL 470. The Bible, (3) I, II. Literature, history, and cultural backgrounds of the Hebrew Bible (Old Testament) and/or the New Testament and early Christianity. Repeatable once with change of topic. Pr.: ENGL 125 or 200.

ENGL 476. American English, (3) I, II. 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. 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. Depicts 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 external and internal influences as causes of language 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, 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. Individualized 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. Open only to seniors in the arts and sciences honors program.

Undergraduate credit for English major/minor and graduate credit in fields other than English

ENGL 510. Introduction to Professional Writing, (3) I, II. S. Intensive practical training in the rhetoric principles and procedures of a number of genres common in non-academic professions and workplaces; an introduction to allied topics such as document design and editing. Pr.: ENGL 125 or 200. Limited to majors and minors in English.

ENGL 516. Written Communication for the Sciences, (3) I, II. Theory and intensive writing practice for students in the basic and applied sciences. Pr.: Junior standing and ENGL 125 or 200. Will not substitute for ENGL 415.

ENGL 525. Women in Literature, (3) I, II. Study of literary works by or about women. Repeatable once with change of topic. Pr.: ENGL 125 or 200.

ENGL 545. Literature for Adolescents, (3) I, II. Selecting, reading, and evaluating books for adolescents. Required for those seeking middle school and high school certification in English. Pr.: ENGL 125 or 200.

ENGL 562. Playwriting, (3) I, II. Theoretical study and practical application of techniques of playwriting with regard to plot, characters, and production; emphasis on the one-act form. Same as THTRE 562.

ENGL 580. Selected World Literature, (3) I, II. Addresses writing by authors whose native origins lie outside Europe or the United States. Content may vary with instructor. May examine literature from several countries or regions, concentrate on literature from one country or region, or focus on a topic which transcends national or regional boundaries. Works are written in or translated into English.

ENGL 599. Special Research in English, (Var.) I, II. Individual investigation in authors, genres, periods of literature, or language. Background of preparation needed for investigation undertaken.

Undergraduate and graduate credit

ENGL 604. Expository Writing Workshop, (3) I, II, S. Course emphasizes style analysis of modern non-fiction prose in the sciences, social sciences, and humanities. Extensive student writing on assignments appropriate to germane topics. Pr.: Junior standing.

ENGL 605–660. Readings Courses. Readings courses are designed primarily for advanced undergraduates although graduate students may also enroll in them. These courses constitute a sequence of period studies covering the chronological range of English and American literature. Within these historical periods, the specific course contents will vary by semester and instructor. They may emphasize literary figures and movements, historical and cultural contexts, or different genres and forms within the periods. Each semester’s offerings will be specifically described before each enrollment period in university and department publications. The courses require junior standing and are repeatable with change of subject matter.

ENGL 605. Readings in Medieval Literature, (3) I, II, S. ENGL 610. Readings in Renaissance Literature, (3) I, II, S.

ENGL 620. Readings in Seventeenth Century British Literature, (3) I, II, S.

ENGL 625. Readings in Eighteenth Century British Literature, (3) I, II, S.

ENGL 630. Readings in Nineteenth Century British Literature, (3) I, II, S.

ENGL 635. Readings in Twentieth Century British Literature, (3) I, II, S.

ENGL 640. Readings in Early American Literature, (3) I, II, S.

ENGL 645. Readings in Nineteenth Century American Literature, (3) I, II, S.

ENGL 650. Readings in Twentieth Century American Literature, (3) I, II, S.

ENGL 655. Readings in American Ethnic Literature, (3) I, II, S.

ENGL 660. Readings in Major Authors, (3) I, II, S.


ENGL 665. Advanced Creative Writing: Nonfiction, (3) I, II. Advanced writing of prose creative nonfiction. Repeatable once. Pr.: ENGL 465 or instructor permission.

ENGL 670–695. Topics Courses. Topics courses are designed primarily for advanced undergraduates although graduate students may enroll in them. These courses address topics not confined to a single period in a national literature. Specific course content will vary by semester and instructor. It may emphasize cross-national subjects, literary criticism, the development of a theme or genre over time, new perspectives from social, intellectual, or cultural studies, or non-traditional texts and topics. Each semester’s offerings will be described more specifically in university and department publications before each enrollment period. The courses require junior standing and are repeatable with change of subject matter.
Languages courses
Undergraduate and graduate credit
ENGL 600. Principles of Linguistics. (3) I, II, S.
ENGL 608. Topics in American Literature. (3) I, II, S.
ENGL 690. Topics in Literature for the Young. (3) I, II, S.
ENGL 695. Topics in Literature. (3) I, II, S.
ENGL 700. Old English. (3) I, II, S.
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.

French, Spanish, and others. Same as LING 602 and LG 602.

ENGL 705. Theory and Practice of Cultural Studies. (3) I, II, S.
ENGL 710. Studies in a Literary Genre. (3) I, II, S.
ENGL 720. Studies in a Major Author. (3) I, II, S.
ENGL 730. Studies in a Literary Period. (3) I, II, S.
ENGL 740. Studies in a Literary Theory. (3) I, II, S.
ENGL 755. Studies in Composition and Rhetoric. (3) I, II, S.
ENGL 757. Studies in Language and Linguistics. (3) I, II, S.
ENGL 761. Creative Writing Workshop: Short Fiction. (3) I, II, S. Advanced writing of short prose fiction. Repeatable twice for credit. Pr.: ENGL 661 or instructor permission.
ENGL 762. Advanced Playwriting. (3) I, II, S. Same as THTRE 762.
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.

Although the major requirements for the B.A. or B.S. degrees are the same, college requirements differ as described earlier in the College of Arts and Sciences section.

Students may pursue a general program in geography, or may choose to develop a concentration in either environmental studies or community studies. Other concentrations may be developed to reflect the particular interests 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: 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. In addition, students must take:
Select one of the following (3 hours):
- GEOG 508 Fundamentals of Geographic Information Systems
- 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
- SOCS 531 Urban Sociology

From the Department of Regional and Community Planning (15 hrs.):
- PLAN 315 Introduction to Planning
- PLAN 715 Planning Principles
- PLAN 736 Planning Implementation
- PLAN 770 Planning Law

Three additional planning courses

Geography courses
- GEOG 100 World Regional Geography
- GEOG 200 Human Geography
- GEOG 220 Environmental Geography
- GEOG 221 Environmental Geography II
- GEOG 440 Geography of Natural Resources
- GEOG 450 Geography of Economic Behavior
- GEOG 555 Cartography/MicroCAD
- STAT 330 Elementary Statistics for the Social Sciences
- A 500- or 600-level regional geography course.

Additional courses at the 500 level and above are also included.
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 geo-sphere 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. Pr.: Six 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 movements 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 301. 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) I, II, S. Open only to majors in the honors program.

**GEOG 440. Geography of Natural Resources.** (3) I, II. 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, in odd years. A regional analysis 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. Interdisciplinary survey on the development of civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan, including consideration of the geographical and demographic challenges, religious 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 data 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 a global, regional, and local scale, with emphasis on the physical processes and environmental factors that influence and control climate. Climate change and its impact on the environment will be explored. Pr.: GEOG 220 and MATH 100.

**GEOG 555. Cartography: MicroCAD.** (3) I. Theory and methods of thematic mapping. Features a CAD-based approach to mapping projects including choropleth, isopleth, quantitative and qualitative symbol, and cartograms. Students will produce a collection of publication quality graphics. Pr.: STAT 330.

**GEOG 610. Geography Internship.** (2–3) I, II. Faculty-supervised field experience, emphasizing the application of geographical topics and/or techniques. Student projects must be approved by both the on-site director and the faculty supervisor, and a report must be submitted at the end of the semester. 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, III. 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 national issues, with particular emphasis on agriculture, manufacturing, urbanization, cultural diversity, and regional development. Pr.: Six hours of social science.

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

**GEOG 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) II. Remote sensing and its applications to earth studies—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) II. Studies both theoretical and applied dimensions of geographic information systems (GIS) in the contexts of environmental impact analysis, natural resource inventories, and continued development of applications of GIS concepts and procedures will be built around the use of PC Arc-Info, where case studies will be completed by teams of students. Pr.: GEOG 702 or 705.

**GEOG 709. Geographic Field Research Techniques.** (2–3) S. Examines methods and techniques employed in modern research. Stresses research design, field data acquisition techniques, and data analysis. Pr.: GEOG 220, 221, and 440.

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

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

**GEOG 718. Geography of Public Lands.** (3) II. Overview of public lands systems, including distribution and uses of public lands, with an emphasis on U.S. federal lands. Geologic and recent controversies regarding the public lands will be addressed. Seminar course with discussion and independent research components. Pr.: Six hours of social science and junior standing.

**GEOG 720. Geography of Land Use.** (3) I, in odd years. Critical factors affecting land use, scarcity, and management examined in a regional, national, and global context; evaluation of land use classification systems and variation of land use patterns. Pr.: Six hours of social science and junior standing.

**GEOG 725. Geography of Water Resources.** (3) II, in even years. Interpretation and analysis of the physical geography of water and water resources including the evaluation of water, emphasizing quality, hazards, institutions, and selected domestic and global issues. Pr.: Six hours of social science and junior standing.

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

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

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

**GEOG 760. Human Impact on the Environment.** (3) I. Assessment of human impacts on the natural environment. Surveys changing human impacts on and attitudes towards the environment, and details alteration of water systems, the atmosphere, landforms, plants, and animals. Pr.: Six hours of social science.

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

**GEOG 770. Perception of the Environment.** (3) I, in even years. An examination of the way people perceive their geographic environment and the role of perception in spatial behavior. Perceptions of neighborhoods, cities,
states, nations, frontier regions, and environmental processes are explored. Pr.: Six hours of social science with one course above the introductory level, and 6 hours of natural science with one course above the introductory level.

**GEOG 780. Cultural Geography.** (3) II, in even years. A study of the forms of human occupancy of landscapes, with consideration of innovations in the use of the landscape, the origins and dispersals of these innovations, and human attitudes toward the natural environment. Pr.: Six hours of social science.

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

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### Geology

Mary S. Hubbard, Head

Professors Chaudhuri, Clark, Cullers, Oviatt, and West; Associate Professors Archer and Hubbard; Assistant Professors Gao, Liu, and Nicolaysen; Instructor Clement; Emeriti: Professors Shenkel, Twiss, Underwood, and Walters.

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, atmosphere, and biosphere. In addition to providing an understanding of the past history of these interactions as a context for future changes, geologists examine the environmental effects of society’s actions, including pollution 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 variables affecting the natural processes operating in the field, as a chemist can control the variables experimentally in a laboratory. Geologists are the observers of processes in operation or already concluded and often must deduce conclusions from incomplete data or by analogy with processes that may be reproduced 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 program for high school teachers. It also cooperates with the Department of Civil Engineering in a dual degree in civil engineering and geology. 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 option

In addition to the general requirements for the B.A. or B.S. degree, the following must be completed:

- **GEOG 100.** Earth in Action
  
- **GEOG 102.** Earth Through Time
- **GEOG 103.** Historical Geology Laboratory
- **GEOG 301.** Historical Geology Laboratory
- **GEOG 502.** Mineralogy
- **GEOG 503.** Petrology
- **GEOG 520.** Geomorphology
- **GEOG 581.** Paleobiology
- **GEOG 530.** Structural Geology
- **GEOG 560.** Field Methods
- **GEOG 630.** Stratigraphy/Sedimentology
- **GEOG 680.** Field Geology

Geology majors should consult their advisors about elective courses to meet their career and educational needs. Computer literacy is essential for all geologists. Departmental advisors can recommend electives for students desiring concentrations in energy and minerals, engineering geology, environmental geology, hydrogeology, sedimentary geology, and geochemistry. Students intending to earn advanced degrees should visit with the departmental graduate advisor concerning entrance requirements of graduate programs.

### Minor in geology

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<tr>
<td>GEOL 100</td>
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<td>GEOL 102</td>
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<tr>
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<tr>
<td>MATH 220</td>
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<td>Geomorphology</td>
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<tr>
<td>GEOL 581</td>
<td>Paleobiology</td>
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<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
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</tr>
<tr>
<td>CHM 210</td>
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</tr>
<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
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</tbody>
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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:

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<td>PHYS 114</td>
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<tr>
<td>PHYS 191</td>
<td>Descriptive Astronomy</td>
<td>3</td>
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<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
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<tr>
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<td>4</td>
</tr>
<tr>
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<td>4</td>
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</tbody>
</table>

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 environmental engineering may receive a dual degree by completing the B.S. degree requirements in civil engineering, the general requirements for a B.A. or B.S. degree in the College of Arts and Sciences, and the following: 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:

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<td>PHYS 114</td>
<td>General Physics II</td>
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</tbody>
</table>

### Geology courses

- **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. 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, 2) I, II, S. Field and laboratory investigation of minerals, rocks, and fossils; use of maps; environmental studies, erosion, transportation, sedimentation. Two hours lab a week. Pr.: GEOL 100, 102, 105, or 125 or conc. enrollment.

- **GEOL 105. Oceanography.** (3) I, II. The oceans: their boundaries, contents, and processes. Three hours rec. a week.

- **GEOL 110. Introductory Geology, Honors.** (3) I. Survey of earth materials, features, and processes. Higher level of sophistication and challenge than GEOL 100. Three hours rec. a week.

- **GEOL 115. Environmental Geology.** (3) I, II. Major reservoirs of Earth and the hydrologic cycle; minerals and rocks on the surface and in subsurface environments; minerals and rock-water interactions; compositional variations of waters; surface and ground water pollutants; atmospheric pollutants; waste disposal problems.

- **GEOL 125. Natural Disasters.** (3) I, II, S. Discussion of geological phenomena such as earthquakes, volcanic eruptions, landslides, and floods, with particular emphasis on their causes, effects, and significance as hazards. Three hours rec. a week.

- **GEOL 301. Historical Geology Laboratory.** (1) I. Field and laboratory investigations of the history of the earth and its fossil record. Three hours lab a week. Pr.: GEOL 102 or conc. enrollment.
GEOL 305. Earth Resources. (3) I, II. Origin and geo-
logic settings of energy, water, and mineral resources.
Additional emphasis will be placed upon exploration and
development. Pr.: GEOL 100 or GEOG 221.

GEOL 310. Topics in Geology. (1–3) I, II. Seminar dis-
cussion of subjects of current interest in geology. Pr.: A
course in natural science at the 100 level or higher.

GEOL 399. Honors Seminar in Geology. (1–3)
Selected topics. Open to nonmajors in the honors program.

GEOL 499. Senior Honors Thesis. (1–3) I, II. S. Directed
research and preparation of an honors thesis. May be
repeated once to a maximum of 3 hours credit. Open only
to seniors in the arts and sciences honors program.

GEOL 501. Independent Study in Geology. (1–3) I, II.
S. Independent reading, field or laboratory investigations,
or both, of geologic problems. Pr.: GEOL 102 and junior
standing.

GEOL 502. Mineralogy. (3) I. Crystalllography: physical
and chemical properties of minerals; descriptive mineral-
ology. Two hours lec. and three hours lab a week. Pr.:
GEOL 100 or 105, 103, and CHM 230.

GEOL 503. Petrology. (3) II. Petrology of igneous, meta-
orphic, and sedimentary rocks. Two hours lec. and three
hours lab a week. Pr.: GEOL 502.

GEOL 506. Geology and Environment. (3) II. Fluxes of
elements to major reservoirs and residence times of the
elements in major reservoirs; origins of surface and
ground waters, ocean water, and atmosphere; interactions of
hydrosphere, atmosphere, biosphere, and lithosphere;
changing atmosphere and global warming; cycles of vari-
ous 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, PHYS 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) II. A critical study of the
atmosphere, weather, climate, composition, and processes
of the earth; also, the interaction of these in producing the
pattern of landforms and human activity. Three hours rec.
a week. Pr.: GEOL 100 or GEOG 220 or junior standing.

GEOL 515. Geology of the National Parks. (3) On suffi-
cient demand. Stratigraphy, structure, and geological his-
tory that produced scenic beauty of the national parks.
Selected national monuments also will be studied. Pr.: 
GEOL 100 or 105.

GEOL 520. Geomorphology. (2) I, II. Laboratory exer-
cises in reading and interpreting topographic maps and
aerial photographs; field studies of 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 cli-
matic change, ways of reconstructing past geologic envi-
nromental and geologic environments changes during the
time when human civilization developed, including recent
historic time. 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-reading, 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-
eukaryotic organisms, especially algae and marine inverte-
brates to earth history. Two hours rec. and six hours lab a
week. Pr.: GEOL 102 and 503; MATH 220; PHYS 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 602. Mineral Exploration. (3) II. Geological,
geochemical, and geophysical prospecting techniques and
their application in the exploration for metallic mineral
deposits. Three hours rec. a week. Pr.: GEOL 503.

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 diagene-
sis of sediments; different chemical pathways in the exo-
genic cycle. Two hours rec. and three hours lab a week. Pr.: 
GEOL 503 and MATH 220.

GEOL 611. Hydrogeology. (3) I. Origin, geologic
occurrence, and migration of subsurface water; laws gov-
erning ground water flow and yield of aquifers. Three hours
rec. a week. Pr.: GEOL 520.

GEOL 630. Stratigraphy-Sedimentation. (4) II. Descrip-
tion, classification, correlation, chronology, and paleogeog-
raphy 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 640. Introduction to Geophysics. (3) I. Introduc-
tion to a broad area of solid earth geophysics and explo-
ation geophysics, such as plate tectonics, earthquake study,
structure and dynamics of the Earth’s deep interior, and
geoexploratory for natural resources. Two hours rec.
and two hours lab a week. Pr.: PHYS 114.

GEOL 642. Field Geophysics. (3) II. Acquisition and
computer processing of geophysical data such as those from
seismic reflection, seismic refraction, gravity, mag- 
netic, and electrical methods. One hour rec. and four hours
lab per week. Pr.: GEOL 640.

GEOL 644. Computational Geophysics. (3) II. Computer
skills and techniques used in geophysical data processing
and analysis such as linear and nonlinear inversion,
forward modeling of gravity, magnetic, and seismic data,
seismic tomography, seismic anisotropy, and seismic wave
attenuation. One hour rec. and four hours lab per week. Pr.: 
GEOL 640.

GEOL 650. Exploration Geophysics. (3) I. Seismic,
gravity, magnetic, and electrical methods used in explo-
ration for petroleum accumulations and mineral deposits.
Two hours rec. and two hours lab a week. Pr.: GEOL 640.

GEOL 680. Field Geology. (3) II. Field projects in the
Rocky Mountains designed to give students practical ex-
perience in applying geologic knowledge and skills. Three
days-week 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)
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 environ-
ments to the quantitative study of the structure and dynam-
ics 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 con-
tituents and properties. Two hours rec. a week. Pr.: 
GEOL 503 or AGRON 705 or 755.

GEOL 790. Problems in Geology. (Var. I, II, S. Work is
offered in mineralogy, paleobiology, paleoecology, stratig-
raphy, structural geology, igneous, metamorphic, and sedi-
mentary petrology, geomorphology, planetary geology,
hydrogeology, geochemistry, and isotope geology. Pr.: 
Background of courses needed for problem undertaken.

History

Jack M. Holl, Chair
Professors Frey, Hamscher, Holl, Linder, McCulloh, and Mrzek; Associate Professors Breen, Parillo, Sherow, Stone, Williams, and Zschoche; Assistant Professors Graff, Lynn-Sherow, Maner, Ramsay, and Sanders; Emeriti: Crawford, Ferguson, Gray, Higham, Page, Socolofsky, and Wilcoxon.

E-mail: history@ksu.edu
www.ksu.edu/history

The history program appeals not only to majors but to all students seeking a rewarding educational experience. The curriculum includes courses in traditional and nontradi-
cional fields of interest taught by a nationally respected faculty willing to try new and inno-

vative teaching techniques. A program of speakers, seminars, colloquia, and films sup-
plements the curriculum to stimulate student interest in the discipline of history and how it is
expressed.

Undergraduate advisors in the history department maintain up-to-date information regarding
requirements of graduate and professional schools and relevant course offerings in his-
tory and other departments.

Transfer students

Normally the history department will accept transfer credit for history courses taught at
credited institutions of higher education. In the case of students transferring from commu-
nity colleges, only courses equivalent to those
taught at the freshman-sophomore level at
K-State (courses numbered HIST 100 through
HIST 299) may receive credit for the history
major.

History

Students may earn a B.A. or a B.S. in history
using one of the following three options:
History major
Requirements for a history major consist of 36 hours distributed as follows:
1. Survey courses: 6 hours
   HIST 101 Rise of Europe ................................. 3
   and
   HIST 102 The Modern Era ............................. 3 or
   HIST 251 U.S. to 1877 .................................. 3
   and
   HIST 252 U.S. since 1877 ............................... 3
II. HIST 586 Advanced Seminar in History ............. 3
III. Upper-division courses (500-level and above) ...... 21
IV. Additional courses at any level ........................ 6

Courses taken to fulfill the requirements listed above must include:
1. At least two courses, 500 level or above, with a primary chronological emphasis prior to 1800.
2. At least one course, 300 level or above, from each of the following areas: U.S., European, and non-western.

Students are urged to consult with advisors and other faculty members in order to develop programs that best suit their interests and needs. Students are encouraged to develop an area of concentration with their 500-level courses. These areas might involve a geographical focus (U.S., Europe, non-western) or a topical emphasis (such as military history, agricultural history, religious history, women’s history, and so on).

Double majors and teacher certification
Students earning double majors may satisfy the requirements with 30 hours in history. The remaining 6 hours will be waived by the completion of an additional major. The distribution requirements are the same as for the standard history major with one exception: Requirement III is changed to read “upper-division courses (500-level and above): 15 hours.”

Students majoring in history may also prepare for teacher certification in social studies at the secondary level. They must meet the same requirements as students earning double majors (30 hours in history with the modified requirements above). They should select their courses in consultation with advisors in both the history department and the College of Education to ensure that they meet the requirements of both programs. (See the College of Education section of this catalog for social science certification requirements.)

Advanced program in history
Certain highly qualified students may elect to define their own programs for the major in consultation with a committee of three faculty members chosen by the student and approved by the head. This program of study should be broadly conceived, not narrowly circumscribed. This option is available to students seeking a B.A. or B.S. degree in history. To enter this program a student must have a grade point average of 3.5 at the end of the freshman year or later, submit two letters of recommendation and a statement of purpose, and receive approval from the undergraduate studies committee.

A student selecting this option must enroll prior to his or her senior year and meet the following minimum requirements:

Write a senior thesis (6 hours credit over one or two semesters);
Pass an oral examination over a specific body of historical knowledge, the scope of which will be defined by the student in consultation with the faculty committee;
Enroll in 30 hours of history courses (24 hours for double majors and teacher education students) including the Junior Seminar to be selected by the student in consultation with the faculty committee. Students are encouraged to supplement regular course offerings with tutorial instruction.

History minor
Requirements for a history minor consist of a minimum of 21 hours in history of which at least 15 must be at the 300 level or higher.

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. S. 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, S. 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) Intensive study, in alternate years. Selected aspects of European history and culture with reading, lectures, and discussions which will relate historical events to places visited.
HIST 105. Western Civilization: The Rise of Europe (Honors), (3) I, in alternate years. Course description same as HIST 101.
HIST 106. Western Civilization: The Modern Era (Honors), (3) II, in alternate years. Course description same as HIST 102.
HIST 112. World History From 1450, (3) Major trends in the history of the world from the 15th century to the present. Global patterns of contact, mutual influence, and interdependence.
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 250. Russian Culture and Civilization, (3) I, in alternate years. Russia’s past and present in the light of the ideologial themes and ideological patterns with emphasis upon fine arts, literature, music, religion, politics, and education. Equal time will be given to the Tsarist and the Soviet periods. Knowledge of Russian language is not required. Same as MLANG 250.
HIST 251. History of the United States to 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. History of the United States Since 1877, (3) Ethnic, 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) 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. Students may petition for enrollment. Pr.: Consent of instructor. Same as ENGL 297, MLANG 297, PHILO 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, PHILO 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 imperialism, ethnicity, revolution, and authoritarianism, women and family, and the role of economic development in Latin American history.
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 498. Senior Thesis, (3) I–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) Intensive study, in alternate years. Selected aspects of European history and culture with reading, lectures, and discussions which will relate historical events to places visited.
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 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, POLSCI 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 Moghal 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 century, the Revolution of 1949, and the post-Mao Reforms. Emphasis on social, political, and intellectual changes in the context of increasing contact with western nations and Japan. 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 aca-
demic specialization through selected reading and topical lectures. The course emphasizes the study of people in nature through time; it stresses people’s response to environmental change through three broadly defined periods: pre-industrial, early 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 social and political structures. 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 sport (especially in Europe and North America) including the growth of competition, the rise of mass spectacle 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 in the west, from antiquity to the end of the sixteenth century, with emphasis on Greek, Latin, 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, philosophers of science, scientific societies, and developments in the physical, biological, and earth sciences, including the relations of science to 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 European and American attitudes toward death and dying in various historical periods. Topics include: death and dying in the European Middle Ages and in nineteenth and twentieth century America, the impact of the Nazi Holocaust on modern opinions about death, suicide as a historical problem, the fear of cancer in modern times, and others. 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 religious, intellectual, 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. Emphasis is on 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 dominance 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) II, in alternate years. 1864–1877. Examination of the sectional controversy, the failure of the Plessy system to resolve peacefully the conflict between North and South, the resort to arms, the nature of the post-war settlement. Emphasis is on the attempt of mid-nineteenth-century American leaders to deal with the complex problems of slavery and race. Pr.: Sophomore standing.

HIST 531. The United States in the Twentieth Century. (3) In alternate years. Examines the creation of modern America, 1890 to the present. Emphasis on the social and cultural roots, and political consequences, of Progressivism, World War I, 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, including the origins of criminology in the Enlightenment, the rise of the penitentiary, nineteenth- and twentieth-century prison reform, the invention of juvenile delinquency, the evolution of criminology from the classical and positive schools to the present, the rise and fall of the medical treatment model for criminals, crime and punishment of women and minorities, the relationship between prison and schools as institutions of social control, and the debate over capital punishment in America. 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. Topics vary. 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) II, in alternate years. Explores the interaction between scientific thought and religious belief in America from colonial times to the present. Major topics covered 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 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) II, in alternate years. Primary emphasis on the nineteenth century when Americans were rapidly spreading across the continent. Also examines the earlier developments of the frontier and considers the nineteenth 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 1492 to the present. Special emphasis given to federal government policy and the cultural decline of the native people of North America. Also includes an examination of Indian reservations and urban Indians.


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 beginning of the European colonization to the Civil War. Women’s changing social role and its relation to the major transformations in American culture and society during this period is stressed. Special emphasis is given to ethnic, racial, and class variations among women. 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 young women’s changing role in modern industry and 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. Stresses the continuity and intellectual foundations of foreign policy. Examination of territorial and foreign commercial expansion and America’s response to war and revolution in the twentieth century. Pr.: Sophomore standing.

HIST 545. War in the Twentieth Century. (3) II, in alternate years. Considers the military theory and practice, the technology, and the political and ideological constraints of World Wars I and II, the Spanish Civil War, the Korean War, and the Indochinese wars. Students are to gain an understanding of the military history of the twentieth century, including civil wars, “total war,” and guerrilla warfare. 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, military relations and conflicts, political constraints and strategic demands, popular attitudes toward the military, and the rise of the military-industrial complex. Pr.: Sophomore standing.

HIST 547. History of the South. (3) In alternate years. Main emphasis is on political, religious, and social thought and ideology, 1607 to 1861. Pr.: Sophomore standing.

HIST 554. History of the South. (3) II, in alternate years. Topics include the American South in the American imagination, and the social, cultural, and political issues of the antebellum period. 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 is the need for a Bill of Rights at the founding and Supreme Court interpretations in 1833 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 and 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 development of 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 560. 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 562. Modern Mexico. (3) In alternate years. Brief survey of lines of national development, 1821–1910, and major emphasis on the twentieth-century revolution and its reforms (1910–1940) as well as its subsequent implications. Pr.: Sophomore standing.

HIST 563. Topics in Comparative History. (1–3) In alternate years. Investigation in detail of a particular theme, event, or problem in comparative history. Topic varies. May be repeated once for credit. Pr.: Prerequisite.

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 invasion, Athens' leadership of Greece, the war between Athens and Sparta, Alexander the Great, and the total Hellenic achievement. Pr.: Sophomore standing.

HIST 566. History and Culture of Rome. (3) In alternate years. Examines the various theories of Rome's origins, the causes, problems, and influences upon the 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, the Puritan Commonwealth, and the impact of religious developments on 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) 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 French Republic. Also examines reform and counter-revolutionary movements in England, Italy, Russia, Poland, and the Germanies. 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 French Republic. Also examines reform and counter-revolutionary movements in England, 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, 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 576. European International Relations to 1815. (3) In alternate years. The nature, evolution, and functions of the diplomatic system for the Ancient World to 1815. Analyzes the Greek and Roman diplomatic tradition, international relations during the Medieval, Renaissance, and Early Modern periods, and the works of various theorists. Sophomore standing.

HIST 577. European International Relations Since 1815. (3) I, II. In alternate years. The nature, evolution, and functions of the European diplomatic system from 1815 to the present. Focuses on the Vienna settlement, the Eastern Question, the Crimean War, Italian and German unification, origins of World War I, international developments between the two world wars, the cold war, and the post-cold war era. Includes analysis of major theorists. Sophomore standing.

HIST 578. Central Europe, 1500–1914. (3) In alternate years. The nature, evolution, and functions of the diplomatic system from 1815 to the present. Focuses on the Vienna settlement, the Eastern Question, the Crimean War, Italian and German unification, origins of World War I, international developments between the two world wars, the cold war, and the post-cold war era. Includes analysis of major theorists. Sophomore standing.

HIST 581. 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 intellectuals. Pr.: Sophomore standing.

HIST 582. Twentieth-Century Russia. (3) 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 583. 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.
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 $130,000 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-television studios and offices in McCain Auditorium and in Bob Dole Hall.

Updated information on the school’s scholarships, faculty, and curriculum is available on the World Wide Web at jmc.ksu.edu.

Becoming a major
To become a major, a student must have a 2.5 GPA based on at least 30 credit hours at the 100-level or higher. MC 235 and ECON 110 with grades of C or higher must be completed within the 30 hours. No more than 3 credits out of the 30 may be in MC 300, 305, 310, 320, or 325.

Transfer students must have a 2.5 GPA on transferable course work plus a 2.5 GPA on at least 15 credit hours at K-State, for a total of at least 30 credit hours. MC 235 and ECON 110 (or their transferable equivalents) with grades of C or higher must be completed within the 30 hours. No more than 3 credit hours out of 30 may be in MC 300, 305, 310, 320, or 325.

Students must pass the school’s writing test prior to applying to be a major. Students who fail the test may retake it in any subsequent fall or spring semester.

Students who have met the academic requirements listed above may seek to become majors. Admission to the major and to a sequence in the major is by application only. Students who are pre-majors must apply for admission upon completion of 30 credit hours at Kansas State University. Those who were not pre-majors as entering freshmen must apply for admission upon completion of MC 235 and ECON 110 if they have more than 30 credit hours.

Enrolling in courses
While awaiting eligibility to become a major, all freshman and new transfer students from other institutions are eligible to be a pre-major. Any student may enroll in Mass Communication in Society (MC 235), which is the required first course in the major.

Enrollment is also open for four other introductory courses: Journalism in a Free Society (MC 300), Radio-Television and Society (MC 305), Visual Communication in Mass Media (MC 310), Principles of Advertising (MC 320), and Fundamentals of Public Relations (MC 325). Enrollment is restricted in all other courses in the major.

Students can take lab courses and advanced courses only if they have passed the JMC composition skills test and have a 2.5 GPA based on 15 or more hours at the 100-level or above. Freshmen who currently have a 2.5 GPA or better but have yet to complete 15 hours and pass the JMC composition test may provisionally pre-enroll in the beginning writing classes on the expectation they will have a 2.5 GPA on 15 hours after completing the semester in progress.

If so, they remain enrolled; if not, they are dropped. Our curriculum requires at least four semesters to complete, since the lab courses progressively build upon one another.
### Mass communications major

Requirements for a mass communications 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 87 hours of course work outside the school, with at least 65 hours of that course work 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.

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. In addition, K-State requires a cumulative 2.0 GPA in all course work (a C average) to graduate.

A curriculum guide for majors and pre-majors is available in the school office and on the website for the School of Journalism and Mass Communications.

#### Print journalism

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<tr>
<th>Course</th>
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<td>MC 235</td>
<td>Mass Communication in Society</td>
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<tr>
<td>MC 400</td>
<td>News and Feature Writing</td>
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<tr>
<td>MC 440</td>
<td>Editing and Design</td>
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<td>MC 500</td>
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<td>MC 540</td>
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<td>MC 565</td>
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<td>MC 595</td>
<td>Mass Communication Research</td>
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<td>MC 535</td>
<td>Photojournalism</td>
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<td>Newspaper Management</td>
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<td>MC 710</td>
<td>History of Journalism</td>
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<td>MC 720</td>
<td>Ethics in Mass Communications</td>
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<td>MC 730</td>
<td>Seminar on Issues in the Media</td>
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<td>Electives (at least 3 hours at 500-level or above)</td>
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#### Electronic journalism

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<th>Course</th>
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<tr>
<td>MC 235</td>
<td>Mass Communication in Society</td>
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<td>MC 400</td>
<td>News and Feature Writing</td>
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<tr>
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<td>MC 550</td>
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<td>MC 715</td>
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#### Advertising

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<td>MC 320</td>
<td>Principles of Advertising</td>
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<td>MC 420</td>
<td>Advertising Writing</td>
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<td>Advertising Sales</td>
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<td>MC 545</td>
<td>Advertising Media Planning</td>
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<td>Law of Mass Communications</td>
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<td>MC 640</td>
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#### Public relations

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<td>MC 325</td>
<td>Fundamentals of Public Relations</td>
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<td>News and Feature Writing</td>
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<td>Editing and Design</td>
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<td>MC 445</td>
<td>Public Relations Writing</td>
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<td>MC 565</td>
<td>Law of Mass Communications</td>
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<td>MC 595</td>
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<td>MC 635</td>
<td>Public Relations Techniques</td>
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<td>MC 645</td>
<td>Public Relations Campaigns</td>
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<td>MC 550</td>
<td>Public Relations Internship</td>
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#### Radio-television

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<td>MC 235</td>
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<tr>
<td>MC 410</td>
<td>Writing for Electronic Media</td>
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<tr>
<td>MC 475</td>
<td>Concepts of Electronic Production</td>
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<tr>
<td>MC 490</td>
<td>Junior Seminar in Electronic Media</td>
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<td>MC 565</td>
<td>Law of Mass Communications</td>
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<td>MC 595</td>
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<td>MC 550</td>
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<td>MC 575</td>
<td>Multimedia Techniques</td>
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<tr>
<td>MC 580</td>
<td>Video Techniques</td>
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<tr>
<td>Electives (at least 3 hours at 500-level or above)</td>
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#### 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 proper 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 all such work, equivalent to courses such as Media Practicum.

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) 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 310. Visual Communication in Mass Media.** (3) I. An overview of concepts and theories of communicating through visual means, including the physiology and psychology of seeing and perceiving; the basics of design and aesthetic principles; and examination of the uses of these concepts and principles within the mass media. Pr.: MC 235.
- **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, processes, and issues involved in the management of communications between an organization and its publics. Open to majors and nonmajors.
- **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 KSDBFM.
- **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.: Passing score on JMC composition skills examination. Open to majors and nonmajors.
- **MC 410. Writing for the Electronic Media.** (3) I, 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 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.: Passing score on JMC composition C and 2.5 GPA upon completion of 15 or more credit hours.

MC 430. Digital Photography for Mass Media. (3) I, II. Basics of composition, exposure, cropping, and editorial judgment using converted analog and digital images and image-handling software. Introduction to uses of digital photography in mass media such as newspapers, magazines, brochures, and websites. Pr.: 2.5 overall GPA on completion of 6 MC credits.

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 a grade of C or better.

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 465. Intermediate Web Communication. (3) I, II. Develop expertise in the construction of websites with a solid emphasis on the appropriate use of content, design, and functionality. Pr.: MC 400, 410, or 420.

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 484. Media Practicum. (1–4) I, II, S. Practical work in student media operations of the school under supervision of an instructor, preparing students for work in the various media industries. Topics include publications, KSDB radio, yearbook, web, video, multimedia. Variable hours of credit equivalent to three hours of lab a week for each hour of credit. Enrollment requires a study and work plan approved by the instructor of record to be on file with the school director. Pr.: Instructor permission.

MC 490. Junior Seminar in Electronic Media. (3) I, II. Current issues in electronic media, including regulation, law, technology, and programming. Preparation for careers in the electronic media. Pr.: MC 410 with a 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. Students serve as reporters for the Kansas State Collegian, 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, II. 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 515. Internet Journalism. (3) I, II. Issues involving journalism and the use of the Internet for delivery of news, including the relationship of the new medium with traditional journalism, new content opportunities and challenges, profitability, standards, and ethics. Pr.: MC 465.

MC 520. Advertising Sales. (3) Advertising sales applied to print and electronic media. Includes designing and writing retail ads, campaign development, production, and sales techniques. Legal, ethical, and regulatory issues covered. Pr.: MC 320 or MKTG 400 with a 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. Photoreporting. (1–3) The materials, principles, processes, and creativity inherent in the visual reporting in newspapers, magazines, 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 Collegian 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, selling, and buying of the various advertising media. Pr.: MC 420 with grade of C or better.

MC 550. Mass Communications Internship. (1–3) II, S. The student works in a professional capacity under proper professional and faculty supervision with reports from student and supervisors 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. (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. Theory and practice of radio remote, automation, and multichannel 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, authoring, and development of computer-based audio, video, and graphic materials. Pr.: MC 410, MC 500, MC 555 or MC 635 with grade of C or better.

MC 580. Video Techniques. (3) I. Theory and practice of electronic field production, video editing, and video for multimedia. Pr.: MC 475 with grade of C or better.

MC 585. Advanced Electronic News Reporting. (3) I, II. Reporting of issues of local importance, information-gathering techniques, in-depth writing, and electronic media news production methods. Pr.: MC 505 with grade of C or better.

MC 595. Mass Communication Research. (3) I, II. Formulation of mass communication research and design. 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 courses 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) 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. The practical application of theory to writing, editing, graphic reproduction, layout, and management of magazines. Pr.: MC 500.

MC 625. Media Relations. (3) I. Examines management skills necessary for establishing, maintaining, and evaluating a media relations program. Discussion includes working with journalists, conducting media events, preparing spokespersons, and developing crisis communications. Pr.: MC 445.

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 program and theories and norms for the selection of objectives and strategies under varying conditions. Pr.: MC 325 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 635. Public Relations Techniques. (3) I, II. Focuses on the use of communications techniques in achieving organizational goals. Includes planning, application, and ethics of messages for print, electronic, and online media and for special events. Pr.: MC 325, MC 440, and MC 445 with grade of C or better; senior standing.

MC 640. Advertising Campaigns. (3) I, II. The management and development of 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, markets, 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 programs, schedules, and programming. Pr.: MC 410 with grade of C or better, and a 2.5 GPA upon completion of 30 or more hours.

MC 660. Global Culture and the Internet. (3) Inter- session only. Examination of the impact of Western influences through Internet communication and technology on the shaping of local and global cultures. Includes issues of commercialism, capitalism, colonialism, and tribalism and conflicts created by cultural clashes. Pr.: MC 235 or instructor permission.

MC 670. Advertising and Social Responsibility. (3) Examines social, ethical, and legal issues and problems fac- ing the advertising industry, and its relationship to the con- sumer. Pr.: Junior standing with a 2.5 GPA and completion of MC 320.

MC 675. International Advertising. (3) I, II. Overview of issues and challenges associated with advertising in a global environment, including cultural and economic differ-ences, regulatory issues, and ethical and social responsi- bilities. Pr.: MC 235 or instructor permission.

MC 680. Readings in Mass Communications. (1–3) I, II. Investigation of the literature of mass communications. Three books per credit hour. Pr.: Senior or graduate standing and consent of supervisory instructor.

MC 685. Electronic Media Management. (3) I, II. Management practices of broadcast, cable, and non-broadcast facili- ties including regulation and sales. Pr.: MC 410 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. Background of courses needed for problem undertaken.

MC 705. Fund Raising by Non-Profit Organizations. (3) 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) 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 712. Environmental Communications. (3) II, in even years. Combines theoretical discussions with practical experience regarding communications about environmental issues and provides introduction to natural and applied science topics related to the communications plan. Three hours lec. per week. Pr.: Senior standing.

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. Ethos 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. (3.1) Survey of research methods used in the study of the mass media. For graduate students.

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 6 hours from the upper-level core or other 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 Dynamics of Sports and 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 Comparative Exercise Physiology .................... 3
- KIN 605 Topics in Biological Basis of Kinesiology .............. 3
- KIN 607 Muscle Exercise Physiology ............................ 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

Kinesiology electives (6 hours; must be 300 level of above)

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

NA 150 Trigonometry ........................................... 3
- PHYS 113 General Physics I .................................... 4
- PSYCH 100 General Psychology ............................... 3
- SOCIO 211 Introduction 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 206. Water Exercise and Water Fitness 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) 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 250. Measurement and Research Techniques in Kinesiology. (3) I, II. Theory and techniques of measurement and research in the biological and behavioral aspects of kinesiology. Pr.: KIN 220

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 EDCEP 215.

KIN 335. Physiology of Exercise. (4) I. The responses of the human body to exercise 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) I, II. A laboratory course to supplement the material of KIN 335. Two hours lab per week. Pr.: KIN 335 or consent of instructor.

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.

KIN 399. Honors Seminar. (1–3) Selected topics in kinesiology. Open to nonsmokers in the honors program.


KIN 430. Practicum in Lifetime Sports. (2) I, II. Supervised students assist in lifetime sports classes. Four hours lab a week. Pr.: Junior standing.

KIN 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. Cross-listed with Sociology, see SOCIO 435. Pr.: SOCIO 211.

KIN 463. Laboratory Practicum in Kinesiology. (1–2) I, II. S. Supervised students assist in laboratory. Four hours lab a week. Pr.: Junior standing and appropriate background for problem undertaken.

KIN 498. Honors Tutorial in Kinesiology. (1–3) I, II, III. 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 590. Seminar in Kinesiology. (3) Issues and problems involving the subdisciplines of kinesiology and professional areas of application. Pr.: Completion of all or concurrent enrollment in final kinesiology core courses.

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 participation, and intervention strategies used to increase exercise participation. Pr.: KIN 250, 340 and 345.

KIN 601. Cardiorespiratory Exercise Physiology. (3) II. 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 for populations 250 and 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, 340, and 345.

KIN 603. Cardiovascular Exercise Physiology. (3) I. Study of the structure and function of the cardiovascular system as it pertains to aerobic 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, 340, and 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 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 course area. Pr.: KIN 250, 340, and 345.

KIN 607. Muscle Exercise Physiology. (3) II. Subcellular, cellular, and tissue structure of skeletal muscle and the relationships of these structural characteristics to the functioning of the muscle. Examines energy pathways available to the muscle to support the various functions, mechanisms underlying changes in exercise tolerance that accompany exercise training and detraining, and diseases that affect skeletal muscle. Pr.: KIN 250 and 335.

KIN 625. Exercise Testing and Prescription. (3) I. Benefits and risks of exercise testing and prescription with a number of different diseases and the impact on exercise performance as well as the use of exercise as a therapeutic modality. Pr.: KIN 250 and 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 therapeutic modality. Pr.: KIN 250 and 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 for the exercise science major in training settings such as YMCA, 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 250 and 330.

KIN 800. Adaptative Physical Activities. (1) I, II. Exercise programs adapted to the needs of the special student.

KIN 804. Swimming I. (1) Beginning instruction for students who have no previous experience with swimming.

KIN 805. Swimming II. (1) For the beginning swimmer who has had some previous swimming experience.

KIN 806. 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)
Mathematics

Louis Pigno, Head
Professors Burckel, Cochrane, Kapitanski, Lee, Miller, Pigno, Ramm, Saeki, Shult, Smith, Soibelman, Strecker, and Surowski; Adjunct Professor Arhangel' skii; Associate Professors Auckly, Bennett, Chernak, Crane, Li, Lin, Maginnis, Moore, Muenzenberger, Rosenberg, and Yetter; Assistant Professors Korten, Nagy, Pinner, Poggi–Corradini, Vidussi, and Yang; Emeriti: Professors Dixon, Dressler, Marr, Stamey, and Young; Associate Professors W. Parker and Sloat; Instructors Sitz and Woldt.

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Mathematics is the unparalleled model of an exact science, the epitome of creative art, and a language essential to understanding our modern technological world. Mathematicians design mathematical models, solve mathematical problems, and create new mathematics. Mathematicians are sought by employers in business, government, and industry, and by universities, colleges, and secondary schools. Mathematics graduates are sought both for their specialized knowledge and for their ability to reason and think analytically and solve problems.

Requirements

Students may obtain either a bachelor of arts or a bachelor of science degree with a major in mathematics. For either degree, in addition to the general requirements of the university and college, mathematics majors must complete the following core courses:

- 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
- CIS 200 Fundamentals of Computer Programming .......... 4
- STAT 510 Introductory Probability and Statistics I ................ 3
- MATH 512 Introduction to Modern Algebra ............. 3
- MATH 511 Introduction to Algebraic Systems .......... 3
- MATH 633 Advanced Calculus I .......................... 3
- MATH 520 Foundations of Analysis ................. 3

For the B.A. degree, students must take 15 additional hours in mathematics numbered 400 or above: PHIL 510 may be substituted for 3 of these hours.

For the B.S. degree, students must take 15 additional hours in mathematics numbered 400 and above; MATH 570 may not be used to meet this requirement. Students majoring in mathematics must earn a grade of C or better in each math course used to satisfy requirements for the major.

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 506 Introduction to Number Theory .......... 3
- 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 551 Applied Matrix Theory .................. 3
- MATH 633 Advanced Calculus I .................. 3
- MATH 655 Elementary Numerical Analysis .......... 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 by completing the requirements for a degree in mathematics education in the College of Education. 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, education, 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 scores 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 100. Intermediate Algebra. (3) I, II, S. Preparatory course for MATH 101. 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 and Pythagorean Theorem). Pr.: Two units of mathematics in grades 9-12 or a College Algebra PROB ≥ C of 43 or more on the ACT assessment by K-State; or a score of at least 7 on the mathematics placement test; 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 101; or two years of high school algebra and a College Algebra PROB ≥ C of 60 or more on the ACT assessment by K-State; or a score of at least 18 on the mathematics placement test.

MATH 101. The Metric System. (1) Interseession only, on sufficient demand. A systematic study of the metric system including historical background and various topics selected by the individual instructors. Pr.: MATH 100.

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 exam.

MATH 160. Introduction to Contemporary Mathematics. (3) I, II, S. Mathematics as used in the contemporary world. Combinatorics and probability; descriptions of data; graph theory; and various additional topics selected by the individual instructors. Pr.: MATH 100.

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 in 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 by K-State; or a score of at least 26 on the mathematics placement test.

MATH 211. Technical Calculus II. (3) I. A continuation of MATH 210 to include integral calculus with an emphasis on application. Pr.: C or better in MATH 210.

MATH 220. Analytic Geometry and Calculus I. (4) I, II. 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 by K-State; or a score of at least 26 on the mathematics placement test.

MATH 221. Analytic Geometry and Calculus II. (4) I, II. 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. 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. Prerequisites: Linear Algebra, and the Pythagorean Theorem. Pr.: Two units of mathematics in grades 9-12 and a College Algebra PROB ≥ C of 43 or more on the ACT assessment by K-State; or a score of at least 7 on the mathematics placement test; or a score of at least 26 on the arithmetic placement test.

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; future and present value; annuities; amortization; yield rates; bonds and related funds; application of calculus and probability to the study of interest. Pr.: Three years of college preparatory mathematics including algebra and trigonometry and a Calculus I PROB ≥ C of 55 or more on the ACT assessment by K-State; or a score of at least 26 on the mathematics placement test.

MATH 506. Introduction to Number Theory. (3) II. Properties of integers, prime numbers, congruences, multiplicative functions. Pr.: MATH 221.

MATH 630. Introduction to Complex Analysis. (3) I. Complex analytic functions and power series, complex integration, Cauchy's Theorem, and Divergence Theorem. Pr.: MATH 240, MATH 551, or concurrent enrollment in MATH 551.


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; also ordinal and cardinal numbers, the Axiom 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 permutation groups, homomorphisms, direct products, Abelian groups, Jordan-Hölder and Sylow theorem. Pr.: MATH 512.

MATH 706. Theory of Numbers. (3) I. 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) Set valued functions and concrete categories, factorization structures, algebraic and topological functors, categorical completions, Abelian categories. Pr.: MATH 710.


MATH 721. Analysis I. (3) I. II. S. Metric spaces, limits, continuity, sequences and series, connectedness, compactness, Baire category, uniform convergence, theorems of Stone-Weierstrass and Arzelà. Pr.: MATH 240 or graduate standing.

MATH 722. Analysis II. (3) I. II. Lebesgue and Riemann-Stieltjes 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) Continuation of MATH 730. Pr.: MATH 730 or consent of instructor.

MATH 740. Calculus of Variations. (3) On sufficient demand. Necessary conditions and the Euler-Lagrange equations, Hamilton-Jacobi theory, Noether’s theorems, direct methods, applications to geometry and physics. Pr.: MATH 722 or equivalent.

MATH 745. Ordinary Differential Equations. (3) I. First order equations and applications, second order equations and oscillation theorems, series solutions and special functions, Sturm-Liouville problems, linear systems, autonomous systems and phase plane analysis, stability, Liapunov’s method, periodic solutions, perturbation and asymptotic methods, existence and uniqueness theorems. Pr.: MATH 240.


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) I. 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 Arthur DeGroat, Head Assistant Professors Lieutenant Colonel (Ret.) Johnson, Major (Ret.) Porter, and Major Graves; Instructors Master Sergeant Vazquez and Sergeant First Class Inman.

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The U.S. Army ROTC advanced course is a nationally acclaimed leader-development program that educates and trains aspiring young professionals to attain critical organizational and interpersonal leadership skills, knowledge, and attributes necessary to lead in military and corporate settings. This program includes a progressive, structured curriculum that provides the theoretical and practical application of military leadership in and out of the classroom.

ROTC students can earn a federal commission as a United States Army officer and be placed in a professional occupational specialty area of their choosing upon graduation. Students can choose to serve full-time or part-time as U.S. Army officers and are fully qualified for continuing education benefits.

Due to the dual requirements of academic degree programs and the military science program, the Department of Military Science provides lucrative financial support to include full-tuition scholarships and monthly stipends to qualified students. Additionally, all students enrolled in this program are managed using a mentor system where a faculty leader takes personal interest and effort toward promoting the students’ professional development.

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. Military science courses are credit-awarding courses and fulfill elective credit requirements in any degree program. Cadets may pursue any curriculum offered by the university.

The military science curriculum consists of the basic course, normally completed during the freshman and sophomore years, and the advanced course, oriented toward the junior and senior years.

Basic course

The basic course consists of a series of four 2-hour courses open to all students and may be counted as electives. Enrollment in basic course classes does not obligate a student to military service. Freshmen will normally enroll in MSCI 101 and 102 Sophomores will normally enroll in MSCI 201 and 202.

Advanced course

The U.S. Army ROTC advanced course is structured to develop the leadership potential of students choosing to pursue an officer commission. Prerequisites for the advanced course may be satisfied in a number of ways; specific questions on individual eligibility should be addressed to the department staff.

Students accepted into the advanced course agree to complete the curriculum and to accept an Active Army, U.S. Army Reserve, or Kansas Army National Guard commission, if offered. Each advanced course cadet receives a $300- to $400-per-month allowance during the school year in return for this agreement. A five-week national advanced leadership camp, with pay, is an integral part of the advanced course and normally is completed between the junior and senior years. Airborne, Air Assault, and the Northern Warfare training courses are U.S. Army schools available to qualified volunteers in addition to other training opportunities. Additionally, two-week leadership internships are available with military units located worldwide.

Leadership training camp

A five-week leadership training camp, with pay, is available. This allows ROTC participation by students who have not taken basic course classes. Application should be made to the Department of Military Science early in the spring semester. Students will attend camp during the summer. Satisfactory completion of the ROTC leadership training camp earns 4 hours academic credit and satisfies all prerequisites for entry into the advanced course. A two-year full-tuition scholarship and benefit

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package will be available to all successful leadership training camp students.

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 $250 to $400 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 three voluntary organizations: KSU Wildcat Battalion Honor Guard, the ROTC Recondo Club, and Officer Christian Fellowship. The Color Guard performs both university and non-university ceremonies as well as home football and basketball games. The ROTC Recondo 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 universiy 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, a required leadership lab, optional participation 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, a 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 Riffled. (I) I. Basic rifle and three-position match shooting. Includes brief introduction to U.S. Army ROTC program.

MSCI 107. Rappel Master Skills. (I) 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: rope 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, leadership, land navigation, and basic military tactics. Two classroom hours; a required leadership lab; participation in two one-hour physical fitness sessions. Participation in a weekend exercise.

MSCI 202. Individual/Team Military Tactics. (V) I, II. Introduction to individual and team aspects of military tactics in small unit operations. Safety assessments, movement techniques, military orders process, rifle marksmanship, rappelling. Two classroom hours; a required leadership lab; participation in two one-hour physical fitness sessions. Participation in a weekend exercise is optional, but highly encouraged.

MSCI 206. Leadership Training Camp. (0–4) 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, 201, and 202, and who pass a physical examination (paid for by ROTC).

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. (0–4) 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. Pr.: Completion of MSCI 301 and instructor permission.

MSCI 306. ROTC National Advanced Leadership Camp. (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 either in a 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. (0–4) 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 leadership 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-in 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
Robert Corum, Head
Professors Corum, Dehon, and Ossar; Associate Professors Arnds, Benson, Clark, Garavito, Kolonosky, Oropesa, Sauter, and Shaw; Assistant Professor Hippolyte; Instructor Pigno; Emeriti: Alexander, Driss, Miller, and Tunstall.

E-mail: modlang@ksu.edu
www.ksu.edu/mlangs

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
Required:
GERM 521 and GERM 522: Introduction to German Literature I and II
At least three 700-level courses

Spanish:
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 (RUSSN 551 or 552, Russian V or Survey of Russian Literature)

Russian: 21 hours (SPAN 574, Hispanic Readings)
Note: in Spanish, Elementary Conversation 3A (262) and 4A (264) do not count toward the minor.

Modern language courses

MLANG 801. European Literature in Translation. (3)
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.

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.

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MLANG 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.

Modern language courses
MLANG 801. 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.

Financial aid
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.

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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 801. 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.

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 215. Elementary French Conversation. (2) I, II. Practice in basic conversational French. Normally taken concurrently with FREN 211 or 213. May be taken twice. Pr.: FREN 112 or equiv.

FREN 398. 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 502. French Literature in Translation. (3) Selected readings in English of works representing important literary trends. May be taken by majors and minors if all assignments are completed 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.

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 century. Pr.: At least one course taught in French at the 500 level or equiv.

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) III. 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 century to the fifteenth century in France. Readings in modern French include Chanson de Roland, Chretien de Troyes Roman de la Rose, etc. Pr.: FREN 511 and 512 or equiv. background as determined by the modern French 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 Molière, 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 trends and themes in the novel, drama, and poetry as reflected in representative works of such authors as Proust, Mauriac, Cocteau, Claudel, Valéry, 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, Sarrature, 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) An advanced, intensive study of French prose style. Introduction to the techniques of translation from English to French. Intensive practice in oral style and dictation. 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 799. Problems in Modern Languages. Pr.: At least one course taught in French at the 500 level or equiv.

Chinese courses


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 lab.

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 IIA. (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 a review of the more difficult points of German grammar. Pr.: GRMN 221 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 221 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 of works by 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 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.

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 223 or equiv.

GRMN 550. 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.
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 III. (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.

ITAL 525. History of the Italian Language. (3) A consideration of post-Roman Italian literature with special emphasis on the novel. Authors including Grillparzer, Keller, and Meyer are discussed. Pr.: 21 hours of college German.

ITAL 724. Early Twentieth-Century German Literature. (3) II. A study of the drama and lyric of naturalism, neoclassicism, neo-romanticism, and expressionism. Pr.: 21 hours of college German.

ITAL 726. German Literature since 1945. (3) A discussion of the postwar writings of the Gruppe 47, Swiss playwrights, and others. Pr.: 21 hours of college German.

ITAL 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.

ITAL 728. History of the German Language. (3) I. A study of the development of the sounds, forms, and syntax of standard German. Fulfills distribution requirements for major. Pr.: Senior standing.

ITAL 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.

ITAL 731. Advanced Spoken and Written German. (3) Intensive practice in conversation and dictation, with considerable practice in the writing of essays in German. Pr.: 24 hours of college German.

ITAL 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.

ITAL 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.

ITAL 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.

ITAL 735. German Lyric Poetry. (3) A study of German 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 learning basic interpretive techniques intrinsic to poetry, the student will learn to identify the literary periods. Pr.: 21 hours of college German.

ITAL 736. German Culture and Literature in Second-Language Learning. (3) Analysis and interpretation of cultural and literary texts from German-speaking countries, 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 200 or above or equiv.

ITAL 799. Problems in Modern Languages. (Var.)

Italian 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) Selected readings in English from the works of such major classical 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 examination of several semiotic systems such as language, literature, 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 structure 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 structural and linguistic principles of the Portuguese language. Pr.: PORT 163 or equiv. course.

PORT 266. Portuguese III. (4) I. Intensive review of syntax 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) II. 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 I. Concurrent enrollment in Russian II 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 II. Concurrent 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 I. (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 practice in the language laboratory.

RUSSN 152. Russian II. (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, politics, 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 intermediate 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 discretion 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 works of Tsarist Russia with emphasis upon Turgenev, Dostoevsky, Tolstoy, and Chekhov.

RUSSN 508. Russian Literature in Translation: The Soviet 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 stories 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, 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) Introduction to the structure of Hindi and Urdu, two languages which are nearly identical in the grammatical structure of their everyday spoken style. Hindi is the dominant language of northern India. Urdu is the national language of Pakistan, also understood throughout the Hindi area.


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, S. 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 003. 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 IV. (2) Continuation of Elementary Spanish Conversation III. 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) Selected readings in English from the works of such major Spanish and Latin American authors as García Lorca, Borges, Neruda, and García Márquez. Not accepted for major credit in Spanish.

SPAN 550. Introduction to Literature of Spanish. (3) An introduction to literary terminology and its practical application for analyzing and interpreting texts from Spain and Spanish America. Strongly recommended for students planning to take SPAN 563 or SPAN 567. Pr.: SPAN 564 or equiv.

SPAN 563. Introduction to the Literature of Spanish America. (3) Reading and analysis of representative works of Spanish-American literature from the colonial period 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 564. Spanish Composition and Grammar. (3) The grammar and syntax of modern Spanish. 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 565. Spanish Civilization. (3) Survey of Spanish culture and civilization from its beginnings to the present; emphasis on Spanish contributions over the centuries in the humanistic field. Pr.: SPAN 263 or equiv. facility as determined by modern languages faculty.

SPAN 566. Hispanic-American Civilization. (3) Survey of Spanish-American culture and civilization from 1492 to the present. Pr.: SPAN 263 or equiv. facility as determined by modern languages faculty.

SPAN 567. Introduction to the Literature of Spain. (3) Reading and analysis of works of Spain 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 head and instructor involved.

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 Professions. (3) Advanced grammar necessary for adequate oral and written expression in selected professional disciplines (such as business, health professions, humanities, etc.) including specialized terminology, conversation and discussion. Pr.: SPAN 564 or equiv. facility as determined by modern languages faculty.

SPAN 574. Hispanic Readings. (3) Practice in reading a variety of literary, journalistic, and specialized texts. Pr.: SPAN 263 or equiv. background as determined by modern languages faculty.

SPAN 575. 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 such as the novel, the short story, the essay, the myth, and the theater. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 578. 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, Cambaceres, Martí, Darío, Güiraldes, Azuela, Gallegos, Rivera, and Bompil. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 722. Contemporary Spanish–American Narrative. (3) Analysis and discussion of the drama of Spanish-speaking nations, with emphasis on the twentieth century. Readings from such leading playwrights as Usigli, Marquez, Carballo, Tristán, Guzmán, Lencero, and Castellanos. Pr.: SPAN 563 and 567 or equiv. background as determined by modern languages faculty.

SPAN 756. Sixteenth-Century Spanish Literature. (3) Reading and study of sixteenth-century Spanish literature: drama, essay, novel, poetry, and short story. Such authors as Lope de Vega, Zorrilla, el Duque de Rivas, Espronceda, Tamayo y Baus, Echevarría, Bécquer, and Pérez Galdós will be discussed. 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 the Poema de Mío Cid to the chronicles and La Celestina, studied within the historical and cultural context of each. 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, Guíllén, Lorca, Cela, Bueró 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, Tirso de Molina, Calderón de la Barca, García Icaza, 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 Cervantes, Sor Juana, Quevedo, Espinosa, Quevedo, Bécquer, Machado, Lorca, Guíllén, Otero, Fuertes, Rodríguez, and Rossetti. 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. Includes poets such as Sor Juana, Martí, Dario, Borges, Vallejo, Neruda, Paz, Storni, 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 both language
Music

Paul Hunt, Head

Professors A. Cochran, R. Edwards, Fallin, Hunt, Littrell, Sloop, Sutton, Tracz, and Walker; Associate Professors Cooper, J. Edwards, Houser, Mortenson, Parker, and Polich; Assistant Professors M. L. Cochran, Ganz, Gartner, Goin, J. Kerstetter, T. Kerstetter, and Pittman; Instructors Gbur and Wingfield; Emeriti: Professors Brookhart, Ganz, Gartner, Goins, J. Kerstetter, Polich; Assistant Professors M. L. Cochran, J. Edwards, Houser, Mortenson, Parker, and Steinbauer, W. Walker, and White; Associate Professors Sidorofsky; Assistant Professor M. Walker.

E-mail: mus@ksu.edu
www.ksu.edu/music

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MUSIC 225 Freshman Survey</td>
<td>2</td>
</tr>
<tr>
<td>MUSIC 230 Music Theory II</td>
<td>3</td>
</tr>
<tr>
<td>MUSIC 231 Aural Skills I</td>
<td>1</td>
</tr>
<tr>
<td>MUSIC 320 Music Theory III</td>
<td>3</td>
</tr>
<tr>
<td>MUSIC 321 Aural Skills II</td>
<td>1</td>
</tr>
<tr>
<td>MUSIC 255 Lower-Division Performance</td>
<td>4</td>
</tr>
<tr>
<td>MUSIC 111, 115, 116, 117, 130, 135, 140, 400, 401, 402, 403, 404, 408, 409, 411</td>
<td>3</td>
</tr>
</tbody>
</table>

Guided electives

*MUSIC 360, 361, or any music history or literature course above 300
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 professional 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MUSIC 225 Freshman Survey</td>
<td>2</td>
</tr>
<tr>
<td>MUSIC 230 Music Theory II</td>
<td>3</td>
</tr>
<tr>
<td>MUSIC 320 Music Theory III</td>
<td>3</td>
</tr>
<tr>
<td>MUSIC 360 Music Theory IV</td>
<td>4</td>
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<td>MUSIC 231 Aural Skills I</td>
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<tr>
<td>MUSIC 321 Aural Skills II</td>
<td>1</td>
</tr>
<tr>
<td>MUSIC 361 Aural Skills III</td>
<td>1</td>
</tr>
<tr>
<td>MUSIC 322 Aural Skills Proficiency</td>
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</tr>
</tbody>
</table>

Bachelor of arts

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 requirements for all options are:

<table>
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<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MUSIC 225 Freshman Survey</td>
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<tr>
<td>MUSIC 230 Music Theory II</td>
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<td>MUSIC 320 Music Theory III</td>
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<td>MUSIC 360 Music Theory IV</td>
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<tr>
<td>MUSIC 231 Aural Skills I</td>
<td>1</td>
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<tr>
<td>MUSIC 321 Aural Skills II</td>
<td>1</td>
</tr>
<tr>
<td>MUSIC 361 Aural Skills III</td>
<td>1</td>
</tr>
<tr>
<td>MUSIC 322 Aural Skills Proficiency</td>
<td>0</td>
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<tr>
<td>MUSIC 530 Music History I</td>
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<tr>
<td>MUSIC 531 Music History II</td>
<td>3</td>
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<tr>
<td>MUSIC 532 Music History III</td>
<td>3</td>
</tr>
<tr>
<td>MUSIC 525 Instrumentation and Arranging</td>
<td>2</td>
</tr>
<tr>
<td>MUSIC 501 Half Recital</td>
<td>0</td>
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<tr>
<td>MUSIC 502 Full Recital</td>
<td>0</td>
</tr>
<tr>
<td>MUSIC 050 Recital Attendance (7 semesters)</td>
<td>0</td>
</tr>
<tr>
<td>MUSIC 060 Piano Proficiency</td>
<td>3</td>
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</tbody>
</table>

Additional requirements for music theatre option

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MUSIC 255 Voice</td>
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</tr>
<tr>
<td>MUSIC 455 Voice</td>
<td>11</td>
</tr>
<tr>
<td>MUSIC 285 Italian Diction</td>
<td>1</td>
</tr>
<tr>
<td>MUSIC 287 German Diction</td>
<td>1</td>
</tr>
<tr>
<td>MUSIC 465 French Diction</td>
<td>1</td>
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</tbody>
</table>

Major performing organization

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSIC 475 Opera Workshop</td>
<td>4</td>
</tr>
<tr>
<td>MUSIC 492 Methods and Materials for the Studio</td>
<td>4</td>
</tr>
<tr>
<td>MUSIC 706 Song Literature</td>
<td>2–3</td>
</tr>
<tr>
<td>MUSIC 650 History of Opera</td>
<td>3</td>
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</tbody>
</table>

External music courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MUSIC 503 Theory</td>
<td>3</td>
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<tr>
<td>MUSIC 504 Practice</td>
<td>3</td>
</tr>
<tr>
<td>MUSIC 505 Literature</td>
<td>3</td>
</tr>
<tr>
<td>MUSIC 506 Performance</td>
<td>3</td>
</tr>
</tbody>
</table>

Music 225, 230, 320, 360, 475, and 492 are courses in music theatre, and may be repeated three times with a change in focus and texts. Pr.: Minor in music. 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. 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 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

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 Blumont Hall for specific requirements.

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.

Additional requirements for vocal performance

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 Blumont Hall for specific requirements.

Music requirements for all options

Music 210 Music Theory I 3
Music 225 Freshman Survey 2
Music 230 Music Theory II 3
Music 320 Music Theory III 3
Music 360 Music Theory IV 3
Music 231 Aural Skills I 2
Music 321 Aural Skills II 1
Music 361 Aural Skills III 1
Music 322 Aural Skills Proficiency 0
Music 530 Music History I 3
Music 531 Music History II 3
Music 532 Music History III 3
Music 525 Instrumentation and Arranging 2
Music 417 Conducting I 2
Music 517 Choral Conducting or
Music 518 Instrumental Conducting 2
Music 501 Half Recital or
Music 502 Full Recital 0
Music 060 Piano Proficiency 0
Music 050 Recital Attendance (7 semesters) 0
Music 255 Lower-Division Performance and/or
Music 455 Upper-Division Performance 8
Music 480 Upper-Division Ensemble Performance or
Music 475 Opera Workshop 1
Music 511 Music in the Schools K–6 4
Music 512 Music Program in Junior/Senior High Schools 4
Music 670 Advanced Studies in Music Education 2

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). String majors may substitute a comparable experience for this requirement.

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, 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.
Proficiencies
Music majors will enroll in MUSIC 322. Aural Skills Proficiency concurrently with MUSIC 320. Credit for MUSIC 322 is earned by passing the aural proficiency exam. Successful completion of MUSIC 322 is a prerequisite for enrollment in MUSIC 517, MUSIC 518, MUSIC 525, MUSIC 532. (Exception 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.

Students not majoring or minoring in one of these music curricula may take private music instruction (pending availability of staff and facilities) by paying fees as listed in the Fees section of this catalog.

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 thematic 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 398. Musical Styles of the Baroque Period. (4) II. Historical survey from 1600 to 1750; counterpoint with emphasis on invention, canon, and fugue; scoring for strings. Pr.: MUSIC 213 and MUSIC 218.


MUSIC 473. Seminar in Comprehensive Musicianship. (2) II. 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 history, literature, and theory courses

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, timetable); and instrument recognition. The focus of the class is on developing listening skills and learning to write brief papers using the new language that has been acquired. Performances are provided by university ensembles, faculty artists, and special guests. Limited to nonmusic majors.

MUSIC 210. Music Theory I. (5) I. An introduction to the basic language of music; scales, triads and seventh chords, and all simple intervals. Written and aural skills reinforce concepts of melody, rhythm, and harmony.

MUSIC 220. Topics in Music. (1–3) Offered on demand. Exploration of the musical language of a particular topic or theme. Topics vary. May be repeated once.

MUSIC 225. Freshman Survey. (2) I. An introduction to the elements of music; the major historical periods of western classical music; music of non-Western cultures; popular styles. For music majors and minors.

MUSIC 230. Music Theory II. (3) I. Continued experience with the language of music. Part-writing, analysis, composition. Pr.: grade of C or higher in MUSIC 210 or tested knowledge of basic music theory and conc. enrollment in MUSIC 231.

MUSIC 231. Aural Skills I. (1) I. Development of aural skills through sight singing, rhythmic training, and ear-training; melodic, rhythmic, and harmonic dictation to reinforce concepts in Music Theory II. Pr.: Grade of C or higher in MUSIC 210 or tested knowledge of music.

MUSIC 245. Introduction to American Music. (3) I, II. 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 repertory, 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 321. Aural Skills II. (1) I, II. Sight singing, rhythmic training, and ear-training through drills and dictation to reinforce concepts in Music Theory III. Pr.: Grade of C or higher in MUSIC 230.

MUSIC 322. Aural Skills Proficiency. (0) I, II. Required for graduation of all music majors. Pr.: MUSIC 320 or conc. enrollment.


MUSIC 361. Aural Skills III. (1) I, II. Sight singing, rhythmic training, and ear-training through drills and dictation to reinforce concepts in Music Theory IV. May be repeated while completing Aural Skills Proficiency. Pr.: MUSIC 320.

MUSIC 385. History of the American Popular Song. (2) Offered on sufficient demand. The vigor and musical inventiveness of this unique American art form including the melodic, rhythmic, and harmonic aspects of the songs of Jerome Kern, Irving Berlin, George Gershwn, and others. 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. (2–5) 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 on 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 combo jazz styles, etc. Pr.: MUSIC 160.

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 and 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 525. Instrumentation and Arranging. (21) Study of writing and arranging for the strings, woodwinds, brass, and percussion as well as choral ensembles. Functional ranges and practical applications through score study and projects. Pr.: MUSIC 322, 360, 361.

MUSIC 530. Music History I: Ancient Greece through 1700. (3) I. An overview of stylistic trends, major composers, repertoire of ancient Greece, the Middle Ages, Renaissance, and early Baroque periods. Pr.: MUSIC 320, 321.


MUSIC 532. Music History III: 1850 to the Present. (3) I, II. An overview of the development of stylistic trends, major composers, and repertoire of the late Romantic period through the present. Pr.: MUSIC 322, 360, 361.

MUSIC 570. 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 599. Special Studies in Music. (1–3) I, II, S. Pr.: Background of courses needed for studies undertaken.


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 required.

MUSIC 615. Canon and Fugue. (2, 3) I, II. Counterpoint in eighteenth century style. Pr.: MUSIC 398, consent of instructor.

MUSIC 616. Twentieth-Century Counterpoint. (2) I, II. Contrapuntal devices used by twentieth-century composers; serial techniques. Pr.: MUSIC 398, consent of instructor.
MUSIC 620. Music Calligraphy and Score Preparation. (2) Tools and procedures for professional 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 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 250. Same as THTRE 671.

MUSIC 665. Jazz Techniques. (2) II, S. Basic practices found in jazz education, including literature, teaching techniques, and resource materials. Pr.: MUSIC 512.


MUSIC 704. Symphonic Literature. (3) II. The development of orchestral music from the baroque to the present, with emphasis on selected symphonies of the last eighteenth and nineteenth centuries. Pr.: MUSIC 407.

MUSIC 705. Chamber Music Literature. (3) II, in alternate years. A selected survey of masterpieces of small ensemble music from 1750 to the present. Special emphasis on the string quartet. Pr.: MUSIC 407.

MUSIC 706. Song Literature. (3) II, in alternate years. Survey, by historical period and national style, of major solo vocal works. Pr.: MUSIC 407.

MUSIC 707. History of Wind Bands. (3) II, S. Development of the wind band medium from the Renaissance to the present, with focus on the composers and literature. Pr.: MUSIC 407.

MUSIC 708. Choral 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) II. 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 525.

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 738. Piano Literature. (3) I. In alternate years. Selective survey of music for piano from 1750 to the present. 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) II. 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) II. 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 purposeful listening and the expressive phases of music including rhythmic 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 musical characteristics of children and materials and techniques for teaching instrumental, vocal, and general music 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 660. Marching Band Techniques. (2) I, S. Philosophical and practical purposes of the marching band, and the skills necessary to design, organize, instruct, and evaluate a marching band show. Pr.: MUSIC 512.

MUSIC 670. Advanced Studies in Music Education. (2) 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.

MUSIC 680. Advanced Rehearsal Techniques. (2) II, S. Explore, evaluate, and develop the musical understanding and skills necessary in leading instrumental ensembles toward significant musical expression through effective rehearsal techniques. Pr.: MUSIC 417.

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) I. 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)–1, 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, II. Admission by audition. (Not open to music majors.)

MUSIC 130. Symphony Orchestra. (0–1) I, I, 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 280. Lower-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 298. Jazz Improvisation I. (1) I, II. Fundamentals of jazz harmony with emphasis on simple chord progressions, blues scales, and some modes. Performance of improvised solos based on “standards” and original. May be repeated once for credit. Pr.: Consent of instructor.

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.: MUSIC 298 or consent of instructor.

MUSIC 350. Studio Accompanying. (1) On sufficient demand. Piano student assigned to studio instructor. Accompanies lessons for at least two hours a week. Pr.: Consent of instructor.

MUSIC 351. Recital Accompanying. (1) On sufficient demand. Piano student assigned to a music major preparing for graduation recital. Pr.: Consent of instructor.

MUSIC 400. Concert Choir. (0–1)–1, I, II. Admission by audition.

MUSIC 401. Concert Band. (0–1)–1, II. S. Open to all interested wind and percussion performers without audition.

MUSIC 402. Symphony Band. (0–1)–1, I, II. Admission by audition.

MUSIC 403. Collegiate Chorale. (0–1)–1, II, S. Open to all interested singers. Audition determines membership in other choral organizations.

MUSIC 404. Symphony Orchestra. (0–1)–1, II, S. Admission by audition.

MUSIC 408. Men’s Glee Club. (0–1)–1, I. Admission by audition.

MUSIC 409. Women’s Glee Club. (0–1)–1, I, II. Admission by audition.

MUSIC 411. Marching Band. (0–1)–1. Admission by audition.

MUSIC 412. University Band. (0–1)–1. Open to all interested wind and percussion performers 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) I, 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 by audition and students may enroll in more than one ensemble simultaneously.

MUSIC 490. Collegium Musicum. (1) I, II, S. An ensemble devoted primarily to the performance of music written before 1700. Authentic instruments used when possible.

Pr.: Consent of instructor.

Performance classes

MUSIC 450. Vocal Techniques IV. (1) I. More advanced singing skills. Practicum 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 performance time of 25 minutes.

MUSIC 502. Full Recital. (0) I, II, S. Public performance; vocal or instrumental with suggested performance time of 50 minutes.

MUSIC 517. Choral Conducting. (2) I. Continued mastery of the skills of Conducting I while emphasizing essential techniques and interpretation for choral ensembles. For music majors only. Required before admission to student teaching.

Pr.: MUSIC 322, 360, 361, 417.

MUSIC 518. Instrumental Conducting. (2) I. Continued mastery of the skills of Conducting I while emphasizing essential techniques and interpretation for instrumental ensembles. For music majors only. Required before admission to student teaching.

Pr.: MUSIC 322, 360, 361, 417.

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, Glymour, Hamilton, Rozemond and Sabatés; Assistant Professors Clark, Foran, and Wall; Emeritus: Professors Scheer and Tilghman.

E-mail: philosophy@ksu.edu

www.ksu.edu/philos

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 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 665 ................................................. 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 252 .......................................................... 3
  - PHILO 353 .......................................................... 3
  - PHILO 680 Problems in Philosophy .......................... 3
  - PHILO 680 Problems in Philosophy .......................... 3
  - PHILO 685 (any of them must be PHILO 635 or PHILO 640) .................................................. 3
  - PHILO 685 (any of them must be PHILO 635 or PHILO 640) .................................................. 3
  - PHILO 685 Problems in Philosophy .......................... 3
- Philosophy electives (of any of them at the 500 level or above) .......................... 6

Additional requirement: Completion of another major in a department other than philosophy.

**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
- PHILO 625 .......................................................... 3
- PHILO 635 or PHILO 640 .................................................. 3
- PHILO 685 Problems in Philosophy .......................... 3
- PHILO 680 Problems in Philosophy .......................... 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 these 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.

Core curriculum .................................................. 18
- PHILO 685 Problems in Philosophy .......................... 3
- PHILO 685 Problems in Philosophy .......................... 3
- PHILO 685 Problems in Philosophy .......................... 3
- PHILO 685 Problems in Philosophy .......................... 3
- PHILO 685 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. (B.A. or B.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.
  - Core curriculum .................................................. 18
  - PHILO 252 .......................................................... 3
  - PHILO 353 .......................................................... 3
  - PHILO 680 Problems in Philosophy .......................... 3
  - PHILO 680 Problems in Philosophy .......................... 3
  - PHILO 680 Problems in Philosophy .......................... 3

On demand. This course introduces students to some ideas about causation, and also to some elementary tools for thinking both critically and constructively about causal claims. The treatment is broadly formal, and introduces ideas from statistics, computer science, and philosophy, but requires no mathematical background beyond high school algebra. Some sections are taught using web-based courseware.

- **PHILO 110. Introduction to Formal Logic. (B.A. or B.S.)**
  - Systematic study of deductive reasoning (and possibly inductive reasoning) using the techniques of modern logic.
  - PHILO 110. Introduction to Formal Logic. (B.A. or B.S.)
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**Pre-law options**

(B.A. or B.S.)

While no 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
- PHILO 650 .......................................................... 3
- PHILO 660 .......................................................... 3
- PHILO 670 .......................................................... 3
- PHILO 675 .......................................................... 3

3 philosophy electives (of any 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
- PHILO 650 .......................................................... 3
- PHILO 660 .......................................................... 3
- PHILO 670 .......................................................... 3
- 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.

**Philosophy/pre-business**

(B.A. or B.S.)

30 hours in philosophy

The pre-business 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
- PHILO 665 .......................................................... 3

2 philosophy electives (of any of them at the 500 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.
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. Topics selected from: skepticism, mind-body dualism, the nature of causation, the existence of God. Pr.: One course in philosophy, or major standing, or consent of instructor.

PHILO 305. Philosophical Methods and Perspectives. (3) II
Special knowledge, methods and skills needed to do philosophical research. Conceptual analysis, argument strategy, definition strategy, thought experiments, 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 principal problems about reality and our knowledge of it, and the answers offered major views such as realism, idealism, skepticism, nominalism, naturalism, foundationalism, and coherentism. 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 Kierkegaard, Fichte, Marx, Nietzsche, Beauvoir, Hegel, Schopenhauer, Sartre, Heidegger, Husserl, Wittgenstein, Gadamer, Ricoeur, Foucault, Lacan), or movements (such as Transcendental Idealism, Essentialism, Existentialism, Marxism, Phenomenology, Post-Modernism), or issues in continental philosophy (such as humanity’s relation to God, free will, the state, irrationalism, gender, philosophical methodology).

◆PHILO 365. Medieval Ethics. (3) II
Selected moral issues which confront the medical professional, including experimentation on human subjects, informed consent, abortion, euthanasia, conflict of interest, and confidentiality.

◆PHILO 380. Philosophy and Race. (3) I
The concept of race and racial identity, and contemporary controversies about the nature of social justice, examined through fiction, movies, and readings in biology, anthropology, history, and philosophy.

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

PHILO 492. Computers and Society. (1-2) II
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 concurrent enrollment in CIS 492; CIS 520.

PHILO 499. Senior Honors Thesis. (2) I, II. Open only to students in the arts and sciences honors program.

PHILO 510. Symbolic Logic II. (3) On sufficient demand.
An advanced study of logical systems and problems in logical systems. Pr.: PHILO 320 or 110.

PHILO 525. Social-Political Philosophy. (3) II
Examines influential works in social and political philosophy with a focus on both historical context 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).

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, and civil disobedience. Pr.: Two courses in philosophy (PHILO 330 recommended).

PHILO 550. Philosophy of Social Sciences. (3) I or II in alternate years. Epistemetic methods and metaphysical pre-suppositions in the social sciences. Topics selected from: methods of measurement, construct validation, 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 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 value of biodiversity, obligations to future generations, obligations to non-humans, and the ethics of environmental risk management. Pr.: One course in philosophy (PHILO 330 recommended).

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.: Two courses in philosophy. Depending on topic, PHILO 300 or 301 required.

PHILO 615. Philosophy of Religion. (3) I or II in alternate years. Concepts of religion, including truth and faith, God and atheism, reason and revelation, morality and religion, evil, humanity, 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 regarding 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. PHILO 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 come 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 liability, whether and when strict criminal liability is justified, the rights of criminals). 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 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 language, philosophy of mind. Pr.: PHILO 320 and additional background courses required for topic.

PHILO 701. Topics in Metaphysics. (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

Dean A. Zollman, Head
University Distinguished Professors Zollman, Cocke, C. D. L. Rahman, Ray, Richard, and Sorensen; Professors Ben-Itzhak, Bolton, Chakrabarti, DePaola, Gray, Hagmann, Jiang, Law, J. Y. Lin, O’Shea, Stanton, Thurn, Weaver, and Wysin; Associate Professors Chang and Ratra; Assistant Professors Demina, Esry, and Rebello; Associate Research Professors Carnes, Fehrenbach, and Sidwell; Assistant Research Professor Kara; Emeriti: Professors Bhalla, Curnutte, Dale, Donoghue, Dragsdorff, Folland, Legg, Manney, and Williams.
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 (B.S.) or a bachelor of arts (B.A.) degree. The B.S. 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 B.S. degree in order to be properly prepared.

Physics majors seeking a B.A. complete the requirements for the College of Arts and Sciences in addition to the following courses:

**Bachelor of arts**

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHYS 122</td>
<td>Computation and Experimentation in Physics</td>
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<td>PHYS 223</td>
<td>Physics I</td>
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<td>PHYS 272</td>
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<tr>
<td>MATH 220</td>
<td>Calculus I</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Calculus II</td>
</tr>
<tr>
<td>MATH 222</td>
<td>Calculus III</td>
</tr>
<tr>
<td>MATH 240</td>
<td>Elementary Differential Equations</td>
</tr>
<tr>
<td>PHYS 3xx</td>
<td>or 6xx physics electives</td>
</tr>
</tbody>
</table>

The advanced physics course electives must be chosen from the following courses:

- PHYS 616: Advanced Physics Lab
- PHYS 620: Teaching University Physics
- PHYS 623: Oscillations, Waves, and Relativity
- PHYS 639: Computation in Physics
- PHYS 642: Nuclear Physics
- PHYS 651: Optics and Lasers
- PHYS 655: Physics of Solids
- PHYS 691: Astrophysics
- PHYS 656: Particle Physics

**Chemistry I and II (CHM 210 and 230) are strongly recommended for all physics majors.**

**Minor in physics**

**Basic courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHYS 213</td>
<td>Engineering Physics I or</td>
</tr>
<tr>
<td>PHYS 223</td>
<td>Physics I</td>
</tr>
<tr>
<td>PHYS 244</td>
<td>Engineering Physics II or</td>
</tr>
<tr>
<td>PHYS 293</td>
<td>Physics II</td>
</tr>
<tr>
<td>PHYS 296</td>
<td>Physics III</td>
</tr>
</tbody>
</table>

**Additional requirement**

Any physics course which has Physics III as a prerequisite

**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.

**Undergraduate research**

All students with a major or minor in physics can and should participate in the research activities of the department. The involvement in research is arranged on an individual basis and may begin as early as the first semester.

Students who participate in research may receive either credit or a stipend. Research areas available to undergraduates are atomic-molecular-optical physics, condensed matter physics, cosmology, high energy physics, and physics education.

**Physics courses**

- **PHYS 017**: Colloquium in Physics. (0) I, II. Weekly lectures on topics of current interest in physics by faculty and visiting scientists.
- **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 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 102**: The Physical World II. (3) I, II. Continuation of PHYS 101. The Physical World II presents an overview of astronomy, geology, chemistry, and molecular biology. Three hours lec. a week. Not open to seniors. Pr.: PHYS 101.
- **PHYS 103**: The Physical World I Laboratory. (1) I. 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 research of scientists 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 112**: General Physics I. (4) I, II, S. A basic development of the principles of mechanics, heat, fluids, oscillations, waves, and sound. Emphasis is placed 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 113**: 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 112.
- **PHYS 121**: Descriptive Physics. (5) I. A one-semester course in physics covering 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 quiz, one hour rec., 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 lec., 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., one hour quiz, and four hours studio a week. Pr. or conc.: MATH 221.
- **PHYS 214**: Engineering Physics II. (5) I, II. Sound, electricity, magnetism, light, and modern physics; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and four hours studio a week. Pr.: PHYS 213 or MATH 221.
- **PHYS 223**: Physics I, Mechanics and Thermodynamics. (5) II. For students of science and engineering. Lecture and quiz in common with PHYS 213. Special studio. 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 studio. Pr.: PHYS 223 or permission of lecturer, MATH 221 or conc.
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 lec. and one two-hour lab per week. Pr.: PHYS 122, 224 or 214; 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 for a senior honors thesis. May be repeated for credit up to a maximum of 6 hours. Pr.: Junior standing and consent of instructor.

◆ PHYS 451. Principles of Contemporary Physics. (3) II. A nonmathematical introduction to twentieth century physics: relativity, quantum mechanics, the physics of solids, and fundamental particles. Not open to physics majors. Credit is not granted for both PHYS 451 and PHYS 452. Pr.: PHYS 101 or equiv.

◆ 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. The lectures are in common with PHYS 451. Three hours lec. and two hour lab each week. The laboratory will contain the quantitative aspects of the subject matter. Not open to physics majors. Credit is not granted for both PHYS 451 and 452. Pr.: One year of college physics (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 lec. 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 honors program should enroll in 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 in physics, normally taken 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 credits.

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 experiments of current and/or historical interest in contemporary physics. Students develop skills in and knowledge of measurement techniques using digital and analog instruments. Various data analysis techniques are used. One hour rec. 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 processes or phenomena under consideration. Topics and activities will be directed toward providing teachers with material for demonstrations and student experiments or projects. Examples of topics are: solar power, laser applications, holography, and subnuclear particles and relativity. Historical development of some physical concept. May be repeated for a maximum of 6 hours credit. Pr.: One year of college physics.


PHYS 532. Electromagnetic Fields. (3) II. Study of static and dynamic electromagnetism, including the development and application of Maxwell’s equations. Three hours of lec. per week. Pr.: PHYS 472 and MATH 240.


PHYS 562. Introduction to Quantum Mechanics. (3) II. An introduction to quantum mechanics. Topics include solutions to the time independent Schrödinger equation, descriptions of one-electron and multi-electron atoms, electron spin and magnetic moments. Three hours of lec. per week. Pr.: PHYS 472, 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 PHYS 506. Six hours of lab per week. Pr.: PHYS 506 and senior standing.

PHYS 620. Teaching University Physics. (3) I, II. 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 472.

PHYS 623. Oscillations, Waves and Relativity. (3) I, II. An introduction to the theoretical aspects of linear and non-linear oscillating systems and the theory of special relativity. Topics include periodic motion, coupled oscillations, Fourier analysis, mechanical and electromagnetic waves, special relativity, and introduced through its formation in electromagnetic fields. Pr.: PHYS 472, 522, and 532.

PHYS 636. Physical Measurements and Instrumentation. (5) I, II. 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 472.

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 solution of ordinary and partial differential equations, Fourier analysis, and numerical integration to physical situations. Students will use both personal computers and advanced workstations. One hour lec., two hours of computer 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) An introduction to the structure of the nucleus, radioactivity and nuclear energy; the application of quantum mechanics to describe 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 lec. a week. Pr.: PHYS 214.

PHYS 652. Applied Optics and Optical Measurement. (3) II, in alternate years following PHYS 651. Topical approach oriented toward measurements including coherence, Fourier optics, holography, light scattering, interferometry and laser technology. Three hours of lec. a week. Pr.: PHYS 651.


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 lec. 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 lec. a 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 lec. 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 standing and consent of instructor.

PHYS 709. Applied Quantum Mechanics. (3) I. A study of Schrödinger’s theory of quantum mechanics and its application to one electron atoms, multielectron atoms, quantum statistics, spectra of molecules and selected topics in quantum excitations of solids, nuclear physics, and elementary particles. Three hours of lec. per week. Pr.: PHYS 562.

Political Science

Kisangani Emizet, Interim Head
University Distinguished Professor Sulaiman; Professors Herspring, L. Richter, W. Richter, and Tummala; Associate Professors Bagby, Emizet, Fliter, Franke, Michie, and Uneki; Assistant Professors Pickering and Tollefson; Emeritus: Professors Hajda and Williams; Associate Professor 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.

Advancing and specialized curricula

Advancing 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 Kisangani Emizet, 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 Jackie Spears, 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, 243 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 thought .................................................. 3
American government and politics ...................... 3
International relations ......................................... 3
Comparative government and politics .................. 3

Electives

Nineteen 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

Additional requirements

Three political science electives, of which at least two must be at the 500-level or above. POLSC 350 cannot fulfill this requirement.
Total electives ..................................................... 9

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 the course will be administered. 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.

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. I, II, S. An introduction to the major themes and leading writers in political philosophy and a discussion of their application to modern 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 political 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) I. 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, S. 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 relevance and concern. May be repeated once.

POLSC 366. Practical Politics. (3) I. 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 formulation 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.

POLSC 401. Topics in Politics. (1–3) Different subjects in politics are selected for intensive study. May be repeated for a total of 6 hours with advisor’s approval.

POLSC 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the arts and sciences honors program.
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 604. Interest Groups and Public Opinion. (3) II. Group theory and politics. Structure, internal 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) II. 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) II. 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) II. 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) I. Principles of the American Political System as prescribed by the Constitution and interpreted by Supreme Court decisions, with emphasis on the institutions and powers of the national government, federalism, and property rights. Pr.: One course in political science, U.S. history, or legal or political philosophy.

POLSC 615. Constitutional Law II. (3) II. The Constitution as a limitation on 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) I. 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) II. The U.S. system of federalism with emphasis on a comparative analysis of the governmental and political powers 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. Particular attention is paid to those features 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) II. 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. agricultural, business, health, income, trade. 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 MANGT 420.

Comparative government and politics courses

POLSC 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. Pr.: SOCIO 211; POLSC 110. Same as SOCIO 304.

POLSC 505. Introduction to the Civilization of South Asia L (3) I. 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 trends, the role of 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) II. Interdisciplinary survey of modern and contemporary civilization in India, Pakistan, Sri Lanka, Bangladesh, and Afghanistan. Current history, religion, culture, languages and literature, geography, social and political structures and ideas. 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 structure, composition of present leadership, role of social forces, impact of external relations on other Asian nations and on the major world powers. Pr.: POLSC 344 or junior standing.

POLSC 545. The Politics of Developing Nations. (3) I. Comparative analysis of politics in emergent states with emphasis on processes of modernization and nation building. Pr.: POLSC 110, 344, or junior standing.

POLSC 569. Comparative Agriculture Policies and Policy. (3) I. Comparative examination of agricultural policies and policy with emphasis on decision making processes and the socio-political impacts of agricultural policy. Pr.: POLSC 110, 344, or junior standing.

POLSC 621. West European Politics. (3) I. 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) I. 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 505, or junior standing.

POLSC 624. Middle Eastern Politics. (3) II. 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-Saharan Africa, including consideration of problems of nationalism and development. Pr.: POLSC 110, 344, or junior standing.

POLSC 627. Eastern and Central European Politics. (3) II. 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) I. Primary focus will be on problems involved in the transition from communism to a new 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, and Spain. 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 morphology 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) I. 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) I. 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 a political perspective through the escalation stages to war. Pr.: POLSC 333, 541, or junior standing.

POLSC 645. International Politics of Europe. (3) II. Relationships among the countries of Europe since World War II. Particular focus will be on the unified European Union. Pr.: POLSC 333, 541, or junior standing.

POLSC 647. International Law. (3) I. Theories of international law and general problems, such as recognition, responsibility, war crimes, sovereignty, 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, and the joint military 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 relationships 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 and the rest of the world. Pr.: POLSC 333, 344, or junior standing.

POLSC 655. International Politics of Latin America. (3) II. Analysis of international relations of Latin America. Examining theoretical approaches to the study of Latin America’s relations, U.S.-Latin American relations, and
comparative foreign policies of Latin American states. This course also explores special topics such as regional integration and geopolitics. Pr.: POLSC 333 or 541.

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, inter-national organizations, bargaining processes, and distributive norms. Pr.: ECON 110, ECON 120, POLSC 333, POLSC 344, 541, or junior standing.

Political thought courses

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) II. 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) II. 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 307 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 400 or 700, STAT 330 or equiv.

POLSC 784. Internship in Government, Public Administration, and Politics. (1–3, Credit/No Credit only.) I, II, S. Supervised field work at the international, national, state, and local levels of government or with political parties or other politically oriented voluntary 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. 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 subspecialties. 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 Ulhlarik; Associate Professors Cozzarelli, Fullagar, and Knight; Assistant Professors Brannon, Brockel, Hemenover, 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, industry, 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 cumulative GPAs of at least 2.5 in both (a) all psychology courses undertaken at Kansas State University and (b) all course 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 can enroll in any course offered by the Department of Psychology except the following:

PSYCH 350 Experimental Methods in Psychology

PSYCH 460 Cognitive Psychology

PSYCH 475 Principles of Learning

PSYCH 480 Fundamentals of Perception and Sensation

PSYCH 605 Advanced Social Psychology

PSYCH 620 Psychology of Personality

Requirements for the major

In addition to the general requirements for a B.A. or B.S. degree in the College of Arts and Sciences the undergraduate major in psychology consists of the following set of required courses:

PSYCH 110 General Psychology ......................... 3

PSYCH 200 Junior Seminar in Psychology ............. 1

STAT 330 Elementary Statistics for Social Sciences .......... 3

PSYCH 350 Experimental Methods in Psychology ............... 5

Two courses from:

PSYCH 460 Cognitive Psychology ....................... 3

PSYCH 475 Principles of Learning ....................... 3

PSYCH 480 Fundamentals of Perception and Sensation .......... 3

One course from:

PSYCH 605 Advanced Social Psychology ............... 3

PSYCH 620 Psychology of Personality ............... 3

Psychology electives ....................................... 12

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.

Arts and Sciences
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 100. Freshman Seminar.** (1) I. An orientation and introduction to the field of psychology for freshmen who are psychology majors only. Additional emphasis on the means by which psychological principles can be used to adapt to college life.

**PSYCH 110. General Psychology.** (3) I, II. An introductory survey of the general content areas of psychology, including methods, data, and principles.

**PSYCH 115. General Psychology (Honors).** (4) I, II. An introductory survey of the general content areas of psychology, including methods, data, and principles.

**PSYCH 200. Junior Seminar in Psychology.** (1) I. Discussion of professional, research, and educational methods and objectives in psychology. Acquaints psychology majors with psychology as a profession, and with the various options available to them at various levels of training. Should be taken during first semester of junior year. Pr.: Junior standing.

**PSYCH 202. Drugs and Behavior.** (2) I. S. Effects of drugs on human performance, cognition, and physiological processes will be discussed and the empirical evidence surveyed and critically evaluated in relation to both use and abuse of drugs in society. Pr.: PSYCH 110.

**PSYCH 280. Psychology of Childhood and Adolescence.** (3) I, II. Survey of behavioral development from birth through adolescence. Pr.: PSYCH 110.

**PSYCH 290. Innovative Studies in Psychology.** (1–6) I, II. Topics selected in consultation with the instructor. To be used for interdisciplinary and innovative approaches to psychological topics. Pr.: Consent of instructor.

**PSYCH 350. Experimental Methods in Psychology.** (5) I, II. Laboratory investigation of learning, motivation, social-personality processes, and perception and sensation. Includes three hours rec. and four hours lab. a week. Pr.: PSYCH 110. (Psychology majors only.)

**PSYCH 399. Honors Seminar in Psychology.** (3) II. Selected topics. Open to nonmajors in the honors program.

**PSYCH 400. Practicum in Teaching Psychology.** (1–4) I, II. Supervised experience in presentation of psychological concepts in various classes. May be taken only with approval of the instructor of a general psychology class under whose supervision the student will obtain this experience. Pr.: Nine hours of psychology including PSYCH 110; junior standing; consent of instructor.

**PSYCH 425. Problem Solving and Decision Making.** (3) II. Provides both the psychological background and practical tools to help solve problems in everyday decision making. Skills to be covered include creativity, methods of problem solving, memory aids, decision-making tools, avoiding biases of judgment, etc. Pr.: PSYCH 110.

**PSYCH 450. Applications of Memory.** (3) II. Examination of the applications of memory in such diverse areas as courtroom testimony, expert performance, memory procedures, and advertising. Relevant theories and research in each area are examined. Pr.: PSYCH 110.

**PSYCH 460. Cognitive Psychology.** (3) I, II. A survey of the manner in which people extract and use relevant information from their environment as a basis for behavior. Topics may include memory storage and retrieval, attention, imagery, mnemonic devices, decision making, and other cognitive processes. Pr.: PSYCH 350. (Psychology majors only.)

**PSYCH 470. Psychobiology.** (3) I, II. Behavior from a biological point of view. Topics include: behavioral neuroscience techniques, sensory coding, food and water intake, sexual behavior, sleep and waking, memory, and learning. Pr.: BIOL 198, PSYCH 110.

**PSYCH 475. Principles of Learning.** (3) I, II. Introduction to the principles of learning and their relevance to the understanding of the behavior of animals and humans. Pr.: PSYCH 350. (Psychology majors only.)

**PSYCH 480. Fundamentals of Perception and Sensation.** (3) I, II. Empirical and theoretical approaches to phenomena of sensation and perception. Pr.: PSYCH 350. (Psychology majors only.)

**PSYCH 490. Honors Tutorial in Psychology.** (1–3) I, II. Individual directed research and study of a topic in psychology, 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.

**PSYCH 499. Senior Honors Thesis.** (2) I, II. Open only to seniors in the arts and sciences honors program.

**PSYCH 505. Abnormal Psychology.** (3) I, II. An introductory study of behavior pathologies, with emphasis on their etiology and treatment. Pr.: Junior standing: PSYCH 110.

**PSYCH 510. Introduction to Behavior Modification.** (3) I. 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.

**PSYCH 520. Life Span Personality Development.** (3) I, II. S. 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 530. 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, ethics, and prejudice, conformity). Relationship of these topics to personal and media influence, social mores, and social systems is also included. Pr.: PSYCH 110.

**PSYCH 540. 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, childbearing, 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 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 SOCIO 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, dreaming, biofeedback, meditation, psychoactive drugs, brain area dominance, and other factors influencing relationships. Pr.: PSYCH 110.

**PSYCH 559. Psychological Testing.** (3) I. 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, S. 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...
Sociology, Anthropology, and Social Work

Leonard Bloomquist, Head
Professors Finnegan, H. Ottenheimer, M. Ottenheimer, Prins, and Schaeffer; Associate Professors Benson, Bloomquist, Dinkel, Gibbons, Goe, Logan, Riquelme, and Verschelden; Assistant Professors Akard, Britton, Cauble, McGowan, Middendorf, Nofziger, and Williams; Instructor Morgan; Emeriti Professors Dushkin, O’Brien, and Orbach; Adjunct Associate Professor Roper; Adjunct Assistant Professors S. Adamchak and West; Adjunct Lecturer McBride.

www.ksu.edu/sasw

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.

Field experience/internship

During their senior year, qualified students in the sociology/criminology program are encouraged to participate in a professionally supervised internship in a criminal justice agency or other organization directly related to their career interests and aspirations. The aim of the supervised internship is to prepare beginning professionals for careers in a variety of settings related to their major. In special instances, a junior with good standing may apply.

Credit hours ranging from 7 to 13 hours may be earned through the field experience option. Field experience hours may not substitute for core or elective requirements for the major.

*Qualifications include a minimum GPA of 2.5 and a letter of recommendation from a sociology faculty member.

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

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

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 senior year to integrate classroom material with practice experience in a professional setting.

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 210, 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.
SOCIO 301. Topics in Sociology. (Var.) I, II. Supervised independent and/or interdisciplinary study projects. Pr.: SOCIO 211 and consent of instructor.

SOCIO 306. 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) I, II. An examination of the major components in the American criminal justice system and the theoretical perspective that reflect and are affected by norms and changes in our society. Special emphasis is placed on issues of gender, race/ethnicity, and class within criminal justice. 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 363. Global Problems. (3) II. Analysis of globalization and contemporary social problems around the world. Emphasis on non-Western, low-income countries. Examines food and hunger, global warming, debt crisis, democratization, ethnic conflict, and structures of economic and political inequality.

SOCIO 399. Honors Seminar in Sociology. (1-3) On sufficient demand. Readings and discussion of selected topics. Open to nonmajors in the honors program.

SOCIO 432. Community Organization and Leadership. (3) I, II. The analysis of community organization and change in American communities, with special emphasis on nonmetropolitan places. Issues include the analysis of internal community 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) Principles and processes of the organization and structure of human societies. Examines how people create social institutions and how these organizations and structures shape human relations and experiences. Analysis of capitalism and other forms of social organization. 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 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 POLSCI 504. Pr.: SOCIO 211, POLSCI 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, POLSCI 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, and Afghanistan, including literature, geography, social and political structure, ideas. Same as HIST 506, ECON 506, POLSCI 506, ANTH 506, GEOG 506. Pr.: SOCIO 211.

SOCIO 507. Comparative Political Sociology. (3) A survey of the socioeconomic and political dimensions of development in regions such as Latin America, Asia, and Africa. Given the diversity of these regions, the course takes a comparative perspective. Special attention is given to authoritarianism and democratization, U.S. foreign policy, globalization and privatization, free trade, debt crisis, inequality, and social movements. 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 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. A systematic survey of major theoretical approaches in sociology. The works of Marx, Weber, Durkheim, and other classical theorists are examined, along with selections from major contemporary perspectives such as functionalism, symbolic interactionism, structuralism, critical theory, and feminist theory. Current debates over structure versus agency, postmodernism, and other controversies are considered. Pr.: SOCIO 211.

SOCIO 520. Methods of Social Research I. (4) I, II. Treatment of the logic and procedures involved in the formulation of a research problem and the difficulties encountered in conducting research. Examines problems of explanation and prediction, the process of inquiry, elements of the scientific method, the design of research, and analysis in the social sciences. Pr.: SOCIO 211, STAT 330 or equiv. To include 1 credit hour of lab and field research experience.

SOCIO 522. Sociological Field Methods. (3) I. Introduction to fieldqualitative methods. Includes collection and analysis of data using techniques such as interviewing, observation, and unobtrusive measures. Taking field notes, report writing, and ethical issues are also stressed. Pr.: SOCIO 520.

SOCIO 531. Urban Sociology. (3) I. 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. Possible specific topics include rural community revitalization, women in agriculture, peasants, off-farm work, rural policy, 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 541. Wealth, Power, and Privilege. (3) II. Analysis of social inequality, particularly within the contemporary U.S. Competing explanations for unequal wealth, status, power, etc. Emphasis on explanations related to
to class, occupational structure, gender, and ethnicity. Pr.: SOCIO 211.


SOCIO 545. The Sociology of Women. (3) I. Addresses basic concepts, theories, and research methods used in the study of women. The course emphasizes both theoretical and structural approaches and provides an overview of theoretical work in the field. Particular attention is paid to how gender interacts with ethnicity, class, and sexuality. 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. Addresses basic concepts, theories, and research methods used in the study of crime, with an emphasis on critical perspectives on crime as a social phenomenon. The course provides an overview of the nature and extent of major categories of crime as well as the integration of current issues dealing with crime. Pr.: SOCIO 361 or 511.

SOCIO 565. Program and Policy Formulation and Analysis. (3) I. Examination of policies and programs developed to cope with various social problems. Emphasis will be on analytical assessment of 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. S. 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 567.

SOCIO 569. Criminology and Sociology Professional Seminar. (3) I, II. Integrates field experience and everyday practices 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) I, II. The nature of religion and its manifestations in different cultural systems. Same as ANTH 618. Pr.: ANTH 209 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 various cultures. Emphasis upon Africa, Asia, and Latin America. Comparisons of public, service, and economic sectors, including agriculture, marketing, and industry. Examination of policy issues. 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) Intersession only. The course examines the economic and social restructuring of North America and northern Mexico through NAFTA, focusing on this process in its historical context and examining the sectoral and geographically specific impacts of this process precipitated by the North American Free Trade Agreement.

SOCIO 640. Sociology of the Family. (3) I. Origin and development of marriage customs and systems of family organization, the preparation for family life under present conditions. Pr.: SOCIO 211.

SOCIO 643. Sociology of Religion. (3) I. On sufficient demand. The role of religion as an institution in American society. An assessment of the functions of religion and an exploration of contemporary trends and movements, including information on traditional denominations and emerging sects and cults. Pr.: SOCIO 211.

SOCIO 647. Sociology of Work. (3) Analysis of the world of work, both paid and unpaid. Examines changes that affect the organization of work and the distribution of income and power, and examines how change alters class, gender, and ethnic relationships. Pr.: SOCIO 211 and junior standing.

SOCIO 665. Women and Crime. (3) I, II. The nature and extent of criminal offending among women and women offenders’ interactions with legal and criminal justice systems; women’s victimization, including rape and intimate violence; women workers in the criminal justice system, specifically in law, policing, and prison work. Pr.: SOCIO 561 or 545 or other women’s studies course at the 500-level or above.

SOCIO 670. Diversity and Social Interaction in the Workplace. (3) Intersession. Examines changes in the world of work; examines various contexts of work, such as business, the professions, education, and home; analyzes the social organization of work, both in terms of formal arrangements—such as authority and hierarchy—and in terms of informal arrangements—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 710. Classical Social Theory. (3) I. Intensive seminar in classical sociological theory. Examines the theoretical frameworks and methodologies of Karl Marx, Max Weber, and Emile Durkheim, along with selections from the works of other major classical theorists. Analysis of primary texts will be emphasized. Pr.: SOCIO 511 or equivalent.

SOCIO 738. Inter-American Migration. (3) I, II. In odd years. Examines 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 policies. Examines the various social processes that shape migrant flows to the U.S., the incorporation and community formation of immigrants, and the social effects of these 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. Emphasis on social change. Pr.: SOCIO 211 or ANTH 200 and either 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) I. Analysis of the phenomena of human aging, such as physical, 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, II. In odd years. A critical examination of the nature, types, and societal reactions to deviant behavior. Special emphases 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. 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. S. 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 ethnology and ethnography; technological, social, and religious characteristics of cultural systems; discussion and independent study.

ANTH 220. Introduction to Linguistic Anthropology. (3) I, II. Language as a part of human behavior: its origins, uses and abuses, and ways of defining reality. Basic descriptive and ethnographic skills used by anthropologists to learn languages in the field.

ANTH 260. Introduction to Archaeology. (3) I. I, II. Brief introduction to the field of anthropological archaeology. 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 280. Introduction to Physical Anthropology. (3) I. (Odd years only). History of research; principles of evolution and human genetics; primate relations of hominids; fossil evidence of the evolution of hominids; the study of modern race; culture and evolution.

ANTH 281. Introduction to Physical Anthropology Laboratory. (3) I or 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 discussion of selected topics. Open to nonmajors in the honors program.

ANTH 420. Ethnography of Language. (3) I or II. Study of language and dialect 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. Integrative review of anthropological concepts and skills under faculty supervision. For single students or groups of students. Not applicable to majors. 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 North American civilizations, Vikingings 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 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. Pr.: ANTH 200 or 204 or 210. Same as HIST 505, ECON 505, POLSC 505, SOCIOT 505.
ANTH 506. Introduction to the Civilizations of South Asia II. (3) III. 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, 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 relations in the world’s societies. 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) 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, money, trade and markets, 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 ethologists 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. Ethnomusicology. (3) I, in odd years. Ethnic, popular, and traditional musics from around the world. The course samples a wide range of stylistic traditions from Africa, Asia, Oceania, Europe, and the Americas. Emphasis is on understanding musical style in cultural context. 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 exploratory 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 ethnohistorical research. Pr.: ANTH 260.

ANTH 536. African American Cultures. (3) On sufficient demand. Description and comparison of African-derived cultural patterns in the Americas, stressing culture contact and acculturation and synthesis, 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 economics, social, political, and religious structures. Pr.: ANTH 200, 204, or 210.


ANTH 570. North American Indian Archaeology. (3) I, II. The prehistoric native cultures of North America explored through the archaeological record from the peopling of the continent, to the spread of agriculture and village life, up to contact period. Pr.: ANTH 260.

ANTH 602. Anthropological Theory. (3) I or II. Review and integration of the major theoretical approaches in the principal branches of anthropology. Pr.: ANTH 200, 204, or 210.

ANTH 604. Culture and Personality. (3) I or II. Anthropological contributions to personality study; cross-cultural comparisons of personality types, means of personality formation in different cultures; cultural change and personality. Pr.: Three hours of anthropology.

ANTH 618. Religion in Culture. (3) I. The nature of religion in different cultural systems. Pr.: ANTH 200, 204, or SOCIO 211 or consent of instructor. Same as SOCIO 618.

ANTH 625. Independent Reading and Research in Anthropology. (1–3) I or II. Guided reading and research on a specific topic in anthropology. Open to anthropology majors only. May be repeated once for credit if at a different type of museum. Pr.: ANTH 200, 204, 210, 260, or 280.

ANTH 630. Indigenous Peoples and Cultures of North America. (3) II. Description and comparison of native cultures of Canada and the United States; culture contact and change among surviving groups. Pr.: ANTH 200, 204, 210, or 260.

ANTH 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 various cultures. Emphasis upon Africa, Asia, and Latin America. Comparison of public, service, and economic sectors, including agriculture, marketing, and industry. Examination of policy issues. Pr.: SOCIO 211 or ANTH 200 or 204 or 210 and 3 additional hours in sociological anthropology. Same as SOCIO 633.

ANTH 634. Indigenous Peoples and Cultures of Latin America. (3) I or II. On sufficient demand. A survey of the nature and variability of the original cultures of Latin America. Analysis of sample cultures, stressing economic, social, political, and religious structures. Pr.: ANTH 200, 204, 210, or 260.

ANTH 641. Internship in Applied Anthropology. (I, II, S. 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 problems of college students and work experience. Pr.: ANTH 519 and junior standing and consent of program coordinator.

ANTH 673. Mesoamerican Archaeology. (3) II. In odd years. Early foraging societies, the beginnings of agriculture, the rise of civilization; the classic empires of the Maya, Aztec, Tarascans, and their neighbors; relationships with the United States. Pr.: ANTH 260.

ANTH 676. Old World Archaeology. (3) I. On sufficient demand. Study of the evolution of human cultures in Africa, Europe, and Asia from its Palaeolithic origins and neolithic developments to the earliest civilizations. Prerequisites, art, architecture, and archaeological sites are investigated to interpret changes in technology, economy, and culture. Pr.: ANTH 260.

ANTH 679. Archaeological Field Methods. (3) I. Archaeological site survey, 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 purposes of the law. Particular emphasis will be given to perspectives about the science itself, its application to anthropology, and the unique ways in which that science may be used by the law. Pr.: A life science with laboratory requirement in the College of Arts and Sciences.

ANTH 684. Forensic Medicine and the Investigation of Death. (2–3) In even years. Survey of the medical, biological, cultural, and social areas of the investigation of death in various cultural settings. Emphasis on the interaction of culture and biology in the investigative process. Pr.: Life or physical science with laboratory, or consent of 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; methods of classifying human races; cultural inheritance; the distinction of race, culture, personality, and intelligence; a review of modern racism; race as an evolutionary episode. Pr.: ANTH 200, 210, or 280.

ANTH 688. Paleoanthropology. (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, in even years. Detailed study of human skeleton, with special attention to health and demographic conditions in prehistoric cultures and the evaluation of physical characteristics and genetic relationships of prehistoric populations. 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, and preservation. 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 including age, sex, stature, race, anomalies, pathologies, trauma, metric and nonmetric traits, cause of death, and time since death. This course allows greater breadth and depth of osteological analysis than either ANTH 694 or 695, and allows for more concentration on individual methods and techniques and case studies. Pr.: ANTH 694 and 695.

ANTH 730. Field and Laboratory Techniques in Archaeology. (1, 3) II. Participation in archaeological excavations; techniques, methods, and procedures in a field research situation. The laboratory work of cleaning, cataloging, analyzing, and preliminary report preparation of materials recovered. May be repeated once if the areas or problems involved are different. Pr.: ANTH 200 or 260 or consent of instructor.

ANTH 792. Field Methods in Linguistics. (3) On sufficient demand. Techniques of collecting and analyzing linguistic data in the field. Work with language consultants in class, on languages such as Spanish. Pr.: ANTH 220 or LING 280 and 300. Same as LING 792 and LG 792.
Social work courses
SOCWK 510. Introduction to the Social Work Major. (0) I, II. Information for new social work majors on the requirements, content, and objectives of the course sequences, and on the formal admissions process; and emphasizes the importance of the liberal arts foundation as the basis for the professional content; and reviews the CSWE Curriculum Policy Statement plus the NASW Code of Ethics.

SOCWK 260. Introduction to Social Work. (3) I, II. An introduction to the profession of social work and the various fields of social service by observing, experiencing, and analyzing social work, and their place in society. An opportunity for the student to test social work as a possible career choice. Restricted to freshmen, sophomores, first-semester transfer students and social work majors.

SOCWK 260. Introduction to Social Work. (3) I, II. An introduction to the profession of social work and the various fields of social service by observing, experiencing, and analyzing social work, and their place in society. An opportunity for the student to test social work as a possible career choice. Restricted to freshmen, sophomores, first-semester transfer students and social work majors.


SOCWK 499. Senior Honors Thesis. (2) On sufficient demand. Open only to seniors in the arts and sciences honors program.

SOCWK 501. Proficiency Development. (1–3) Integrative review of social work concepts and skills under faculty supervision. For single students or groups of students. Not applicable to major requirements. Not repeatable. Pr.: Consent of instructor and superior performance in relevant course.

SOCWK 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 other parts of our social system; the analysis of present-day philosophy and the functions of social welfare. Same as SOCIO 510. Pr.: One course in each of the following areas: sociology, economics, and political science.

SOCWK 515. Human Behavior in the Social Environment. (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 social world models of practice. Emphasis on social systems understanding of human development. Pr.: FSHS 110, SOCWK 260, BIOL 198, PSYCH 110, SOCIO 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 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 process 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 1 credit hour of lab and field experience. Pr.: STAT 330 and SOCWK 260. Social work majors only. Must be taken concurrently with SOCWK 560.

SOCWK 525. Human Behavior and the Social Environment II. (3) I, II. Continuation of SOCWK 515, with a focus on large systems (organizations and communities). Social systems and ecological perspectives as a framework for understanding macrosystems. Structure and function of large systems and their impact on people. Institutional racism and other forms of institutional discrimination, and the importance of recognizing the functions and the effects of racial, ethnic, and other forms of community diversity. Pr.: SOCWK 515. Must be taken concurrently 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 Practice 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 theories 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 concurrently with SOCWK 519.

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

SOCWK 562. Field Experience. (10) I, II. Supervised field experience in community agencies and programs as a practical application of social work knowledge and skills gained from major course work. Emphasis on direct work with clients, whether individuals, groups, or communities. Seminars make use of student’s experiences to analyze social work theory and practice. Pr.: SOCWK 515, 550, 561; senior standing; social work majors only; permission of the instructor.


SOCWK 564. Social Work Professional Seminar. (2) I, II. A review of various theories in the behavioral sciences which influence the practice of social work. Primary focus is on the course is on the use of these theories in implementing change in various client systems. Pr.: To be taken concurrently with SOCWK 562. Social work majors only.

SOCWK 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 placed on analysis of existing programs and policies and the formulation of alternative policies. Attention will be given to policy change through organizational and legislative action. Same as SOCIO 565. Pr.: SOCWK 510; one course in each of the following areas: sociology, economics, political science; and one course in social science research methods.

SOCWK 566. Social Work in Aging Services. (3) Social work practice course focusing attention on working with institutionalized and noninstitutionalized elderly. Role of the social worker is explored in the context of physical, psychological, and social, and economic aspects of aging. Skills in working with elderly are emphasized through classroom and direct practice in social work or in gerontology. Pr.: Three course hours in social work or gerontology.

SOCWK 567. 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 concurrently 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 permission 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) Internship 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, Davy Goulden, Griffin, MacFarland, Muallar, Orlock, Pinkston, Procter, Schenck–Hamlin, Shelton, Uthoff, and Yagerline; Assistant Professors Bailey and Yum; Instructors P. Anderson, Brown, Hansen, and Stanfield; Emeriti: Professors Fedder and Zivanovic; Associate Professor Hinrichs; Assistant Professor Ross.

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 social change and the importance of the 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:

Note: Students must achieve a grade of B or better in the two foundational theory courses, SPCH 320 and SPCH 330, before they are permitted to enroll in SPCH 550 Senior Colloquium.

Rhetorical and communication theory ........................................ 7
SPCH 080 Speech Seminar .................................................. 0
SPCH 320 Theories of Human Communication ..................... 3
SPCH 330 Rhetoric of Western Thought ............................. 3
SPCH 550 Senior Colloquium ............................................ 1

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 326 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 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:

<table>
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<tr>
<th>Course</th>
<th>Description</th>
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<tbody>
<tr>
<td>THRT 080</td>
<td>Theatre Forum</td>
</tr>
<tr>
<td>THRT 162</td>
<td>Concepts of Theatre Production</td>
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<tr>
<td>THRT 261</td>
<td>Fundamentals of Acting</td>
</tr>
<tr>
<td>THRT 267</td>
<td>Fundamentals of Stage Costuming and Makeup</td>
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<tr>
<td>THRT 368</td>
<td>Fundamentals of Technical Production</td>
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<tr>
<td>THRT 369</td>
<td>Introduction to Theatrical Design</td>
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<tr>
<td>THRT 370</td>
<td>Dramatic Structure</td>
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<tr>
<td>THRT 565</td>
<td>Principles of Directing</td>
</tr>
<tr>
<td>THRT 572</td>
<td>History of Theatre I</td>
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<tr>
<td>THRT 573</td>
<td>History of Theatre II</td>
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<tr>
<td>THRT 574</td>
<td>Fundamentals of Design</td>
</tr>
<tr>
<td>THRT 575</td>
<td>History of Theatre III</td>
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</tbody>
</table>

Twelve additional hours in theatre courses numbered 500 or above (excluding THRT 566 and 710).

Four hours of production work distributed as follows:

Two hours in THRT 210 Drama Participation: One hour in conjunction with THRT 368 Fundamentals of Technical Production; one hour with THRT 267 Fundamentals of Stage Costuming and Makeup.

Two hours in THRT 566 Practicum in Theatre, or in THRT 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.

THRT 162 | Concepts of Theatre Production | | 1 |
| THRT 261 | Fundamentals of Acting | | 3 |
| THRT 369 | Introduction to Theatrical Design | | 3 |
| THRT 370 | Dramatic Structure | | 3 |
| THRT 566 | Fundamentals of Stage Costuming and Makeup | | 3 |

Linguistics

Concentration in dance

A concentration in dance requires the following:

Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
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<tbody>
<tr>
<td>DANCE 195</td>
<td>Improvisational Structures</td>
</tr>
<tr>
<td>DANCE 200</td>
<td>Anatomy for Dancers</td>
</tr>
<tr>
<td>DANCE 205</td>
<td>Dance as an Art Form</td>
</tr>
<tr>
<td>DANCE 225</td>
<td>Principles of Rhythmic Notation</td>
</tr>
<tr>
<td>DANCE 295</td>
<td>Dance Composition I</td>
</tr>
<tr>
<td>DANCE 321</td>
<td>Variations and Partnering</td>
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<tr>
<td>DANCE 380</td>
<td>Musical Stage Dance</td>
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<tr>
<td>DANCE 405</td>
<td>Applied Movement Fundamentals</td>
</tr>
<tr>
<td>DANCE 420</td>
<td>Dance/Theatre Lab (required each semester)</td>
</tr>
<tr>
<td>DANCE 495</td>
<td>Dance Composition II</td>
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<tr>
<td>DANCE 502</td>
<td>Performance Production (minimum of 3 semesters)</td>
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<tr>
<td>DANCE 504</td>
<td>Performance Aesthetics</td>
</tr>
<tr>
<td>DANCE 505</td>
<td>Methods and Materials of Teaching Dance</td>
</tr>
<tr>
<td>DANCE 506</td>
<td>Dance Education Fieldwork</td>
</tr>
<tr>
<td>DANCE 510</td>
<td>Senior Project</td>
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<tr>
<td>DANCE 520</td>
<td>Principles of Dance Technology</td>
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<tr>
<td>THRT 261</td>
<td>Fundamentals of Acting</td>
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<tr>
<td>THRT 267</td>
<td>Drama Participation (with THRT 267 and 368)</td>
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<tr>
<td>THRT 267</td>
<td>Fundamentals of Stage Costume Design</td>
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<tr>
<td>THRT 368</td>
<td>Fundamentals of Technical Production</td>
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Choose one

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<tr>
<th>Course</th>
<th>Description</th>
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<tbody>
<tr>
<td>ART 100</td>
<td>Design I</td>
</tr>
<tr>
<td>ART 190</td>
<td>Drawing I</td>
</tr>
<tr>
<td>HIST 459</td>
<td>History of Dance in Its Cultural Setting</td>
</tr>
<tr>
<td>KIN 455</td>
<td>Movement Exploration and Creative Dance for Children</td>
</tr>
</tbody>
</table>

46–51

Dance technique

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.

DANCE 205 | Dance as an Art Form | | 3 |
DANCE 215 | Improvisational Structures | | 2 |
DANCE 225 | Principles of Rhythmic Notation | | 1 |
DANCE 295 | Dance Composition I | | 3 |
DANCE 321 | Variations and Partnering | | 1 |
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:

DANCE 405, 495, 504, (505 and 506) or 520

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Dance technique

Proficiency must be demonstrated by successful completion with a minimum grade of B in Level III in one technique and Level II in another. Enrollment in a minimum of one technique course and DANCE 420 is required for 4 semesters.
Quiz-out
Students may earn 3 hours of credit for Public Speaking I by completing the quiz-out option with a grade of C or better. Students electing this option must (a) enroll in quiz-out as specified in the current schedule of classes; and (b) attend a mandatory informational meeting at the beginning of that semester.

Speech communication, theatre, and dance courses
SCTD 100. Introduction to Speech Communication, Theatre and Dance. (1) An exploration of the disciplines and connections constituting the Department of Speech Communication, Theatre and Dance.

Rhetoric and communication courses
SPCH 065. Spoken English for International Students. (3) I. Intensive practice in spoken American English for improved fluency and overall comprehensibility.

SPCH 080. Speech Seminar. (0) Special topics and lectures for speech majors. Required of all majors.

SPCH 090. Teaching Public Speaking I and IA. (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) II, I. Alternate to SPCH 106. Principles and practice of message preparation, audience analysis, presentation skills, and speech content. 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 II. (3) I, II. Principles and practice of message preparation, audience analysis, presentation skills, and speech content. Emphasizes political considerations, public speaking. Credit not granted for both SPCH 105 and 106.

SPCH 109. Public Speaking I A, 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. Intercollegiate debate or individual events. Four hours maximum credit. Pr.: Consent of director of the activity.

SPCH 311. Business and Professional Speaking. (3) I. 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. Study 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 interaction. Focus is on applying principles of relational communication.

SPCH 323. Nonverbal Communication. (3) II. Analysis of nonverbal communication in human interaction; theory and research in kinesics, proxemics, and paralinguistics. Pr.: SPCH 105 or 106.

SPCH 325. Argumentation and Debate. (3) II. Basic theories of argumentation with emphasis on the construction and criticism of well reasoned and supported positions. Pr.: SPCH 105 or 106.

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 the 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. 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 students’ critical experiences will focus on a broad array of public discourse including political, social, and cultural messages.

SPCH 399. 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 the literature and develop research 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 curricular and extracurricular 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 325, and THTRE 263.

SPCH 430. Freedom of Speech. (3) I. 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) I. 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. Attention is directed to theory that encompasses political discourse as it affects political behavior. Pr.: SPCH 105 or 106.

SPCH 436. 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 a preliminary to 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) I. The study of communication as persuasion; examination of contemporary approaches to persuasion.

SPCH 550. Senior Colloquium. (1) II. I. 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. (3) 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 716. Small Group Communication. (3) I, in alternate years. Review literature and develop research projects pertaining to the communication processes in small task groups. Topics to include: group communication processes, barriers to group communication, and style-specific theories of effective group communications. Pr.: SPCH 326 or senior standing.

SPCH 720. Perspectives on Communication. (3) Analysis of current perspectives on the communication process. Materials cover assumptions, principles, implications, and selected research within each perspective. 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 activity. 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 integration of modes of 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, speeches, 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 traditional and contemporary approaches to the analysis of public discourse. Pr.: SPCH 330.

SPCH 735. Leadership Communication. (3) II in alternate years. Review the literature and develop research projects regarding the communicative 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 discourse systems and study of oral narratives: published and unpublished texts including coyote stories, adventure stories, personal recollections, etc. Some attention to pronunciation, but major emphasis on the development of a basic reading ability and understanding of the world portrayed in the narratives. Same as LG 594.
LING 295. Archeological Decipherment. (3) I or II, in alternate years. The art and science of four famous cases of decipherment: Mesopotamian cuneiform, Egyptian hieroglyphics, Creto-Mycenaean Linear B, and on-going work on the Maya script. Characteristics of successful decipherments and resultant increases in knowledge about the history 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 acquisition, dialects, language change, 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 families, 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 alternate years. Seminar on a special topic in linguistics: decipherment of ancient writing systems, linguistics applied to the teaching of English or other languages, discourse analysis (especially of spoken texts), etc. Topic to be announced for semester in which offered. 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 including 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 theory, with particular reference to English but including reference 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 sufficient demand. Techniques of collecting and analyzing linguistic data in the field. Work with language consultants in classes, 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 normative 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 standing, and ENGL 530 or LING 600.

Theatre courses
THTRE 080. Theatre Forum. (0–1) I. II. Special topics presentations 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.
THTRE 253. Multicultural Storytelling. (2) Intersession only. Development of oral performance skills in storytelling, with emphasis on cultural/ethnic diversities. Students will do individual research on cultural/ethnic area of their choice.
THTRE 260. Stage Movement. (3) A study of the technique of stage movement and an investigation of the language of gesture.
THTRE 261. Fundamentals of Acting. (3, Theory and practice of fundamental skills and techniques of acting. Major emphasis is on freeing and training the individual’s imagination, intellect, body, and voice through designed exercise and performed scenes. Three hours rec. per week.
THTRE 263. Oral Interpretation of Literature. (3) Techniques of reading from the printed page, selecting portions from various forms of literature, including narrative poetry, essay, lyric, sonnet, nonfictional prose, scenes from plays, and selected short stories.
THTRE 265. Fundamentals of Improvisation II, (3) Introduction to the techniques of improvisation with the emphasis upon practical participation.
THTRE 267. Fundamentals of Stage Costuming and Makeup. (3) I. Basic techniques of stage costume construction and stage make-up. Examination of the costume design process. Conc. enrollment in at least one credit of THTRE 211 required.
THTRE 268. Techniques of Makeup. (1) Techniques of makeup for stage, movies, and television.
THTRE 270. Introduction to Theatre. (3) A comprehensive introduction to theatre: basic elements of theater and theater production, theater history, dramatic literature, multicultural theater traditions and perspectives, and the theater experience.
THTRE 275. Summer Theatre Workshop. (0–6) S. Supervised participation in a summer theatre repertory/stock program. Limited to freshmen and sophomores. May be repeated for a maximum of 6 hours credit. Pr.: Consent of instructor.
THTRE 330. Dramatic Comedy and the Theory of Laughter. (3) Intersession only. An examination of the origin, structure, and historical development of dramatic comedy, with a special emphasis on the psychology of laughter. Representative essays expounding various theories of the comic.
THTRE 361. Intermediate Acting. (3) Emphasis upon expanding the actor’s capabilities through more advanced scene work and character study. Pr.: THTRE 261 and consent of instructor.
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. Incudes examination of relevant history 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 techniques 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 6 hours credit by qualified students. Pr.: Consent of instructor.
THTRE 562. Playwriting. (3) Theoretical study and practical 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 in the art of storytelling. Pr.: SPCH 105 or 106.
THTRE 566. Rehearsal Techniques. (0–3) I. II. A laboratory course for students enrolled in performance and production classes. May be repeated for 6 hours. 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 569. Advanced Technical Production. (3) A lecture-lab course in advanced technical theatre problems of organization, planning, drafting and execution of scenery and lighting. Pr.: THTRE 368.
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. Cultivates 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) 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 imaginations in special populations with special educational needs 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 the
atrical productions. Pr.: THTRE 368.

THTRE 667. Period Styles for the Theatre I. (3) II. Survey of historical styles of architecture, furnishings, and clothing in relation to theatrical design and the history of the theatre from the Greeks to 1800. Pr.: THTRE 572 or conc. enrollment.

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 relation-
ship 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, includ-
ing the theatre of African, Asian, Hispanic, Jewish, and Native Americans. Pr.: Junior standing.

THTRE 673. Theatre for Conflict Resolution. (3) S. Intersession. Drama and theatre techniques used to explore the nature of conflict and how to promote collaboration through action. Pr.: Junior standing.

THTRE 674. Drama Therapy with Adolescents. (3) S. Intersession. The therapeutic uses of drama with adolescents, including normal development, youth-at-risk, ESL, and BD adolescents. Pr.: Junior standing.

THTRE 675. Drama Therapy with Older Adults. (1–3) S. Intersession. The therapeutic uses of drama with older adults, focusing on the development of life review, social relatedness, and creative self-expression in the here and now. 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 mem-
bers 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 manage-
ment, promotion, finance, organization; emphasis on con-
tract negotiations and use of facilities.

THTRE 760. Principles of Drama Therapy. (3) Study of theory and practice in the use of drama as therapy, includ-
ing assessment and treatment, individual and group prac-
tice, and psychodrama. Pr.: THTRE 664 or 665.

THTRE 761. Advanced Acting. (3) Studies in style, tech-
ique, 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. Cross-listed as ENGL 762. Pr.: THTRE 562.

THTRE 763. Reader's Theatre. (3) The nature, purpose, and provision of oral interpretation in the the-
atre; 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 764. Early American Theatre. (3) Studies in the

drama and stagecraft of the colonies and the United States from the beginnings to 1900. Pr.: Junior standing.

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 770. Creative Arts Therapies. (3) I. Survey of

creative arts therapy modalities: drama/psychodrama, art, poetry/bibliotherapy, music, and dance/movement.

Instruction in theory and hands-on experience with each modality, as well as reading, discussion, and methods for using the modalities interdisciplinarily. 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 selec-
tion and production methods; operation of and assistance 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 produ-
tion. Emphasis on advanced techniques in research, analysis, and production problems. 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 made by women in theatre as playwrights, managers, directors, and performers; contemporary women in theatre and their expressions 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 Direct-
ning 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 ther-

apy. 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 156. 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 control and release of energy. Three hours lab a week.

DANCE 195. Improvisational Structures. (2) Exploration of personal creative sources for spontaneous move-
ment through improvisational structures. Emphasis on solo and group problem-solving in creating a performance work.


DANCE 205. Dance as an Art Form. (3) I. Dance in its religious, social, and artistic forms. Film, slides, demonstra-
tions, and lectures will trace the function of dance in soci-
ety, the influence of society on dance, how dance relates to other art forms, and current trends in the dance world.

DANCE 225. Rhythmic Notation for Dance. (1) On suf-
cient demand. Introduction to basic elements of meter, tempo, rhythm, and notation. Application and practice to dance pedagogy, performance, and choreography.

DANCE 250. Performance Styles. (1) Study and practice of theatrical and performance of specific periods/historical, character, or ethnic/specialty dance styles. May be repeated three times.

DANCE 295. Dance Composition I. (3) On sufficient demand. Introduction to the principles of the choreographic craft. Practical experience in development of movement phrases. Culminating presentation and critique of work. Pr.: DANCE 195

DANCE 321. Variations and Partnering. (1) On suffi-
cient demand. Directed study in the principles of partnering and repertoire performance in various styles and forms of choreography. Pr.: Consent of instructor.

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 con-
sent 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 con-
sent 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 325 and con-
sent of instructor.

DANCE 371. Jazz Dance II. (2) I, II. Intermediate course in jazz technique and style focusing on development of iso-
lations, 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 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. Pr.: Sophomore standing.

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

John Boyer, Head

Professors Boyer, Higgins, Johnson, Kemp, Milliken, Nelson, and Yang; Associate Professors El Barmi, Loughin, Neill, and Pontius; Assistant Professor Zhou; Emeritus: Professors Peng, Feyerherm, and Fryer.

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www.ksu.edu/stats/

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 Software Design and Implementation .................. 4
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 941 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

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 populations; 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 biological sciences. 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, 330, 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 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, 330, or 340.

◆ 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. Descriptive statistics and graphical methods; basic probability; probability distributions; several random variables; Poisson processes; computer simulation of random phenomena; confidence interval estimation; hypothesis testing. Pr.: MATH 221 and CIS 300.

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 conc. 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 variates; expected values; confidence intervals; binomial parameter, median, normal mean, and variance; testing simple hypotheses using CIs and chi-square 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 variates; 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 biserial 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. (2) 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. (2) I, II, S. 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.: MATH 205, 210, or 220 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, analysis of covariance, multiple comparison methods, contrasts, factorial studies, blocking, subsampling, and split-plot designs. Pr.: Prior knowledge of matrix or linear algebra and one prior course in statistics. A student may not receive credit for both STAT 704/705 sequence and STAT 713.

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 reversal designs; 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; 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
Ike C. Ehie, Associate Dean
David R. Vruwink, Assistant Dean

110 Calvin Hall
785-532-7190
www.cba.ksu.edu/cba

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 Association to Advance Collegiate Schools of Business (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 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 must achieve a 2.3 K-State GPA by the time they complete 30 credit hours to remain in good standing.

Students with previous academic work (either at K-State or elsewhere) requesting transfer to the College of Business Administration must have a 2.3 or higher grade point average and enroll in the BAPP curriculum. Transfer students must achieve a K-State GPA of 2.5 or higher on the first 12 or more hours of K-State course work to be able to continue in the College of Business Administration. 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 60 or more credit hours will not be allowed to enroll in BAPP unless they are first-semester transfer students. Students with more than 60 hours who have consistently met the grade point requirements may be admitted into degree-track majors.

Transfer students must complete at least 12 hours at K-State before they can be admitted into degree track majors.

Admission to a degree-track (major) in accounting, finance, management, marketing, management information systems, or general business 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 with a K-State grade point average of 2.5 or above. For accounting and MIS the grade point average for admission to the degree track is 3.0 K-State GPA.

Requirements for BAPP

Communications

ENGL 100 Expository Writing I ............................ 3
ENGL 200 Expository Writing II ........................... 3
ENGL 300 Expository Writing III .......................... 3

Communications elective

Choose six communications elective hours from the following list:

ENGL 300 Expository Writing III
ENGL 306 Professional Selling and Sales Management
SPCH 311 Business and Professional Speaking
SPCH 320 Theories of Human Communication (theory)
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 (theory)
SPCH 399 Honor Seminar Small Group Communication

SPCH 425 Theories of Organizational Communication (theory)
SPCH 430 Freedom of Speech
SPCH 435 Political Communication (theory)
SPCH 450 Special Studies in Human Discourse
SPCH 480 Intercultural Communication
SPCH 526 Persuasion
SPCH 726 Small Group Communication (theory)
SPCH 735 Leadership Communication (theory)

Courses approved for university general education credit.

Note: At least three hours of the communication electives must be skills courses (as opposed to theory).

Quantitative

MATH 100 College Algebra**
MATH 205 General Calculus and Linear Algebra**

Computing

CIS 101 Introduction to Personal Computing
CIS 102 Spreadsheet Applications
CIS 103 Database Applications

Any of the following may be substituted for CIS 101, 102, 103:

CIS 200 Fundamentals of Software Design
CIS 209 C Programming
CIS 210 Introduction to Computer Programming

Optional: CIS 104 Word Processing (1 hr.) will count as unrestricted elective.

MANGT 366 Management Information Systems
STAT 350 Business and Economic Statistics I

Economics

ECON 110 Principles of Macroeconomics
ECON 120 Principles of Microeconomics

Social science electives

Choose nine social science elective hours from the following list:

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.

FHS 105 Introduction to Personal and Family Finance
FHS 110 Introduction to Human Development
FHS 301 The Helping Relationship
FHS 302 You and Your Sexuality
FHS 350 Family Relationships and Gender Roles
FHS 400 Family and Consumer Economics

GEOG All courses except GEOG 220 and 221
GNHE 310 Human Needs

POLSC All courses

PSYCH All courses

SOCIETY All courses

Humanities electives

Choose six humanities elective hours from the following list:

AMETH 160 Introduction to American Ethnic Studies
ANTH 515 Creativity and Culture*
ANTH 516 Ethnomusicology*
ANTH 517 African American Music and Culture*
ARCH 301 Appreciation of Architecture
ART All courses*
DANCE All courses*
DEN 210 History of Building and Construction
ENGL All literature courses
ENV 205 Graphics I
ENVS 206 Graphics II
ENVS 250 History of Design Environment I
ENVS 251 History of Design Environment II
HIST All courses
MUSIC All courses*
PHIO All courses*
THTRE All courses*
hours of the pre-professional requirements. Degree-track applications must be filed by the time students complete 60 credit hours. Decisions for admission will be made as soon as possible after the end of the semester.

**Degree requirements**
Candidates for the bachelor of science in business administration must complete at least 27 credit hours of resident instruction in upper-division courses after acceptance and enrollment in a degree track program in the college. Exceptions may be considered for those who have consistently exceeded a 2.50 grade point average on upper-division courses applied toward the degree. See additional residency requirements earlier in this catalog.

### University General Education Requirements

The College of Business Administration requires 18 credit hours to fulfill the university general education requirements. These 18 UGE credit hours may overlap with the business general studies requirements in communication electives, humanities, social sciences, and natural sciences. At least 6 of the 18 UGE credit hours must be taken in courses numbered 300 or above. The business general education requirements include:

- **ECON 110** Macroeconomics .......................... 3
- **ECON 120** Microeconomics .......................... 3

The remaining 12 hours may be taken from communications courses, humanities, social sciences, and natural sciences or any course (except business) approved as UGE. Students must choose courses from at least three different categories to fulfill UGE requirements, keeping in mind that at least 6 credit hours must be 300 level or above.

Social sciences ............................................. 3
Humanities .................................................. var.
Natural sciences ......................................... var.
Communication .......................................... var.
Nonbusiness .............................................. var.

In course descriptions, UGE courses are marked with a ♦. For more information about UGE requirements, see the Degrees section of this catalog. For a current list of approved UGE courses:

- [www.ksu.edu/registrar/enroll/gened.html](http://www.ksu.edu/registrar/enroll/gened.html)

### 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.

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**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.

To qualify for the business honors program, students, other than transfer students, must have at least 15 college credits and 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.

### Certificate in international business

The certificate in international business appeals to students seeking adventure, growth, and international exposure that will enhance their personal and professional development. The certificate will be awarded to students who achieve a superior level of expertise in international aspects of business. This certificate will be noted on the student’s transcript.

### Requirements

- Advanced foreign language study, Level 4 or the equivalent of Level 4, in a foreign language sequence offered by the Department of Modern Languages.
An additional 6 hours in language courses numbered 500 or above in a single language.

MENG 100 World Regional Geography
At least 12 hours of approved international courses. Nine hours must be from international business courses.

An approved study abroad experience or an international internship specifically approved for this certificate.

Students must earn a 2.75 GPA on all courses used for the certificate program. Students must earn at least 50 percent of the credits that apply to the certificate program from K-State.

The number of students admitted into the certificate in international business will be based on resource availability.

**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 and advised by the College of Education 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 study of the 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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<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>MANGT 420</td>
<td>Management Concepts</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 400</td>
<td>Marketing</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 450</td>
<td>Introduction to Finance</td>
<td>3</td>
</tr>
</tbody>
</table>

Students with a fall 2001 or later date of entry to K-State must have a 2.5 K-State GPA and must achieve a grade of C or better in each of the five courses that comprise the minor.

**Small Business Development Center**

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 75 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 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**

Professors Donnelly and Graves; Associate Professors Deines, Fisher, Ott, Thomas, and Vruwink; Assistant Professor Kovar; Instructors Charland, Lyle, Smith, and Vogt. 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. Requirements that accomplish this objective are specified below.

**Requirements for major**

**BAPP Program**

(See general section of the College of Business Administration.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ACCTG 431</td>
<td>Accounting Information Systems and Controls</td>
<td>3</td>
</tr>
<tr>
<td>ACCTG 432</td>
<td>Accounting Theory and History</td>
<td>3</td>
</tr>
<tr>
<td>ACCTG 442</td>
<td>Accounting for Not-For-Profit Entities</td>
<td>2</td>
</tr>
<tr>
<td>ACCTG 444</td>
<td>Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACCTG 641</td>
<td>Accounting Theory and History</td>
<td>3</td>
</tr>
<tr>
<td>ACCTG 642</td>
<td>Accounting Research</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 420</td>
<td>Management Concepts</td>
<td>3</td>
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<tr>
<td>MANGT 421</td>
<td>Introduction to Operations</td>
<td>3</td>
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<tr>
<td>MANGT 595</td>
<td>Business Strategy</td>
<td>3</td>
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<tr>
<td>MANGT 596</td>
<td>Business, Government, and Society</td>
<td>3</td>
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<tr>
<td>MKTG 400</td>
<td>Marketing</td>
<td>3</td>
</tr>
<tr>
<td>STAT 351</td>
<td>Business and Economic Statistics II</td>
<td>3</td>
</tr>
</tbody>
</table>

**Major field**

(3) I, II. An introduction to the operating activities of businesses 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.

(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 lecture and one hour lab a week. Pr.: ACCTG 231.

(5) 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.

(6) I. II. Problems in Accounting. (Var.) I, II Pr.: Background of courses needed for the problems undertaken and consent of instructor.

(7) 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 sources 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) II. An intensive study of an accountant’s 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 Higgins, B. Van Ness, R. Van Ness, Warr, and Yang; Instructors Kruse and Sheppard; Emeriti Professors Chalmers, Hollinger, and Richards.

www.cba.ksu.edu/cba/depart/finance

The finance curriculum allows the student to specialize in financial management, financial controllership, or financial services. The financial management option 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 option is designed for graduates who wish to pursue a career as a financial manager or analyst.

The financial controllership option supplements the analytical focus of the financial management track with additional accounting skills. This option is designed for those who intend to pursue careers related to the controllership function of a firm.

The financial services option 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 option 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 students develop these necessary skills through active learning methods.

Requirements for major

BAPP Program .......................................................... 63

(See the general section of the College of Business Administration.)

Core courses ........................................................................ 21

FINAN 450 Principles of 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 requirements .................................................. 18

ACCTG 331 Accounting Processes and Controls ......... 4
FINAN 453 Careers in Finance ........................................ 1
FINAN 510 Debt Securities and Markets ..................... 3
FINAN 520 Equity Securities ........................................... 3
FINAN 665 Intermediate Finance ............................. 4
FINAN 675 Cases in Finance ......................................... 3

Financial controllership option ....................................... 9

ACCTG 342 Taxation I ...................................................... 3
ACCTG 432 Managerial Reporting .............................. 3
ACCTG 433 Financial Reporting .................................... 3

Financial management option ......................................... 9

Select one from the following

Select 6 credit hours from

FINAN 561 Financing Emerging Businesses ............. 3
FINAN 562 Short-Term Financial Management .............. 3
FINAN 643 International Financial Management ....... 3
FINAN 653 Security and Portfolio Analysis ................. 3
FINAN 654 Derivative Securities and Markets .......... 3

Financial services option ............................................... 9

ACCTG 433 Financial Reporting .................................... 3

Select 6 credit hours from

FINAN 460 Insurance .................................................. 3
FINAN 531 Commercial Banking ............................... 3
FINAN 552 Real Estate .................................................. 3
FINAN 561 Financing Emerging Businesses ............. 3
FINAN 653 Security and Portfolio Analysis ................. 3
FINAN 661 Professional Financial Planning ............... 3

Economics

ECON 510 Intermediate Macroeconomics ................. 3
ECON 520 Intermediate Microeconomics .................... 3

Economics elective ......................................................... 3

Economics electives must be selected from economics course offerings numbered 500 or above in consultation with the student’s academic advisor. Economics electives may not overlap with economics courses used as social science, restricted, or unrestricted electives.

Nonbusiness electives* ................................................. 9

* 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

FINAN 250. Personal Investing and Risk Management. (3) I, II. Provides a framework for identifying, analyzing, and managing the lifetime financial risks faced by the average person. An overview of the types and mechanics of investment instruments, development of personal risk profiles, investment plans, collection of methods, diverse and non-diverse risk, and risk avoidance and hedging methods. Pr.: Sophomore standing and MATH 100.

FINAN 450. Principles of Finance. (3) I, II. Study of the basic principles of finance, including discounted cash flow analysis, risk-return tradeoff, asset pricing models, and financial and real asset valuation. Applications of these concepts to the firm’s investment and financing decisions and performance analysis will be discussed. Pr.: ECON 120, STAT 350, and ACCTG 231.

FINAN 453. Careers in Finance. (1) I, II. An overview of the various types of career opportunities available in the field of finance, and how to prepare for them. Should be taken prior to first semester of senior year. Pr.: Junior standing.

FINAN 460. Insurance. (3) I, II. A study of life, property, casualty, and health insurance from the purchaser’s point of view with additional emphasis on the operation and contribution of the insurance industry. Pr.: ECON 110.

FINAN 498. Problems in Finance, (Var.) I, II. S. Internship program and selected projects appropriate to the student’s program of study. Pr.: Consent of department head based on background courses appropriate to the project selected.

FINAN 510. Debt Securities and Markets. (3) I, II. An analysis of the features, valuation, and use of debt securities by both businesses and governments, from the investor’s point of view. The determinants of interest rates and the impact of inflation on asset returns. Applications to the management of bond portfolios and the use of derivatives of debt securities will be discussed. Pr.: FINAN 450. May be taken conc. with FINAN 520.

FINAN 520. Equity Securities and Markets. (3) I, II. An analysis of equity securities and markets from the investor’s point of view. Topics covered include the mechanics of investing in equity securities, risk-return tradeoff, asset pricing models, market efficiency, valuation of equity securities, portfolio performance measurement, and an introduction to equity derivatives. Pr.: FINAN 450. May be taken conc. with FINAN 510.

FINAN 531. Commercial Banking. (3) I, II. An application of financial management concepts to the liquidity management, investment portfolio analysis, capital budgeting, and capital structure decision-making process required by a commercial bank to perform effectively its financial intermedium role within the financial system’s institutional, regulatory, and competitive environment. Pr.: FINAN 450.

FINAN 552. Real Estate. (3) I, II. Principles and practices including legal, economic, and social implications from the viewpoint of the real estate practitioner, investor, and society. Pr.: Junior standing.


FINAN 562. Short-Term Financial Management. (3) I. 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 510 and 520.

FINAN 643. International Financial Management. (3) I. 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 653. Security and Portfolio Analysis. (3) I, II. The analysis and valuation of securities and the management of investment portfolios. Students analyze the compo-
sition of, make buy/sell recommendations for, and evaluate the performance of an actual portfolio. Pr.: FINAN 510 and 520.


FINAN 661. Professional Financial Planning. (3) I, 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 510 and 520.

FINAN 665. Intermediate Finance. (4) I, II. An in-depth study of a firm’s investment and financing decisions, firm performance measurement, and financial planning for a business enterprise. Topics include financial statement analysis and forecasting, capital budgeting, risk considerations in capital budgeting, cost of capital, capital structure theory and practice, distribution policy, leasing, and mergers and acquisitions. Pr: FINAN 510 and 520. (Not available for credit to students taking FINAN 815 or 860.)

FINAN 675. Cases in Finance. (3) I, II. A capstone course in finance. Utilizes the case method of instruction to provide students with the opportunity to integrate financial concepts and theories with the objective of solving financial problems in a real world setting. Analytical and written and oral communication skills are developed using cases in such topics as financial analysis and forecasting, investment and financing decisions, distribution policies, security issuance, and international aspects of finance. Pr.: FINAN 510 and 520.

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.

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.: ENG 120 and SPCH 106.

GENBA 498. Problems in Business Administration. (Vac.) 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 convocations 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 important feminist movements 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

Brian Niehoff, Head

Professor Ebadi and Niehoff; Associate Professors Elsea, Hagmann, Katz, McCalon, McHaney, Prince, Sheu, Swanson, and W. Turnley; Assistant Professors Bloodgood, Cassidy, Kimery, and Mudrack; Instructors Borth, Kovar, Letcher, Redina, Rice, Satzler, Seeberger, S. Turnley, and Whitney–Bammerlin; Emeriti: Professors Barton–Dobenin, Deihl, Jones, Paul, and Townsend; Associate Professor Thiessen; Assistant Professors Buzenberg and Riley.

www.cba.ksu.edu/cba/depart/manager

The curriculum in management presents two on-campus majors: management information systems (MIS) and management. Through the Department of Management, the College of Business Administration also offers a general business degree taught using distance learning technology. This major is available only to off-campus students.

Management majors select an area of emphasis in human resource management, operations management, or 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

ECON 540 Managerial Economics ......................... 3

FINAN 450 Principles of Finance ....................... 3

MANGT 420 Management Concepts ....................... 3

MANGT 421 Introduction to Operations ....................... 3

MANGT 595 Business Strategy ....................... 3

MANGT 596 Business, Government, and Society ............ 3

MKTG 400 Marketing ........................................ 3

STAT 351 Business and Economics Statistics I ............ 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 elective (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

MANGT 623 Compensation Management .................... 3

MANGT 630 Labor Relations Law ......................... 3

MANGT 631 Collective Bargaining ......................... 3

MANGT 633 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 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 662 Supply Chain 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 from the MIS major field requirements, or from the courses listed below.

A total of 9 of the above credits must be management courses.

ACC/CTG 331 Accounting Processing and Control .......... 4

FINAN 520 Equity Security and Markets ................. 3

MANGT 440 Entrepreneurship ................................ 3

MKTG 450 Consumer Behavior ................................ 3

MKTG 542 Professional Selling and Sales Management ............. 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) MANGT 652 or MANGT 653 or MANGT 535, and (4) MKTG 542 or MKTG 543.

Note on economics electives: The economics elective required by an emphasis area can be satisfied by all economics courses numbered above 120 except 505 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

Quantitative

STAT 351 Business and Economic Statistics II. .............. 3

Restricted electives .................................................. 9

Humanities, natural science, quantitative, social science

Business core courses ............................................ 21

FINAN 450 Principles of Finance ................................ 3

FINAN 450 Management Concepts ............. 3

FINAN 420 Introduction to Operations Management .......... 3

MANGT 520 Organizational Behavior ............. 3

MANGT 520 Business Strategy ............................ 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 520 Equities and Securities and Markets .......... 3

MANGT 367 Information Systems Fundamentals ...... 3

MANGT 390 Business Law ................................... 3

MANGT 440 Entrepreneurship ............................. 3

MANGT 521 Quantitative Management .............. 3

MANGT 530 Industrial and Labor Relations ........... 3

MANGT 531 Personnel and Human Resource Management .... 3

MANGT 535 Personnel Law ................................ 3

MANGT 537 Industrial Conflict Resolution .......... 3

MKTG 450 Consumer Behavior ......................... 3

MKTG 542 Professional Selling and Sales Management ...... 3

MKTG 546 Services Marketing ........... 3

Unrestricted electives .............................................. 6

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

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 a week. Pr.: MATH 100, 205, or 220, sophomore standing. Crosslisted with DEN 300.

MANGT 366. Management Information Systems. (3) I, II. 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.: Demonstrated competence in use of computer spreadsheets. Pr.: CIS 101, 102, 103 or 200, 209, or 210; 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. or conc. MANGT 366.

MANGT 390. Business Law I. (3) I, II. 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) I, II, S. 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, 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 the conception, start-up, organization, and development 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 financing, 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 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 senior 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, II. Quantitative techniques, models, and the integrative nature of management systems. Includes PERT, CPM, linear programming, and inventory models. Pr.: CIS 101, 102, 103 or 200 and lab, MANGT 420, MATH 205, and STAT 350.

MANGT 522. Operations Planning and Control. (3) II, in odd years. 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 and information systems. Topics include aggregate planning, master production scheduling, production activity planning and control, operations information systems, inventory control, material requirements planning, and total quality control. Pr.: MANGT 421.

MANGT 530. Industrial and Labor Relations. (3) I. 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 Resource Management. (3) I, 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.

MANGT 535. Personnel 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 causes and nature 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) I, II. On sufficient demand. 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) I, 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 learning, and evaluation of 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. An integration of previous courses through the study of problems in policy formulation and implementation. Cases and current topics with emphasis on strategic planning. Open only to seniors or nonbusiness graduate students. Pr.: FINAN 450, MANGT 420, and MKTG 400.

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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 in unfair labor practice cases, 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 a number of techniques 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 operating system. Pr.: MANGT 420, 421.

MANGT 653. Business Project Management. (3) I. This course provides an overview 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 662. Supply Chain Management. (3) II. This course addresses the interrelationship between operations and other functions required to deliver value to the end customer of a supply chain. Topics include major processes to manage the flows of goods, services, and information through core functions such as logistics, operations, and purchasing in the supply chains of both goods and service providers. Pr.: MANGT 421 or permission of instructor.

MANGT 666. Applications of Data Models in Business. (3) I, II. Examination of interrelationship 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) I. II. Application of fundamental concepts learned in introductory systems analysis courses. 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.

MANGT 676. Management of Local Area Networks. (3) I, II. Study of telecommunication 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. II. 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 666.

MANGT 690. International Management. (3) On sufficient demand. Examination of business decision parameters and strategies 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.

## Marketing

David M. Andrus, Head
Professor Andrus; Associate Professors Gwinner and Janda; Assistant Professors Donovan, Martin, McFarland, Trocchia, and Suh; Instructors Alexander, Crow, Fallin, and Fogg.

www.cba.ksu.edu/cba/depart/market

Study in marketing covers such areas as consumer behavior, marketing channels, marketing research, international marketing, retailing, professional selling, sales management, business marketing, sports marketing, electronic 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 with other fields may be arranged by consulting the Department of Marketing.

### Requirements for major

**BAPP program** ........................................ 63

| Business core courses .................................................. 21 |
| FINAN 450 Principles of Finance ..................................... 3 |
| MANGT 420 Management Concepts ..................................... 3 |
| MANGT 421 Introduction to Operations .................................. 3 |
| MANGT 595 Business Strategy ........................................... 3 |
| MANGT 596 Business, Government, and Society ...................... 3 |
| MKTG 400 Marketing ..................................................... 3 |
| STAT 351 Business and Economic Statistics .......................... 3 |
| **Major field** ......................................................... 21 |
| MKTG 450 Consumer Behavior .......................................... 3 |
| MKTG 544 International Marketing ...................................... 3 |
| MKTG 642 Business Marketing ......................................... 3 |
| MKTG 690 Marketing Management ....................................... 3 |
| Plus 9 hours from: ....................................................... 3 |
| MKTG 541 Retailing ...................................................... 3 |
| MKTG 542 Professional Selling and Sales ............................. 3 |

Management 3

MKTG 543 Integrated Marketing ........................................ 3
MKTG 545 Marketing Channels ............................................ 3
MKTG 546 Business Marketing ............................................. 3
MKTG 547 International Business .......................................... 3
MKTG 550 Business Marketing ............................................. 3
MKTG 630 Sports Marketing ............................................... 3
MKTG 635 Electronic Marketing .......................................... 3

### Economics electives

Select two courses from the following list:

- ECON 507 The Japanese Economy ....................................... 3
- ECON 510 Intermediate Macroeconomics .............................. 3
- ECON 520 Intermediate Microeconomics .............................. 3
- ECON 521 Intermediate Microeconomics Theory ..................... 3
- ECON 523 Human Resources Economics .............................. 3
- ECON 527 Environmental Economics .................................. 3
- ECON 530 Money and Banking .......................................... 3
- ECON 536 Comparative Economics .................................... 3
- ECON 540 Managerial Economics ....................................... 3
- ECON 555 Urban and Regional Economics ............................ 3
- ECON 620 Labor Economics ............................................. 3
- ECON 630 Introduction to Econometrics ............................... 3
- ECON 631 Principles of Transportation ............................... 3
- ECON 633 Public Finance ................................................ 3
- ECON 640 Industrial Organization and Public Policy ............... 3
- ECON 681 International Trade .......................................... 3
- ECON 682 Economics of Underdeveloped Countries .............. 3
- ECON 690 Monetary, Credit, and Fiscal Policies .................... 3

Economics electives may not overlap with economics courses used as social science, restricted, or unrestricted electives.

### Restricted electives

- Humanities ................................................................. 9
- Social science ............................................................. 9

### Natural science

All courses in the BAPP requirements in this college section.

### Quantitative

- All courses in the computing and information sciences department numbered 300 and above; MATH 221 or 222; all statistics courses numbered 500 and above.
- **Social science**—All courses in anthropology, 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; MED 460 Impact of Engineering Technology on Society; ENVD 510 Places and People; FSHS 110 Introduction to Human Development; FSHS 350 Family Relationships and Sex Roles.

### Unrestricted electives

- Humanities ................................................................. 6
- Natural science ............................................................ 6

### 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** ........................................ 64

Complete the BAPP program with one exception: natural science requirements—8 credit hours; BIOL 198 Principles of Biology (4 hours) and CHM 110 General Chemistry (3 hours) and CHM 111 General Chemistry Lab (1 hour).

| Business core courses .................................................. 43 |
| FINAN 450 Principles of Finance ..................................... 3 |
| MANGT 420 Management Concepts ..................................... 3 |
| MANGT 421 Introduction to Operations .................................. 3 |
| MANGT 595 Business Strategy ........................................... 3 |
| MANGT 596 Business, Government, and Society ...................... 3 |
| **Major field** ......................................................... 3 |
| MKTG 400 Marketing ..................................................... 3 |

### Business core courses

- FINAN 450 Principles of Finance ..................................... 3
- MKTG 545 Marketing Channels ............................................ 3
- MKTG 546 Business Marketing ............................................. 3
- MKTG 547 International Business .......................................... 3
- MKTG 550 Business Marketing ............................................. 3
- MKTG 630 Sports Marketing ............................................... 3
- MKTG 635 Electronic Marketing .......................................... 3

### Agribusiness option

- FINAN 450 Principles of Finance ..................................... 3
- MANGT 420 Management Concepts ..................................... 3
- MANGT 421 Introduction to Operations .................................. 3
- MANGT 595 Business Strategy ........................................... 3
- MANGT 596 Business, Government, and Society ...................... 3
- MKTG 400 Marketing ..................................................... 3
- MKTG 450 Consumer Behavior .......................................... 3
MKTG 544 International Marketing .......................... 3
MKTG 642 Marketing Research ................................. 3
MKTG 690 Management ........................................... 3
STAT 351 Business and Economics Statistics II ........... 3
AGEC 318 Food and Agribusiness Management ............ 3
AGEC 300 Production Economics .............................. 3
AGEC 305 Agricultural Market Structure ..................... 3
Economics electives .................................................. 3
Select one course from the following:
ECON 507 The Japanese Economy ............................... 3
ECON 510 International Macroeconomics ..................... 3
ECON 520 Intermediate Microeconomics ....................... 3
ECON 521 Intermediate Microeconomic Theory ............... 3
ECON 523 Human Resources Economics ....................... 3
ECON 527 Environmental Economics ........................... 3
ECON 530 Money and Banking .................................... 3
ECON 536 Comparative Economics .............................. 3
ECON 540 Monopolistic Economics .............................. 3
ECON 555 Urban and Regional Economics ..................... 3
ECON 620 Labor Economics ...................................... 3
ECON 630 Introduction to Econometrics ....................... 3
ECON 631 Principles of Transportation .......................... 3
ECON 633 Public Finance ........................................... 3
ECON 640 International Organization and Public Policy .... 3
ECON 681 International Trade ..................................... 3
ECON 682 Economics of Underdeveloped Countries ........... 3
ECON 690 Monetary, Credit, and Fiscal Policies ............... 3

Sixteen hours must be taken from the following three groups of electives:

Agribusiness electives ........................................... 6
Select 6 credit hours from the following:
AGEC 410 Agricultural Policy ..................................... 3
AGEC 415 Global Agricultural Economics ..................... 3
AGEC 416 Agricultural Law and Economics .................... 3
AGEC 420 Commodity Futures Marketing ..................... 3
AGEC 513 Agricultural Finance ................................... 3
AGEC 515 Food and 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 ..................... 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 680 Agricultural Risk Management ...................... 3

Agricultural sciences and/or product technology electives ........................................... 6-8
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 340 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 Meat Science ............................................. 3
ASI 361 Conversion of Farm Animals to Carcasses .......... 2
ASI 405 Fundamentals of Milk Processing ..................... 3
ASI 430 Food Products Evaluation .............................. 3
ASI 694 Food Plant Management ............................... 3
ENTOM 300 Economic Entomology ............................ 3
ENTOM 305 Livestock Entomology ............................... 3
HN 132 Basic Nutrition ............................................ 3
HN 301 Trends in Food Products ............................... 3
FOR 285 Introduction to Forestry .............................. 3

GENAG 500 Food Science Seminar ................................ 3
GRSC 100 Principles of Milling .................................. 3
PLPTH 500 Principles of Plant Pathology ..................... 3

Additional agribusiness option electives ........................................... 2-4
Select additional courses from agribusiness electives and agricultural sciences and/or product technology electives to total 16 credit hours.

Marketing courses

MKTG 400. Marketing. (3) I, II. 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 and 120, junior standing.

MKTG 450. Consumer Behavior. (3) I, II. An examination of consumer motives, attitudes, and decision processes as these relate to product image 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) Eight weeks of applied marketing business experience designed to coordinate the interests of students and firms. Pr.: FINAN 450, MANGT 420, MKTG 400, junior standing, and consent of instructor.

MKTG 498. Independent Study in Marketing. (Var.) I, II. Selected topics in marketing. Pr.: Consent of departement head.

MKTG 541. Retailing. (3) I, II. This course is designed to introduce the student to the role retailing performs in the distribution of consumer goods and services. This course will survey the retailing environment and incorporate strategic planning from the management point of view; study of retail policies and organizations, merchandise control, personnel management, retail accounting, and expense control. Pr.: MKTG 450.

MKTG 542. Professional Selling and Sales Management. (3) I, II. Focuses on interpersonal communications between buyers and sellers, both oral and written. The mechanics and intricacies of personal sales presentations, which will be developed through practice. Management of the sales force in nonretail settings including hiring, training, organizing, motivating, supervising, and evaluating sales representatives and techniques of sales forecasting. Pr.: MKTG 400.

MKTG 543. Integrated Marketing Communications. (3) I, II. Focuses on the management of promotional programs which include elements of advertising, personal selling, sales promotion, and public relations. Includes a review of concepts from economics, behavioral sciences, and mathematics which play a role in creating, executing, and evaluating promotional programs. Pr.: MKTG 450.

MKTG 544. International Marketing. (3) I, II. This course deals with the problems and perspectives of marketing across national boundaries. It also focuses on the tools and practices for structuring and controlling marketing programs related to overseas business. Emphasis is on the management of marketing functions in global context. Topics include international trade organizations, international economic factors, foreign business customs, and the international marketing mix. Pr.: MKTG 400.

MKTG 545. Marketing Channels. (3) I. Study of the quantitative and qualitative factors involved in selecting, developing, managing, and controlling marketing channels of distribution. Includes decision models from industrial marketers through purchasing units. Pr.: MKTG 400.

MKTG 546. Services Marketing. (3) I, II. An analysis of the unique marketing challenges faced by service organizations. Major topics include the unique characteristics of services, creating, and positioning a service in the marketplace, distributing, promoting, and pricing services. An evaluation of marketing strategies from the perspective of a service firm. Pr.: MKTG 400.

MKTG 547. International Business. (3) On sufficient demand. This course provides students with an appreciation of the opportunities and unique challenges in international business, an understanding of the strategic and operational options available to an international firm, and managerial decision making abilities required to be successful abroad. The course examines strategic and operational issues in management, marketing, accounting, and finance from an international perspective. Pr.: MKTG 400, ACCTG 241, MANGT 420, FINAN 450.

MKTG 550. Business Marketing. (3) I. A study of the nature of the industrial marketplace, concentrating on those aspects that differentiate it from the consumer markets. The major topics are analysis of market needs, market segments, organizational buying behavior, purchasing agent functions and activities, marketing strategy and mix for institutional customers, not-for-profit and services marketing, and buyer/seller relations. Pr.: MKTG 400.

MKTG 630. Sports Marketing. (3) This course provides students with the opportunity to study the nature and scope of marketing a sports franchise as well as marketing traditional products or services with the assistance of sports figures. Topics include sports franchise promotion, sports identification, consumer loyalty to a team, and consumer loyalty to participation sports. Pr.: MKTG 400.

MKTG 635. Electronic Marketing. (3) This course is designed to provide students with the awareness and understanding of how Internet and web-based technologies can be utilized to create effective marketing programs. Major topics will include new product development, brand building, promotion, pricing, and distribution in an electronic commerce context. Pr.: MKTG 400.

MKTG 642. Marketing Research. (3) I, II. Designed to acquaint the student with the marketing research literature, concepts, methods, and techniques. The emphasis in this course is on how to actually conceptualize and conduct a marketing research project as well as use research as an aid for marketing management decisions. Topics include the marketing research industry, defining the marketing research problem, research design formulation, data collection, data preparation and analysis, communicating the research project, and international and ethical dimensions of marketing research. Pr.: STAT 351, CIS 101, CIS 102, CIS 103, and MKTG 450.

MKTG 690. Management. (3) I, II. Analysis of marketing situations which lead to appropriate management of the marketing program’s objectives. Capstone course integrates knowledge of marketing and other business management principles into marketing strategy, development, implementation, and control. Pr.: MKTG 642 or conc. enrollment.
Education

Michael C. Holen, Dean.
Janice R. Wissman, Associate Dean
Paul R. Burden, Assistant Dean
Robert C. Newhouse, Assistant Dean
Linda Thurston, Assistant Dean
Michael F. Perl, Director, Center for Student and Professional Services and Coordinator of Laboratory Experiences
Candace Pannbacker, Licensure 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 individuals 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 interdisciplinary approach to the preparation of teachers and other educational personnel. This includes participation in cooperative education programs through Career and Employment Services.

The undergraduate teacher education programs 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 leadership studies, women’s studies, and gerontology, described earlier in the Minors and 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 professional program, generally late in their sophomore 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 education requirements. These 18 credit hours, which must be approved UGE courses from outside of the major, may overlap with the general studies requirements 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 toward 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 UGE 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 UGE courses:

www.ksu.edu/registrar/enroll/gened.html

Honors Program

The honors program in the College of Education has been established for undergraduate students who have demonstrated high academic achievement. The major purpose of the honors program is to give selected students an opportunity to expand their knowledge 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 faculty members in seminars and research projects; exercise creativity and explore leadership 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

Honors 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 responsibilities in their professions.

Honors Research gives students an opportunity 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. Formaled 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 in-service 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™, a consumer economic challenge sponsored by the National Coalition for Consumer Education. The center is fully affiliated with the National Council on Economic Education and participates in its EconomicsAmerica programming.

**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 licensure recommendations to the Kansas State Department of Education. All licensure 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 licensure standards. Students should contact their advisors or the licensure officer if they have questions about licensure program changes.

Licensure 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 licensure requirements for grades 7–12.

Beginning for freshman of 2003, the above described teaching levels will change.

Detailed information on the levels is available in 13 Bluemont Hall.

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, 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 Blue mont Hall for specific requirements.

Teaching specialty GPA
A 2.5 GPA is required in all college work attempted in the teaching specialty, including middle-level specialties. (This includes work at K-State and other institutions.) Note: Elementary education majors do not have a teaching specialty.

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 172 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 teaching 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 licensure 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 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

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 teaching field courses 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, EDCIP 310 or equivalent, 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.
applies to all people seeking teacher licensure 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 institution shall have the opportunity to graduate under the academic program (course and total credit requirements) in existence at the time of entry, 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>Allowed for completion</th>
<th>6 years</th>
<th>5 years</th>
<th>4 years</th>
<th>3 years</th>
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<tbody>
<tr>
<td>Less than 30 credits</td>
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<tr>
<td>30 to 59 credit</td>
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<tr>
<td>60 to 89 credit</td>
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<td>90 or more credit</td>
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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 might be drafted. In these cases, it would be expected that students could graduate under the requirements that existed at the time they originally entered unless licensure requirements have changed, whereupon the student must modify the entry program to include the current licensure requirements.

### Professional licensure

#### Initial licensure

The College of Education has the responsibility to serve as the recommending agent for all K-State graduates who wish to qualify for licensure. The degrees earned in the College of Education in elementary education and in secondary education will fulfill licensure program requirements in the state of Kansas. Early childhood, elementary, and secondary teaching licensure may be accomplished through the completion of the approved program and the appropriate degree. Students must meet the requirements for licensure or for an endorsement area in effect at the time they apply for that licensure or endorsement. Students who do not apply for the initial Kansas licensure when they are eligible will be expected to meet the requirements in effect at the time they do apply for initial licensure. Students enrolled in and earning degrees in colleges other than the College of Education must complete all requirements of an approved teacher education program.

The state of Kansas will issue initial teaching licenses only to individuals who have completed an approved teacher education program, received the recommendation of their college or university, and successfully passed the prelicensure examination (Principles of Learning and Teaching, PLT, passing score is 161). This test is administered at K-State several times each academic year. Anyone applying for initial licensure in a state other than Kansas must also apply for Kansas licensure.

The state of Kansas may not issue a teaching license to any applicant who has been convicted of a felony, signed certain diversion agreements, or who has had a teaching license revoked in another state.

People seeking initial licensure who present degrees from other accredited institutions must meet all requirements of the teacher education program. For additional information, these individuals should contact the Licensure Office, 13 Bluemont Hall.

#### Additional licensure endorsements

K-State will recommend for licensure those individuals who are already licensed, but who are adding an endorsement to the license (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.

#### Re licensure

Renewal applications not requesting an additional licensure endorsement are sent directly to the Kansas State Department of Education. For additional information on prelicensure testing, applications, or procedures, contact the Licensure Office in 13 Bluemont Hall.

### Approved programs

All students preparing to be licensed 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 licensure in the state of Kansas. Both degrees offered through the College of Education are four-year programs.

### Bachelor of science in elementary education

Minimum of 129 hours required

**Certification K–9**

#### General education requirements

<table>
<thead>
<tr>
<th>(53 hrs. minimum)</th>
<th>Communications (8–9 hrs.)</th>
<th>ENGL 100 Expository Writing I</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ENGL 200 Expository Writing II</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>SPCH 105 Public Speaking I</td>
<td>2</td>
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<tr>
<td></td>
<td>SPCH 106 Public Speaking I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPCH 109 Public Speaking Honors</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Humanities (12 hrs.)</td>
<td>ENGL 355 Literature for Children</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>ENGL 355 Literature for Children</td>
<td>3</td>
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</tr>
<tr>
<td></td>
<td>ENGL 355 Literature for Children</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fine arts appreciation</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Social science (12 hrs.)</td>
<td>History: Choose from HIST 101, 102, 251, 252, 500, 553.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Geography: Choose from GEOG 100, 310, 399, 440, 500.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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).</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Natural science (12 hrs.)</td>
<td>(Recommended courses are available in 13 Bluemont Hall.)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biological</td>
<td>4</td>
<td></td>
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<tr>
<td></td>
<td>Physical</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Earth science</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Quantitative sciences (9 hrs.)</td>
<td>MATH 100 College Algebra*</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td>MATH 160 Introduction to Contemporary Mathematics*</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STAT 320 Elements of Statistics*</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 320 Math for Elementary School Teachers I</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

*Grade of C or better required.

#### Pre-professional

For the freshman and sophomore years, or until requirements for admission to teacher education...
education have been satisfied, students in the College of Education will enroll in the appropriate pre-professional curriculum: elementary (EDPPE) or secondary (EDPPS). These students are advised by a College of Education pre-professional advisor in 13 Blumert 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 Center for Student and Professional Services in 13 Blumert Hall concerning course selections.

Professional-level courses (44 hrs.)
All students must file an application for admission to the teacher education program. When a student’s application has been approved, he or she is admitted to the professional program and assigned to a professional-level advisor.

Admission to teacher education is not required for enrollment in the following.

EDEL 220 Orientation to Elementary/ Middle School .................. 1
FSHS 110 Introduction to Human Development .................. 3
FSHS 200 Sexuality and Health ........................................ 2
EDEL 300 Principles of Elementary Education .............. 3
ART 425 Art for Elementary Schools .................. 3
MUSIC 405 Music for Elementary Teachers .................. 3
EDEL 379 Elementary/Middle-Level Physical Education Methods ........ 2
EDETC 318 Instructional Media and Technology .................. 2

Admission to teacher education is required for enrollment in the following courses. EDCEP 315 may be taken before or concurrently with Block A. EDSIP 324 and EDCIP 455 may be taken anytime after admission to teacher education but before student teaching.

EDCEP 315 Educational Psychology .................. 3
EDSP 324 Exceptional Child in the Regular Classroom .................. 3
EDCIP 455 Teaching in a Multicultural Society ........... 2

Block A
Block A must be taken before Block B.

EDEL 470 Elementary/Middle-Level Science Methods .......... 3
EDEL 473 Elementary/Middle-Level Mathematics Methods ........ 3
EDEL 420 Block A Clinical Experience .................. 1

Block B
EDEL 474 Elementary/Middle-Level Reading Methods ........ 3
EDEL 471 Elementary/Middle-Level Language Arts Methods .......... 3
EDEL 472 Elementary/Middle-Level Social Studies Methods .......... 3
EDEL 430 Block B Practicum .................................. 1

Professional semester (16 hrs.)
Requirements for admittance to student teaching: Minimum 3.0 GPA in all Block A and Block B courses, with no grade lower than a C in any blocked course. Students may re-take blocked methods courses one time only.

EDEL 585 Teaching Participation in the Elementary School (with seminar) .............. 16

Area of concentration (15 hrs.)
The 15 hours selected in the area of concentration are in addition to those taken to 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, English as a second language, family studies and human services, 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.

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

Communications (8–9 hours)
(A grade of C or better is required)

ENGL 100 Expository Writing I .................. 3
ENGL 200 Expository Writing II .................. 3
SPCH 106 Public Speaking I .................. 3
SPCH 109 Public Speaking Honors .................. 3

Humanities (9 hours)

Literature
Any department of English literature (except ENGL 230, 231, 233, 234, 355, or 545) or Department of Modern Languages literature course .................................. 3

Fine arts appreciation
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 .................. 3

Restricted elective
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 .................. 3

Social science (9 hours)

History
Any course from the Department of History .................. 3

Non-Western cultures
Recommended: ANTH 204; additional courses are available in ANTH, ECON, GEOG, HIST, POLSCI, and SOCIO. See your advisor for approved courses .................. 3

Restricted elective
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 .................. 3

Natural science (7 hours)
One lab required.

Quantitative sciences (6 hours)
(College Algebra is a prerequisite for statistics and computer science.)

MATH 100 College Algebra (or higher level math course) (Grade of C or better) .................. 3
STAT 230 Elements of Statistics (or higher level statistics course) (Grade of C or better) ........ 3

General education electives (6 hours)
49

Professional education requirements

Pre-professional education
Required for admission to teacher education and prerequisite for Block I.

EDSEC 102 Teaching as a Career .................. 1
FSHS 110 Introduction to Human Development .................. 3

Non-blocked courses—These courses must be taken prior to or concurrent with Block I.

EDCL 310 Foundations of Education .................. 3
EDETC 318 Instructional Media and Technology .................. 2

Block I—Admission to teacher education required. Courses must be taken concurrently and are a prerequisite for Block II.

EDCEP 315 Educational Psychology .................. 3
EDSP 323 Exceptional Students/ Secondary School .................. 2
EDSEC 376 Core Teaching Skills and Lab .................. 3

Block II—Courses must be taken concurrently and are a prerequisite for Block III.

EDSEC 477 Middle-Level/Secondary Reading .................. 2
EDSEC 500 Content Area Methods/ Secondary School .................. 2
EDSEC 520 Content and Reading Methods Lab .................. 1
EDCIP 455 Teaching in a Multicultural Society .................. 1
EDCIP 525 Interpersonal Relations in the School .................. 1

Block III—Courses must be taken concurrently.

EDSEC 586 Teaching Participation/ Secondary School .................. 12

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 .................................. 3
ART 190 Drawing I .................. 3
ART 195 Survey of Art History .................. 3
ART 196 Survey of Art History .................. 3
ART 200 3D Design .................................. 3
ART 210 Drawing II .................. 3
ART 220 Water Color .................. 3
ART 245 Painting I .................. 3
ART 265 Ceramics I .................. 3
ART 270 Metalsmithing and Jewelry .................. 3
ART 295 Photography in Art .................. 3
ART 376 Studio Art Exploration .................. 3
ART 545 Twentieth Century Art History .................. 3
ART 690 Techniques in Teaching Art .................. 2

Three additional art studio hours that build on prior course experience in that area .................. 3
### Business education (EDBUS)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCTG 251</td>
<td>Accounting for Business Operations</td>
<td>3</td>
</tr>
<tr>
<td>ACCTG 241</td>
<td>Accounting for Investments and Finances</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 390</td>
<td>Business Law</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 420</td>
<td>Management Concepts</td>
<td>3</td>
</tr>
<tr>
<td>MKTG 400</td>
<td>Marketing</td>
<td>3</td>
</tr>
<tr>
<td>SPEECH 311</td>
<td>Business and Professional Speaking</td>
<td>3</td>
</tr>
<tr>
<td>EDSEC 215</td>
<td>Information Processing</td>
<td>3</td>
</tr>
<tr>
<td>EDSEC 315</td>
<td>Administrative Data Applications</td>
<td>3</td>
</tr>
<tr>
<td>EDSEC 415</td>
<td>Administrative Support Services and Technology</td>
<td>1</td>
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<tr>
<td>EDSEC 416</td>
<td>Office Management</td>
<td>3</td>
</tr>
<tr>
<td>ECON 530</td>
<td>Money and Banking</td>
<td>3</td>
</tr>
<tr>
<td>FINAN 450</td>
<td>Introduction to Finance</td>
<td>3</td>
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<tr>
<td>Option A: Computer literacy</td>
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</tr>
<tr>
<td>CIS 300</td>
<td>Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>or EDETC 723</td>
<td>Logo and Problem Solving</td>
<td>3</td>
</tr>
<tr>
<td>or EDSEC 718</td>
<td>Learning Technologies</td>
<td>3</td>
</tr>
<tr>
<td>or EDSEC 900</td>
<td>Computer Area Methods in the Secondary School: Computers</td>
<td>2</td>
</tr>
<tr>
<td>Option B: Vocational office education</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>EDSEC 620</td>
<td>Principles and Philosophy of Vocational Education</td>
<td>3</td>
</tr>
<tr>
<td>EDSEC 701</td>
<td>Administration and Supervision of Vocational Education</td>
<td>2</td>
</tr>
<tr>
<td>EDSEC 713</td>
<td>Vocational Education</td>
<td>1</td>
</tr>
<tr>
<td>EDSEC 739</td>
<td>Coordination of Cooperative Vocational Education</td>
<td>2</td>
</tr>
<tr>
<td>Option C: Accounting</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ACCTG</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ACCTG</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Supporting courses required

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>ECON 100</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 120</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>CIS 101, 102, 103</td>
<td>Introduction to Information Technology and Microcomputers</td>
<td>3</td>
</tr>
<tr>
<td>CIS 200</td>
<td>Fundamentals of Computer Programming (or other programming language)</td>
<td>4</td>
</tr>
<tr>
<td>FSHS 105</td>
<td>Introduction to Personal and Family Finance</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 400</td>
<td>Family Economics</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 405</td>
<td>Advanced Personal and Family Finance</td>
<td>3</td>
</tr>
</tbody>
</table>

### English/journalism (EDENJ)

#### Two of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>ENGL 361</td>
<td>British Survey I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 362</td>
<td>British Survey II</td>
<td>3</td>
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<tr>
<td>ENGL 381</td>
<td>American Survey I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 382</td>
<td>American Survey II</td>
<td>3</td>
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<tr>
<td>Required:</td>
<td>ENGL</td>
<td>World literature course</td>
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<tr>
<td>or ENGL 410</td>
<td>World literature course</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 410</td>
<td>World literature course</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 410</td>
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<tr>
<td>or ENGL 410</td>
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<tr>
<td>or ENGL 410</td>
<td>World literature course</td>
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</tr>
<tr>
<td>or ENGL 410</td>
<td>World literature course</td>
<td>3</td>
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### Family and consumer sciences education

For family and consumer sciences education requirements, see the section on secondary education programs outside the College of Education.

### Journalism (EDJOR)

#### MC 235

<table>
<thead>
<tr>
<th>Description</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>Mass Communication in Society</td>
<td>3</td>
</tr>
<tr>
<td>News and Feature Writing</td>
<td>3</td>
</tr>
<tr>
<td>Photography I</td>
<td>3</td>
</tr>
<tr>
<td>Editing and Design</td>
<td>3</td>
</tr>
<tr>
<td>Law of Mass Communications</td>
<td>3</td>
</tr>
<tr>
<td>Supervision of School Publications</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Electives (Recommended courses) (12 hours):

- MC 320: Principles of Advertising
- MC 360: Publications Practice
- MC 410: Writing for the Electronic Media
- MC 470: Audio I
- MC 480: Video I
- MC 500: Advanced News and Feature Writing
- MC 510: Yearbook Editing and Management
- MC 545: Advertising Techniques
- MC 555: History of Journalism
- MC 720: Ethics in Mass Communications

### Mathematics (EDMTH)

#### MATH 220

| Analytic Geometry and Calculus I | 4 |
| Analytic Geometry and Calculus II | 4 |
| Analytic Geometry and Calculus III | 4 |
| Elementary Differential Equations | 4 |
| Finite Application of Mathematics | 3 |
| Introduction to Algebraic Systems | 3 |
| History of Math | 3 |
| Foundations of Geometry | 3 |

### 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

<table>
<thead>
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<th>Required:</th>
<th>Course Code</th>
<th>Description</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>or FREN 211</td>
<td>French III</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>or FREN 213</td>
<td>French IV</td>
<td>4</td>
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<tr>
<td>or FREN 214</td>
<td>French Conversation IVA</td>
<td>2</td>
<td></td>
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<tr>
<td>or FREN 511</td>
<td>Masterpieces of French Literature I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>or FREN 512</td>
<td>Masterpieces of French Literature II</td>
<td>3</td>
<td></td>
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<tr>
<td>or FREN 513</td>
<td>French Composition and Grammar</td>
<td>3</td>
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<tr>
<td>or FREN 514</td>
<td>French Civilization</td>
<td>3</td>
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<tr>
<td>or FREN 719</td>
<td>Advanced Spoken and Written French</td>
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<tr>
<td>or FREN</td>
<td>French electives at 500 and above</td>
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#### German

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<tr>
<td>or GRMN 221</td>
<td>German III</td>
<td>5</td>
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<tr>
<td>or GRMN 223</td>
<td>German IV</td>
<td>4</td>
<td></td>
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<tr>
<td>or GRMN 224</td>
<td>German Conversation IVA</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>or GRMN 521</td>
<td>Introduction to German Literature I</td>
<td>3</td>
<td></td>
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<tr>
<td>or GRMN 522</td>
<td>Introduction to German Literature II</td>
<td>3</td>
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<tr>
<td>or GRMN 530</td>
<td>German Civilization</td>
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<tr>
<td>or GRMN 731</td>
<td>Advanced Spoken and Written German</td>
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<tr>
<td>or GRMN</td>
<td>German electives at 500 and above</td>
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#### Spanish

<table>
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<th>Required:</th>
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<tbody>
<tr>
<td>or SPAN 261</td>
<td>Spanish III</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>or SPAN 263</td>
<td>Spanish IV</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>or SPAN 264</td>
<td>Spanish Conversation IVA</td>
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<tr>
<td>or SPAN 563</td>
<td>Introduction to the Literature of Spanish America</td>
<td>3</td>
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<tr>
<td>or SPAN 564</td>
<td>Spanish Composition and Grammar</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>or SPAN 565</td>
<td>Spanish Civilization</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>or SPAN 566</td>
<td>Hispanic-American Civilization</td>
<td>3</td>
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<tr>
<td>or SPAN 567</td>
<td>Introduction to the Literature of Spain</td>
<td>3</td>
<td></td>
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<tr>
<td>or SPAN 571</td>
<td>Advanced Spanish Conversation</td>
<td>3</td>
<td></td>
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<tr>
<td>or SPAN</td>
<td>Spanish electives at 500 and above</td>
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<td></td>
</tr>
</tbody>
</table>

Licensure to teach elementary school foreign language is an optional extension of secondary school licensure. The following must be added to the requirements for secondary modern foreign language certification if elementary foreign language licensure is desired:

- EDELC 502: Foreign Language Elementary School Practicum
- EDELC 585: Teaching Participation in the Elementary School
- EDELC 720: Foreign Language Methods for Elementary Schools (offered spring only)

### Natural sciences

#### Biological science (EBDSBC)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</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 455</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 303</td>
<td>Ecology of Environmental Problems</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 529</td>
<td>Fundamentals of Ecology</td>
<td>3</td>
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<td>ASI 500</td>
<td>Genetics</td>
<td>3</td>
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<tr>
<td>BIOL 450</td>
<td>Modern Genetics</td>
<td>3</td>
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<tr>
<td>BIOL 541</td>
<td>Cell Biology</td>
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Approved electives at the 300 level or higher from the Department of Biology or related life sciences (e.g., entomology, horticulture, plant pathology, etc.) 6-7
Chemistry courses required:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
<td>4</td>
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<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>
</tr>
<tr>
<td>CHM 351</td>
<td>General Organic Chemistry Lab</td>
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Other required courses:

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>GEOL 103</td>
<td>Geology Laboratory</td>
<td>1</td>
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<tr>
<td>PHYS 115</td>
<td>Descriptive Physics</td>
<td>5</td>
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<tr>
<td>PHYS 191</td>
<td>Descriptive Astronomy</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>4</td>
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<tr>
<td>MATH 150</td>
<td>Plane Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 312</td>
<td>Finite Applications of Math</td>
<td>3</td>
</tr>
<tr>
<td>STAT 320</td>
<td>Elements of Statistics</td>
<td>3</td>
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<tr>
<td>EDSEC 614</td>
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Chemistry (EDCHM)

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<td>CHM 350</td>
<td>General Organic Chemistry</td>
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<tr>
<td>CHM 351</td>
<td>General Organic Chemistry Lab</td>
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</tr>
<tr>
<td>CHM 371</td>
<td>Chemical Analysis</td>
<td>4</td>
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<tr>
<td>CHM 500</td>
<td>General Physical Chemistry</td>
<td>3</td>
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<tr>
<td>CHM 520</td>
<td>Geology electives</td>
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Supporting courses required:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 100</td>
<td>Earth in Action</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 101</td>
<td>Geology Lab</td>
<td>3</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Analytic Geometry and Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 222</td>
<td>Analytic Geometry and Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>MATH 312</td>
<td>Finite Applications of Math</td>
<td>3</td>
</tr>
<tr>
<td>STAT 320</td>
<td>Elementary Statistics</td>
<td>3</td>
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<tr>
<td>EDSEC 614</td>
<td>Laboratory Techniques in Teaching Science</td>
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Earth science (EDFSC)

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>GEOL 100</td>
<td>Earth in Action</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 102</td>
<td>Earth Through Time</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 103</td>
<td>Geology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 105</td>
<td>Oceanography</td>
<td>3</td>
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<tr>
<td>GEOL 301</td>
<td>Historical Geology Lab</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 502</td>
<td>Mineralogy</td>
<td>3</td>
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<tr>
<td>GEOL 520</td>
<td>Geomorphology</td>
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Supporting courses required:

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<tbody>
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<td>CHM 210</td>
<td>Chemistry I</td>
<td>4</td>
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<td>CHM 230</td>
<td>Chemistry II</td>
<td>4</td>
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<tr>
<td>GEOG 100</td>
<td>Earth Through Time</td>
<td>3</td>
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<tr>
<td>GEOG 101</td>
<td>Geologic Laboratory</td>
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<tr>
<td>GEOG 400</td>
<td>Physical Geography</td>
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<td>STAT 320</td>
<td>Elementary Statistics</td>
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Physical science (EDPSC)

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<tr>
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<tbody>
<tr>
<td>PHYS 111</td>
<td>General Physics I</td>
<td>4</td>
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<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
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<tr>
<td>PHYS 191</td>
<td>Descriptive Astronomy</td>
<td>3</td>
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<tr>
<td>PHYS 452</td>
<td>Contemporary Physics</td>
<td>4</td>
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<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>
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<td>CHM 350</td>
<td>General Organic Chemistry</td>
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<td>CHM 351</td>
<td>General Organic Chemistry Lab</td>
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<tr>
<td>CHM 371</td>
<td>Chemical Analysis</td>
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<td>GEOL 100</td>
<td>Earth in Action</td>
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<tr>
<td>GEOL 102</td>
<td>Earth Through Time</td>
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<td>GEOL 103</td>
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<td>GEOL 301</td>
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<td>GEOL 502</td>
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Supporting courses required:

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<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
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<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
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<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
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<tr>
<td>MATH 221</td>
<td>Analytic Geometry and Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 222</td>
<td>Analytic Geometry and Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td>MATH 312</td>
<td>3</td>
</tr>
<tr>
<td>STAT 320</td>
<td>Elementary Statistics</td>
<td>3</td>
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Physics (EDPHY)

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<th>Course Title</th>
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<tbody>
<tr>
<td>PHYS 122</td>
<td>Computation and Experimentation in Physics</td>
<td>3</td>
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<tr>
<td>PHYS 191</td>
<td>Descriptive Astronomy</td>
<td>3</td>
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<tr>
<td>PHYS 223</td>
<td>Physics I: Mechanics and Thermodynamics</td>
<td>5</td>
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<tr>
<td>PHYS 224</td>
<td>Physics II: Electromagnetism and Sound</td>
<td>4</td>
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<tr>
<td>PHYS 325</td>
<td>Physics III: Relativity and Quantum Physics</td>
<td>5</td>
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<tr>
<td>PHYS 326</td>
<td>Physics Laboratory</td>
<td>3</td>
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<td>PHYS 322</td>
<td>Mechanics I</td>
<td>3</td>
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<tr>
<td>PHYS 532</td>
<td>Electricity and Magnetism I</td>
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Supporting courses required:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
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<td>BIOL 198</td>
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<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
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</tr>
<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
<td>4</td>
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<tr>
<td>GEOL 100</td>
<td>Earth in Action</td>
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<td>or</td>
<td>GEOL 512</td>
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<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
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<td>Analytic Geometry and Calculus II</td>
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<td>Analytic Geometry and Calculus III</td>
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</tr>
<tr>
<td>MATH 240</td>
<td>Series and Differential Equations</td>
<td>4</td>
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<tr>
<td>EDSEC 614</td>
<td>Laboratory Techniques in Teaching Science</td>
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</table>

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in physics, chemistry, or mathematics. The course selection should be made in consultation with the science education advisor.

Social sciences

Economics (EDSEC)

Courses required:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ANTH 200</td>
<td>Introduction to Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 150</td>
<td>World Regional Geography</td>
<td>3</td>
</tr>
<tr>
<td>ECON 200</td>
<td>Money and Banking</td>
<td>3</td>
</tr>
<tr>
<td>ECON 353</td>
<td>Comparative Economics</td>
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Three hours of 500 level or above from economics:

<table>
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<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>3</td>
</tr>
<tr>
<td>or</td>
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Geography (EDGEO)

Courses required:

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<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ANTH 200</td>
<td>Introduction to Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>GEOG 100</td>
<td>World Regional Geography</td>
<td>3</td>
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<td>or</td>
<td></td>
<td>3</td>
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<tr>
<td>ECON 530</td>
<td>Money and Banking</td>
<td>3</td>
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<td>ECON 450</td>
<td>Comparative Economics</td>
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Three hours of 500 level or above from geography:

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<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
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<td>ECON</td>
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<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
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</table>

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in geography, history, or political science. The course selection should be made in consultation with the education advisor.

History (EDHST)

Courses required:

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ANTH 200</td>
<td>Introduction to Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>ECON 150</td>
<td>World Regional Geography</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>3</td>
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<tr>
<td>ECON 200</td>
<td>Money and Banking</td>
<td>3</td>
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<tr>
<td>or</td>
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<tr>
<td>ECON 350</td>
<td>Comparative Economics</td>
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Three hours of 300 level or above from history:

<table>
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<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ECON</td>
<td></td>
<td>3</td>
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<tr>
<td>or</td>
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Three hours of 300 level or above from economics, history, political science, or sociology:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>ECON/HIST/POLSC/SOCIO</td>
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Supporting course:

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<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>HIST 586</td>
<td>Advanced Seminar</td>
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Nine hours of 500 level or above from history distributed in 3 of the following areas:

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<tr>
<td>HIST</td>
<td>Ancient medieval and early modern Europe</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HIST</td>
<td>Modern Europe including Britain</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HIST</td>
<td>The Third World (Asia, Africa, Latin America)</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>HIST</td>
<td>History of science, technology, and military history</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
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</table>

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.
Political science (EDPLS)
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

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 440 Social Organization ................................ 3
SOCIO 511 Comparative Social Theory ..................... 3
SOCIO 520 Methods of Social Research ................... 3
SOCIO 535 Population Dynamics ............................ 3
SOCIO 450 Social Interaction .................................. 3
SOCIO 640 Sociology of Family ................................ 3
Three hours of 500 level or above from sociology:
SOCIO ................................................................. 3

Three hours of 300 level or above from history:
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 IA or IA
The following courses are required:
SPCH 325 Argumentation and Debate ....................... 3
SPCH 321 Public Speaking II ...................................... 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 500 level or above in theatre ............... 3
THTRE 565 Principles of Directing ......................... 3
MC 235 Mass Communications in Society ............. 3

Optional Secondary Licensure Programs

Licensure in one or more of these optional programs is available only to students who have successfully completed an approved full licensure 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 licensure 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 licensure for any additional teaching area when all requirements have been completed, provided all requirements of the approved degree program and the secondary area of licensure have also been completed.

Business
EDSEC 215 Information Processing ....................... 3
EDSEC 315 Administrative Data Applications .......... 3
EDSEC 415 Administrative Support Services .......... 3
EDSEC 461 Office Management .............................. 3
EDSEC 500 Methods of Teaching Business in the Secondary School ......................... 2
EDSEC 520 Block II Lab/Language Arts ................. 3
ACCTG 231 Accounting for Business Operations ... 3
ACCTG 241 Accounting for Investments and Finances ......................................................... 3
MANGT 390 Business Law I ......................................... 3
ECON 110 Principles of Macroeconomics ............. 3
ECON 120 Microeconomics .................................... 3
ECON 530 Money and Banking .............................. 3
FINAN 450 Introduction to Finance ......................... 3
CIS 200 Fundamentals of Computer Programming (or other programming language) ......................... 4

This prepares a student to teach typing, business law, business economics, bookkeeping, office practice, and data processing.

Computer studies
Computer science component
CIS 200 Fundamentals of Software Design ............... 4
CIS 300 Data and Program Structures .................... 3
EDETC 723 Logo and Problem Solving .................... 3

Professional knowledge component
EDSEC 500 Content Area Methods in the Secondary School (Computer Studies) .......... 2
EDETC 718 Learning Technologies .......................... 3
CIS 101 Introduction to Information Technology .......... 1
CIS 102 Introduction to Microcomputer Spreadsheet Applications ............................... 1
CIS 103 Introduction to Microcomputer Database Management ......................................... 1
CIS 104 Introduction to Microcomputer Word Processing Applications ............................. 1

English
One of the following survey courses required:
ENGL 361 British Survey I ....................................... 3
ENGL 362 British Survey II ....................................... 3
One of the following survey courses required:
ENGL 381 American Survey I ................................. 3
ENGL 382 American Survey II ............................... 3

All of the following required:
ENGL 252 Introduction to Literary Studies ............... 3
ENGL 535 A world literature course ......................... 3
ENGL 350 Introduction to Shakespeare ..................... 3
ENGL 400 Advanced Expository Writing for Prospective Teachers ................................. 3
ENGL 435 Linguistics for Teachers ............................. 3
ENGL 545 Literature for Adolescents ....................... 3
ENGL English elective 320 or above ....................... 3
EDSEC 500 Methods of Teaching Language Arts in the Secondary School ......................... 2
EDSEC 520 Block II Lab/Language Arts ................. 3

English as a second language (7–12)
Secondary education majors may choose to complete course work leading to licensure in English as a second language (ESL). Endorsement in ESL can only be achieved in conjunction with the completion of a secondary initial licensure program.

To add English as a second language endorsement to a secondary teaching license, the following course work is required:

ANTH 200 Introduction to Cultural Anthropology .............. 3
or
ANTH 522 Becoming American .................................. 3
or
DED 560 Introduction to American Diversity .......... 3
or
EDCIP 733 Curriculum Materials for Ethnic Diversity ......................................................... 3
ENGL 600 Principles of Linguistics .............................. 3
or
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 ................. 3
EDSEC 742 ESL/Dual Language Assessment ............... 3
EDSEC 745 ESL/Language Practicum ......................... 3

Journalism
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
EDSEC 500 Methods of Teaching English/Journalism in the Secondary School ......................... 2
EDSEC 520 Block II Lab/Language Arts ................. 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 511 Introduction to Algebraic Systems ............ 3
MATH 570 History of Mathematics ......................... 3
MATH 572 Foundations of Geometry ....................... 3
Modern language

Students seeking modern language endorsement must demonstrate proficiency in speaking and understanding the foreign language during the semester preceding methods (EDSEC 500) by scoring at least “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. Contact the modern language education advisor for additional information.

French

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREN 211</td>
<td>French III</td>
<td>5</td>
</tr>
<tr>
<td>FREN 213</td>
<td>French IV</td>
<td>4</td>
</tr>
<tr>
<td>FREN 214</td>
<td>French Conversation IVA</td>
<td>2</td>
</tr>
<tr>
<td>FREN 511</td>
<td>Masterpieces of French I</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FREN 512</td>
<td>Masterpieces of French II</td>
<td>3</td>
</tr>
<tr>
<td>FREN 513</td>
<td>French Composition and Gram</td>
<td>3</td>
</tr>
<tr>
<td>FREN 514</td>
<td>French Civilization</td>
<td>3</td>
</tr>
<tr>
<td>FREN</td>
<td>French electives at 500 or</td>
<td>6</td>
</tr>
<tr>
<td>or</td>
<td>above</td>
<td></td>
</tr>
<tr>
<td>EDSEC 500</td>
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<tr>
<td>or</td>
<td>Language in the Secondary</td>
<td></td>
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<tr>
<td>or</td>
<td>School</td>
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</table>
| EDSEC 520    | Block II Lab/Modern Language| 1     | 29

German

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>GRMN 221</td>
<td>German III</td>
<td>5</td>
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<tr>
<td>GRMN 223</td>
<td>German IV</td>
<td>4</td>
</tr>
<tr>
<td>GRMN 224</td>
<td>German Conversation IVA</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRMN 521</td>
<td>Introduction to German I</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRMN 522</td>
<td>Introduction to German II</td>
<td>3</td>
</tr>
<tr>
<td>GRMN 523</td>
<td>German Composition</td>
<td>3</td>
</tr>
<tr>
<td>GRMN 530</td>
<td>German Civilization</td>
<td>3</td>
</tr>
<tr>
<td>GRMN</td>
<td>German electives at 500 or</td>
<td>6</td>
</tr>
<tr>
<td>or</td>
<td>above</td>
<td></td>
</tr>
<tr>
<td>EDSEC 500</td>
<td>Methods of Teaching Foreign</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>Language in the Secondary</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>School</td>
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</tbody>
</table>
| EDSEC 520    | Block II Lab/Modern Language| 1     | 29

Spanish

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>SPAN 261</td>
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<tr>
<td>SPAN 263</td>
<td>Spanish IV</td>
<td>4</td>
</tr>
<tr>
<td>SPAN 264</td>
<td>Elementary Spanish IVA</td>
<td>2</td>
</tr>
<tr>
<td>SPAN 564</td>
<td>Spanish Composition and Gram</td>
<td>3</td>
</tr>
<tr>
<td>SPAN 565</td>
<td>Spanish Civilization</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPAN 566</td>
<td>Hispanic-American Civilization</td>
<td>3</td>
</tr>
<tr>
<td>SPAN</td>
<td>Spanish electives at 500 or</td>
<td>6</td>
</tr>
<tr>
<td>or</td>
<td>above</td>
<td></td>
</tr>
<tr>
<td>SPAN 563</td>
<td>Spanish-American Masterpieces</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPAN 567</td>
<td>Spanish Masterpieces</td>
<td>3</td>
</tr>
<tr>
<td>EDSEC 500</td>
<td>Methods of Teaching Foreign</td>
<td>2</td>
</tr>
<tr>
<td>Language</td>
<td>in the Secondary School</td>
<td></td>
</tr>
<tr>
<td>(offered</td>
<td>(offered fall only)</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| EDSEC 520    | Block II Lab/Modern Language| 1     | 29

Modern foreign language elementary school

Licensure to teach elementary school foreign language is an optional extension of secondary school licensure. The following must be added to the requirements for secondary modern foreign language licensure:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDEL 585</td>
<td>Teaching Participation in the</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>Elementary School</td>
<td></td>
</tr>
<tr>
<td>EDEL 720</td>
<td>Foreign Language Methods for</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>Elementary Schools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(offered spring only)</td>
<td></td>
</tr>
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</table>

EDSEC 502    Foreign Language Elementary School Practicum                        | 1

Natural science

Biological science

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 798</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 303</td>
<td>Ecology of Environmental Problems</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 529</td>
<td>Fundamentals of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 455</td>
<td>General Microbiology</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 110/111</td>
<td>General Chemistry/Lab</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>EDSEC 614</td>
<td>Laboratory Techniques in Teaching Science</td>
<td>3</td>
</tr>
<tr>
<td>EDSEC 500</td>
<td>Methods of Teaching Science</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>in the Secondary School</td>
<td></td>
</tr>
<tr>
<td>EDSEC 520</td>
<td>Block II Lab/Science</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 100</td>
<td>Earth in Action</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 103</td>
<td>Geology Lab</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 115</td>
<td>Descriptive Physics</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 191</td>
<td>Descriptive Astronomy</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100*</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 150*</td>
<td>Plane Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 312*</td>
<td>Finite Applications of Math</td>
<td>3</td>
</tr>
<tr>
<td>STAT 320</td>
<td>Elements of Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

*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.

Chemical science

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<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 L</td>
<td>4</td>
</tr>
<tr>
<td>CHM 352</td>
<td>General Organic Chemistry L</td>
<td>2</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>GEOL 100</td>
<td>Earth in Action</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 103</td>
<td>Geology Lab</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 115</td>
<td>Descriptive Physics</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 191</td>
<td>Descriptive Astronomy</td>
<td>3</td>
</tr>
<tr>
<td>EDSEC 500</td>
<td>Methods of Teaching Science</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>in the Secondary School</td>
<td></td>
</tr>
<tr>
<td>EDSEC 520</td>
<td>Block II Lab/Science</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 100</td>
<td>Earth in Action</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 512</td>
<td>Earth Science</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 103</td>
<td>Geology Lab</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 113</td>
<td>General Physics</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 115</td>
<td>Descriptive Physics</td>
<td>5</td>
</tr>
</tbody>
</table>

*Higher-level math courses may meet this requirement.

**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.

Earth science or space science

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 100</td>
<td>Earth in Action</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 102</td>
<td>Earth Through Time</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 103</td>
<td>Geology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 105</td>
<td>Oceanography</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 301</td>
<td>Historical Geology Lab</td>
<td>1</td>
</tr>
<tr>
<td>GEOL 502</td>
<td>Mineralogy</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL 520</td>
<td>Geology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 198</td>
<td>Principles of Biology</td>
<td>4</td>
</tr>
<tr>
<td>CHM 100</td>
<td>Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 220</td>
<td>Environmental Geography</td>
<td>4</td>
</tr>
</tbody>
</table>

**Higher-level math courses may meet this requirement.

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 798</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>EDSEC 500</td>
<td>Methods of Teaching Science</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>in the Secondary School</td>
<td></td>
</tr>
<tr>
<td>EDSEC 520</td>
<td>Block II Lab/Science</td>
<td>1</td>
</tr>
<tr>
<td>EDSEC 614</td>
<td>Laboratory Techniques in Teaching Science</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100*</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 150*</td>
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<td>Elements of Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

*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.

Earth science option

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>GEOL 102</td>
<td>Earth Through Time</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 105</td>
<td>Oceanography</td>
<td>3</td>
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</tbody>
</table>

At least one course selected from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>GEOL 502</td>
<td>Mineralogy</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 520</td>
<td>Geomorphology</td>
<td>2</td>
</tr>
</tbody>
</table>

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.
## 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 licensed 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 licensure for grades 7–12.

#### Professional education requirements

The following courses must be completed before admission to the professional semester:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDSEC 300</td>
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<tr>
<td>EDSEC 376</td>
<td>3</td>
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<tr>
<td>EDSEC 400</td>
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<tr>
<td>EDSEC 477</td>
<td>3</td>
</tr>
<tr>
<td>EDSEC 500</td>
<td>2</td>
</tr>
<tr>
<td>EDSEC 520</td>
<td>1</td>
</tr>
</tbody>
</table>

### Music education (MUSED)

Students planning to be music teachers must complete the approved teacher licensure 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 licensure for grades K–12.

The following courses are required for admission to teacher education:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDSEC 102</td>
<td>1</td>
</tr>
<tr>
<td>EDSEC 300</td>
<td>1</td>
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</tbody>
</table>

### Optional Secondary Licensure Program at the Middle Level

#### Middle-level family and consumer sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>FSHS 105</td>
<td>3</td>
</tr>
</tbody>
</table>

---

*Higher-level courses may meet this requirement.

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.
EDSEC 306 Coaching and Officiating Volleyball
EDSEC 302 Coaching and Officiating Basketball
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
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 licensure, birth to kindergartener eligibility
Students planning to be licensed 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.

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 587 Supervised Practicum for Athletic Coaches ........................................ 2
HN 320 Care and Prevention of Athletic Injuries ..................... 3
One coaching and officiating class ......................... 2
Examples:
EDSEC 302 Coaching and Officiating Basketball
EDSEC 305 Coaching and Officiating Football
EDSEC 306 Coaching and Officiating Volleyball

Athletic training
See the Department of Human Nutrition in the College of Human Ecology.

General Courses

General courses in education
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. 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.

Counseling and Educational Psychology

Stephen Benton, Chair

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. Begins 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 Paramedical. (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 omitting skills which influence interaction quality. Pr.: Junior standing or sophomore standing and consent of instructor.

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 HDFS 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. S. 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) I, II A. 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.: EDSEC 376, EDSP 323, EDCEP 315. Simultaneous enrollment required for EDSEC 477, 500, 520, and EDCEP 525 and EDCEP 455.

EDCEP 711. Middle School Classroom Guidance. (3) I, II S. On sufficient demand. Techniques of integrating guidance principles for pre- and early teens into a middle school concept; investigation of classroom dynamics for middle school teachers as model for guidance team; involvement of teachers in model guidance programs. Pr.: EDCEP 315.


EDCEP 721. Mental Health in Schools. (3) S. Examines mental health and risk factors in the context of schools and student learning. Topics include: characteristics and behaviors of at-risk students; and prevention, intervention, and referral strategies to facilitate and promote mental health and a positive learning environment. Pr.: PSYCH 280 or FSHE 110.

EDCEP 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.: FSHE 110. Consent of department chair.

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.: FSHE 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 and consent of instructor.

### Educational Administration and Leadership

**David Thompson, Chair**

Professors Bailey, Shoop, Stewart, Thompson, and Wilson; Associate Professors Bosco, Devin, Salsberry, and Scott; Assistant Professor Siefers; Adjunct Professors Bagby, Doll, Franklin, Lumley, Miller, and Peak; Emeritus: Keys.

[www.ksu.edu/Departments/EdAdmin/Overview.html](http://www.ksu.edu/Departments/EdAdmin/Overview.html)

**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 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
- **EDADL 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
918 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, II. 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 WMST 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.
- **EDADL 770. Educational Change and Technology.** (2) I, II. This course deals with educational change, teaching, and information literacy. Three thrusts are considered: the emerging technologies and educational change, shaping change with technology, and the use of technology/information literacy to transform teaching and learning. Pr.: Teaching experience.
- **EDADL 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.: FSHE 110.
- **EDADL 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.: FSHE 110.
- **EDADL 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 and consent of instructor.

### Elementary Education

**Paul Burden, Chair**

Professors Burden, Fallin, Heller, and Staver; Associate Professors Hancock, Herrera, Perl, and Shroyer; Assistant Professors Allen, Bay-Williams, K. Holen, and Norton-Meier; Emeriti: Bloomquist, Brookhart, Kellstrom, Kurtz, McAnarney, Schell, Smith, and Trennepohl.

[www.educ.ksu.edu/Departments/ElemEd/Overview.html](http://www.educ.ksu.edu/Departments/ElemEd/Overview.html)

The Department of Elementary Education offers a four-year program leading to licensure 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 218. Elementary Teacher Education Colloquium. (1–2) On sufficient demand. Discussion, assigned readings, and lectures over selected trends, developments, and problems in the field of teaching.

EDEL 220. Orientation to Elementary/Middle School. (1) I, II. 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 overall view 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, II. 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 school: the social, psychological, and physical characteristics of early adolescent development; middle-level curricula; 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. 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, curricula, instructional methods, 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, curriculum, methods of instruction, instructional materials, and the evaluation of outcomes. 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 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.

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, II. 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) II, S. 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 in a second language is other than English. Pr.: Junior standing/target language proficiency.

EDEL 717. Corrective Reading Instruction. (1–3) On sufficient demand. Supervised tutoring of children with reading difficulties. Not open to students with credit in EDEL 847. Pr.: Students who are in teacher experience.

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 is 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 student instructional strategies. Pr.: A course in environmental studies.

EDEL 742. ESL/Dual Language Assessment. (3) II, 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/BE lessons/methodology. Pr.: EDEL 730, 731, 742, and EDUC 733.

EDEL 750. Contemporary Curriculum and Technology Connections. (3) S. Contemporary curriculum and education technology theories, methods, and models are examined and connections are developed for instruction and professional development. Specific methodological and technological skills are combined and applied to enhance student learning. Internet access and e-mail are required. Cross-listed: Elementary education and secondary education.

EDEL 755. Tradebooks in Elementary/Middle Schools. (3) I, II. This course examines the use of children's literature in the K–8 literacy classroom. It focuses on recently published books in several literary genres. Pr.: Student teaching experience.

EDEL 758. Reading/Writing Connections. (3) S. This course examines teaching language arts in an integrated manner, exploring the relationships between reading and writing from a developmental perspective. Teaching methods for a holistic environment are highlighted. Pr.: Student teaching experience.

EDEL 760. Teachers as Researchers. (3) I. This course introduces the theoretical and practical dimensions of classroom-based action research about curriculum and instruction topics, and students conduct an action research project. Pr.: Instructor permission. Cross-listed as EDEL 760 and EDSEC 760.

EDEL 768. Enhancing Instruction Through Technology. (3) I, S. Ways to use technology in instruction are examined as a means to enhance teacher presentations and student interpretations, teacher and student access to information, and professional communication. Pr.: Student teaching experience. Cross-listed as EDEL 768 and EDSEC 768.

EDEL 775. Readings in Education. (1–3) I, II. 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 300, and junior standing.

EDEL 786. Topics in Education. (1–3) I, II. S. Examina- tion 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. Inde- pendent study of a specific problem in curriculum or instruction. Pr.: Junior standing or higher.

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.

Foundations and Adult Education

Robert C. Newhouse, Chair
Professors Byrne, Litz, Oaklie, Polson, Rankin, Spikes, and Wright; Associate Professors Griffith, McGrath, Murry, Ross, and Spears; Assistant Professors Fishback and Stoney; Other: Abbott; Emeritus: Boyer, Hausmann, Meisinger, and Price.

www.educ.ksu.edu/Departments/AdultEd/overview.html
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. (3) I. Development and objectives of 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 various techniques 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 an understanding of the selection, utilization, 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 industry, 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 750. Women, Education, and Work. (2–3) 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.

EDACE 753. Introduction to Occupational Education. (3) I, II, S. Overview of occupational education at all levels and its role in society. Designed for administrators, counselors, and vocational educators who perform a leadership function involving occupational education programs. Pr.: Teaching experience or consent of instructor.

EDACE 754. Adult Basic Education. (3) On sufficient demand. Evolving adult basic and high school equivalency education concepts will be examined. Program implementation, supervision, methods, and materials are emphasized. Pr.: Adult teaching experience or consent of instructor.

EDACE 775. Readings in Adult 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. No more than 3 hours may apply to a graduate degree.

EDACE 780. Introduction to Adult Education. (3) I, II, S. A survey of adult education. Consideration given to articulation with other levels of education. Identification of changing needs within the field are reviewed. Pr.: Consent of instructor.

EDACE 782. Educational Gerontology. (3) On sufficient demand. For both the practitioner and those interested in educational gerontology as a field of inquiry, this course will combine practice and theory. It will examine education for and about aging, with particular reference to the role, needs, and ability of persons in the later years as learners. Stressing current trends and prospective new developments in the field, it will include a review of present programs and discussion of the teaching-learning process for older adults. Pr.: EDACE 780.

EDACE 786. Topics in Adult Education. (1–3) I, II, S. Examination of current topics in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDACE 790. Characteristics of the Adult Learner. (3) II, S. For teachers and administrators in adult and occupational programs who need a familiarity with the major characteristics of adulthood which affect the adult as a learner. Includes an examination of early, middle, and late adulthood. Pr.: EDACE 780 or FSHS 110 or PSYCH 110.

EDACE 791. Career Education. (2–4) On sufficient demand. Emphasis on providing occupational and adult experiences including orientation and exploratory and applied experiences in school and nonschool situations. Cross-listed with EDACE/EDSEC 791. Pr.: Teaching experience or consent of instructor.

EDACE 792. Hospital and Industry Adult Education. (3) On sufficient demand. An introduction to principles, roles, organization, procedures, and problems of adult education in hospitals, industry, and related agencies.

EDACE 795. Problems in Adult and Continuing Education. (Var.) I, II, S. Independent study of specific problems in the areas of adult or occupational education.

Curriculum, instruction, and policy courses
EDCIP 310. Foundations of Education. (2–3) 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) 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, EDSEP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 477, 500, 520, and EDCP 525, and EDCP 455.


EDCIP 611. Educational Sociology. (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 706. Aerospace Education Workshop. (3) S. 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 curricula and an examination of recent economic education materials. Pr.: Senior standing or higher.


EDCIP 730. Education of the Disadvantaged. (3) On sufficient demand. Consideration of the lifestyles and educational needs of school populations which have faced social, economic, and personal deprivation. Pr.: Consent of instructor.

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) I, II. Analysis of recent materials from perspective of concern with their potential for sex-role stereotyping. Examination of teaching resource materials for curricula 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 740. Curriculum Materials for Dual Language Learners. (3) I. An examination analysis of materials and practices of schools serving dual language learners. Materials include any items used by the school to implement the curriculum. Pr.: Senior standing.

EDCIP 750. Multicultural Issues in Teaching. (3) I. Examines the socio-cultural forces that influence the American educational system. Considers curriculum and instruction implications of human differences, and analyzes ways to promote equitable, quality education. Pr.: Senior standing.

EDCIP 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.

EDCIP 786. Topics in Education. (1–3) I, II. Examination of current topics in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDCIP 795. Problems in Education. (Var.) I, II, S. Independent study of a specific problem in curriculum or instruction. Pr.: Junior standing or higher.

Secondary Education

Lawrence C. Scharrmann, Chair
Professors Heerman, Scharrmann, Talab, and Wissman; Associate Professors Dalida, Goodson, Griffin, Harbort, Hertin, and Yahake; Assistant Professors Byars, Chance-Reay, Harris, and P. Staver; Instructors Jankovich, Kane, and Stone; Courtesy appointments: McFarlin and B. Newhouse; Emeriti: Alexander, Carpenter, Hause, Laurie, Prawl, Terrass, Wauthier, Welton, and Weiner.

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, modern 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 reading student’s 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 over 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 300. Introduction to Agricultural Education. (1–2) I, II. Introduction to the program responsibilities, methodology, organization, current trends and issues, and future direction of program 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 304. Coaching and Officiating Track and Field. (2) I, II. I in odd years. Study of rules, theory, and practices; methods of coaching. Pr.: EDSEC 250.


EDSEC 315. Administrative Data Applications. (3) I, II. Development of competencies in the usage of integrated software packages as they apply to the automated business environment. Pr.: EDSEC 215.

EDSEC 376. Core Teaching Skills: Secondary/Middle. (3) I, II. General teaching practices and the opportunity to apply that information in a laboratory setting. Two hours of lab and two of lab a week. Pr.: Admission to teacher education, EDSEC 102, and FSIS 110. Must be taken contemporaneously with EDCEP 115 and EDSP 123.

EDSEC 400. Leadership and Personal Development in Agricultural Education. (1) I, II. 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; and the role of the teacher in the guidance of students at the middle level. Cross-listed with EDEL 405. Pr.: Admission to teacher education.

EDSEC 407. World Wide Web-Based Searching/Researching. (3) II. The major topics of this course are formulating search strategies; critically evaluating information; using and evaluating major search engines, search tools, and other sources; and assessing the impact of the web on self and society, particularly with regard to how people learn and interact with others in this environment. Pr.: Introductory computer course.

EDSEC 415. Administrative Support Services and Technologies. (1) I. Introduction to computer terminology, software packages as they apply to the automated business environment; planning and evaluation of office automation; communication 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 ergonomics environment of the office, and the management of human resources in the office.

EDSEC 477. Middle-Level/Secondary Reading. (2) I, II. Introduction to and development of effective study/skill-based 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 EDSEC 525 and EDCEP 455.

EDSEC 500. Content Area Methods in the Secondary School. (2–3) I, II. Principles of teaching applied to content area 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.: EDCEP 315, EDSP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 477, 500, 520, and EDSEC 525 and EDCEP 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 565. Field Experience in Agricultural Education. (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 observation of and participation in school and community organizations and programs. Pr.: EDSEC 300 and FSIS 110 and consent of instructor.

EDSEC 580. Block II Lab: Content and Reading Methods. (1) I, II. Field-based experience to help the preprofessional teacher practice the incorporation of specific content area with reading methods in the secondary and middle schools. Pr.: EDCEP 315, EDSP 323, and EDSEC 376. Simultaneous enrollment required for EDSEC 477, 500, 520, and EDSEC 525 and EDCEP 455.

EDSEC 590. 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 582. Teaching Participation in Music. (8–12) I, II. Observation and teaching under the direction of selected music teachers in elementary, middle level, and secondary school music programs. Pr.: Admission to student teaching.

EDSEC 585. Internship in Athletic Training. (1–4) I, II. Supervised clinical application of practical skills in athletic training programs. Pr.: Consent of instructor. EDSEC 585 must be repeated for a total of 4 credit hours with additional prerequisite of KIN 330 and 335 required for last four semesters.

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. Pr.: Consent of instructor. Student teachers will participate in seminar sessions to discuss issues and experiences encountered during this school-based experience. Pr.: EDSEC 420, 476, and 477. Simultaneous enrollment required for EDCEP 455, EDCEP 525, and EDSEC 586.

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. (1) II. Acquaints students with techniques in selecting, implementing, and coordinating occupational programs between the school and the business community. Pr.: EDSEC 620.

EDSEC 620. Job Analysis. (1) II. Acquaints students with techniques of analyzing jobs and tasks related to occupations. Pr.: EDSEC 620.

EDSEC 614. Laboratory Techniques in Teaching Science. (3) II. I. 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 agricultural education programs. Students will gain experience in 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. S. Preparation and orientation in vocational education in Kansas and other states and countries; principles and philosophy underlying such education, relation of vocational education to social systems and community, state, and national needs. Pr.: EDCEP 315.

EDSEC 621. Program Planning in Vocational Education. (2–3) I, II. S. On sufficient demand. Emphasis on the duties and responsibilities of administrative and supervisory personnel responsible for the promotion, development, and coordination of comprehensive vocational-technical education programs at the local level. Pr.: Teaching experience or consent of instructor.

EDSEC 704. Extension Organization and Programs. (3) I, S. Development and objectives of Cooperative Extension and other university adult education programs; with emphasis on programs and procedures. Cross-listed as EDSEC 704, EDACE 704. Pr.: Senior standing or consent of instructor.

EDSEC 705. Organization Problems in Teaching Agricultural Mechanics. (Var.) On sufficient demand. Analysis of the agricultural mechanics course of study; needs and interests of students; learning difficulties; skills and technical knowledge required; correlation with agriculture; application of laws of learning to the teaching process; determination of objectives. Pr.: EDSEC 586.

EDSEC 706. Principles of Teaching Adults in Extension. (3) I, II. S. 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.
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 performance-based perspectives. Pr.: Junior standing.

EDSEC 731. ESL/Dual Language Literacy. (3) I. Explores the theoretical underpinnings of language acquisition and literacy theories 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.


EDSEC 737. Family and Consumer Science-Related Occupations. EDSEC 739. Coordination of Cooperative Vocational Education. (2–3) I, II. S. Emphasis on the legal aspects and other minimum requirements essential to conducting cooperative vocational education programs at the secondary and postsecondary levels. Pr. or cons.: EDSEC 620.


EDSEC 741. German Culture in Second-Language Learning. (3) Emphasis on the study of German culture and applications in Germanic curricula, including the development of materials. Pr.: Twenty-four credits in 200 and above in German or equiv. (Same as GRMN 741).

EDSEC 742. ESL/Dual Language Assessment. (3) I, II. 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.


EDSEC 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/BE lessons/methodology. Pr.: EDSEC 730, 731, 742, and EDCEP 733.

EDSEC 750. Contemporary Curriculum and Technology Connections. (3) S. Contemporary curriculum and educational technology theories, methods, and models are examined and connections are developed for instruction and professional development. Specific methodology and technological skills are combined and applied to enhance student learning. Internet access and e-mail are required. Cross-listed: Elementary education and secondary education.

EDSEC 760. Teachers as Researchers. (3) I. This course introduces the theoretical and practical dimensions of classroom-based action research about curriculum and instructional topics, and students conduct an action research project. Pr.: Instructor permission. Cross-listed as EDEL 760 and EDSEC 760.

EDSEC 768. Enhancing Instruction Through Technology. (3) I. Ways to use technology in instruction are examined as a means to enhance teacher presentations and student interpretation, teacher and student access to information, and professional communication. Pr.: Student teaching experience. Cross-listed as EDEL 768 and EDSEC 768.

EDSEC 770. Methods for Second Language Acquisition/Learning. (3) On sufficient demand. Study of the development of second language instruction, both historical and current. Syntax, morphology, discourse analysis, and global proficiency evaluation are foci for analysis of methods and for the development of a personal method of teaching. Pr.: EDSEC 476 and 24 credits in one second language at 200 level and above or equivalent.

EDSEC 775. Readings in Education. (1–3) I, II, S. Readings in research and applications in specialized areas in education. May be taken more than once. Pr.: FSHS 110.

EDSEC 776. Teaching in Middle Schools. (3) On sufficient demand. Several instructional approaches consistent with the characteristics of the emerging adolescent student (grades 5–9) will be examined in relation to current research. Direct development of alternative curricular programs, appropriate use of interdisciplinary activities and nontraditional materials will be emphasized. Pr.: EDCEP 315, middle-level field experience, elementary or secondary content methods course.

EDSEC 777. Hispanic Cultures in Second-Language Learning. (3) Emphasis on the study of Spanish culture and applications to the Spanish curriculum, including the development of materials. Pr.: Twenty-four credits in Spanish at 200 or above or equivalent. Same as SPAN 777.

EDSEC 786. Topics in Education. (1–3) I, II, S. Examination of the role of the teacher in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: FSHS 110.

EDSEC 791. Career Education. (2–4) On sufficient demand. Emphasis on providing for vocational and adult experiences including orientation and exploratory practice. Pr.: Cross-listed with EDACE/EDSEC 791. Pr.: Teaching experience or consent of instructor.

EDSEC 795. Problems in Education. (Var.) I, II, S. Independent study of a specific problem in curriculum or instruction. Pr.: Junior standing or higher.

EDSEC 795. Problems in Education. (Var.) I, II, S. Independent study of a specific problem in curriculum or instruction. Pr.: Junior standing or higher.

EDSEC 795. Problems in Education. (Var.) I, II, S. Independent study of a specific problem in curriculum or instruction. Pr.: Junior standing or higher.
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 school teaching. Program focus is to work with students with mild/moderate disabilities or high abilities 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 500. Introduction to Human Exceptionality. (3) II, S. Survey of history and legal aspects of service, etiologies, characteristics, and special needs of exceptional individuals. Pr.: FSHS 110 or PSYCH 100.


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) 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. 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. Characteristics and Needs of Individuals Who Are 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 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) I, II, S. Experiences 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

Terry S. King, Dean
Ray E. Hightower, Assistant Dean
Richard Gallagher, Associate Dean
Tom C. Roberts, Assistant Dean
Suzanne E. Franks, Director, Women in Engineering and Science Program
Thirkelle Howard, Director, Multicultural Engineering Program

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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. In addition to the 12 degree programs, 6 formal options and 60 areas of specialization are offered. 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 practice-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 met the admission requirements of Kansas State University (see the Admission section of this catalog). Students are expected to have a strong academic rank in class and good ACT scores (or equivalent), but academic support programs are available to help students achieve their goals.

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. Given extenuating circumstances, exceptions to this policy may be granted with the written recommendation of the pre-engineering advisor at the transfer institution. The advisor’s letter of recommendation must be included 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 must 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 advised by the assistant dean of student services and 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 provides courses supporting technical leadership developments and 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. For additional information, contact the assistant dean of recruitment and leadership development.

Engineering equipment fee
The engineering equipment fee is in addition to the normal university fees. Students enrolling in engineering courses are assessed $14 per student credit hour plus a $1 per student credit hour university technology fee. (Fees are subject to change.)

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 12 credit hours after their transfer, in order to continue their studies in the College of Engineering.

Transferability of courses
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 their pre-engineering advisors and the College of Engineering assistant dean of student services.

To determine which courses at a particular college or university will substitute for courses at K-State, access the Office of Admissions webpage:
www.ksu.edu/admit/trans_info.html

The grade of Cr is not acceptable for transfer into College of Engineering programs.

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.

Engineering subjects that normally are offered during the summer include:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 530</td>
<td>Statics and Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>CIS 200</td>
<td>Fundamentals of Software Design</td>
<td></td>
</tr>
<tr>
<td>CIS 209</td>
<td>Programming for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>EECE 519</td>
<td>Electric Circuits and Controls</td>
<td>4</td>
</tr>
<tr>
<td>ME 512</td>
<td>Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>ME 513</td>
<td>Thermodynamics I</td>
<td>3</td>
</tr>
<tr>
<td>ME 571</td>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Analytical Geometry and Calculus I</td>
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</tbody>
</table>

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.

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 UGE courses. In most instances, courses will be used as “overlays,” e.g., to satisfy concurrently a requirement based on accreditation criteria and a UGE requirement.

Students who have acquired academic credits which are accepted by the university, prior to fall 1997, are not obligated to complete the UGE requirements. Students who pursue and complete their first acceptable credit in fall 1997 or later must meet all aspects of the university general education program.

Requirements
The minimum university general education requirements of the college include:

- Humanities and social science: 9 credit hours
- Must be selected from UGE courses that are also on the engineering approved humanities and social science elective list. 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.
- 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.
- In course descriptions, UGE courses are marked with a . For more information about UGE requirements, see the Degrees section of this catalog. For a current list of approved UGE courses: www.ksu.edu/registrar/enroll/gened.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 course work 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, speech, and UGE requirements of the university, graduates of these programs have taken at least 60 credit hours outside the College of Engineering.

Significant program breadth of our ABET-accredited engineering programs is ensured by the many curricular requirements outside of a student’s major and the UGE program requirements of the college.

The construction science and management major is accredited by the American Council for Construction Education. The computer science major is accredited by the Computing Sciences Accreditation Board. These programs also contain significant program breadth.

Requirements for each degree can be obtained from the webpage of the department that offers the degree. Go to the college index of department webpages:
www.engg.ksu.edu/departments

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: DEN 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, 535, 555, 700, 702, 705, 708, 709, and 711
History: Any course
Mass communications: 235, 300, 530, 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 except 110, 220, and 510
Political science: Any course
Psychology: Any course
Sociology: Any course except 520 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 earn quiz-out credits in chemistry, computer science, 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: kstate@ksu.edu

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 problems designed to enrich and challenge each participant. The engineering honors program is closely integrated with the honors program 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 computing and information sciences

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<thead>
<tr>
<th>Required courses</th>
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<tbody>
<tr>
<td>CIS 200</td>
<td>Fundamentals of Software Design and Implementation</td>
</tr>
<tr>
<td>CIS 300</td>
<td>Data and Program Structures</td>
</tr>
<tr>
<td>CIS 501</td>
<td>Software Architecture and Design</td>
</tr>
<tr>
<td>Two additional 500- or 600-level courses in CIS</td>
<td>6</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Required courses</th>
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</thead>
<tbody>
<tr>
<td>EEEC 241</td>
<td>Introduction to Computer Engineering</td>
</tr>
<tr>
<td>EEEC 431</td>
<td>Microcontrollers</td>
</tr>
<tr>
<td>EEEC 541</td>
<td>Design of Digital Systems</td>
</tr>
<tr>
<td>EEEC 543</td>
<td>Computer System Interfacing Lab</td>
</tr>
<tr>
<td>EEEC 643</td>
<td>Computer Engineering Design Lab</td>
</tr>
<tr>
<td>EEEC 649</td>
<td>Computer Design I</td>
</tr>
</tbody>
</table>

Minor in embedded systems
The minor in embedded systems provides the opportunity to gain knowledge and experience necessary for designing and implementing real-time embedded systems for applications in their field of study.

<table>
<thead>
<tr>
<th>Required courses</th>
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<tbody>
<tr>
<td>CIS 621</td>
<td>Real-Time Programming</td>
</tr>
<tr>
<td>CIS 622</td>
<td>Real-Time Operating Systems</td>
</tr>
<tr>
<td>CIS 721</td>
<td>Real-Time Systems</td>
</tr>
<tr>
<td>EEEC 633</td>
<td>Real-Time Embedded Systems</td>
</tr>
<tr>
<td>EEEC 733</td>
<td>Real-Time Embedded Systems</td>
</tr>
<tr>
<td>Engineering electives from approved list</td>
<td>6</td>
</tr>
</tbody>
</table>

Minor in ergonomics/safety
A minor in ergonomics and safety emphasizes the consideration of the well being of the human being in industrial operations.

<table>
<thead>
<tr>
<th>Required courses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSE 250</td>
<td>Introduction to Manufacturing</td>
</tr>
<tr>
<td>IMSE 251</td>
<td>Manufacturing Processes Lab</td>
</tr>
<tr>
<td>IMSE 602</td>
<td>Topics in Industrial Engineering:</td>
</tr>
<tr>
<td>IMSE 623</td>
<td>Advanced Safety Principles</td>
</tr>
<tr>
<td>IMSE 625</td>
<td>Industrial Ergonomics</td>
</tr>
<tr>
<td>IMSE 610</td>
<td>Work Environments</td>
</tr>
<tr>
<td>Occupational Safety Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>
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 563 Manufacturing Processes Engineering 1
- 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 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**
Core courses:
- STAT 511 Introduction to Probability and Statistics I 3
- IMSE 560 Introduction to Operations Research I 3
- IMSE 633 Production Planning and Inventory Control 3
- IMSE 643 Industrial Simulation 3
- IMSE 660 Introduction to Operations Research II 3

**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 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 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 650 Energy and Biofuel Engineering
- BAE 700 Agricultural Process Engineering
- CHE 715 Biochemical Engineering
- CHE 725 Biotransport Phenomena
- CE 563 Environmental Engineering Fundamentals
- CE 565 Water and Wastewater Engineering
- CE 762 Water Treatment Processes
- CE 766 Wastewater Engineering: Biological Processes
- EECE 571 Introduction to Biomedical Engineering
- 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 underwater 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 in 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.
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 the Assistant Dean of 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.

The second degree may be earned at other four-year institutions, such as the other Regents schools in Kansas. Advisors from these schools will help plan programs commonly referred to as “3-2” degree programs. Students complete 3 years of course work at their institution and arrange to transfer a portion of the credit hours earned at K-State to complete the degree requirements at their institution. If properly planned and implemented, students will also complete requirements for a degree at K-State when the fifth year is completed. However, because about 66 percent of the students at engineering schools take five or more years to complete four-year programs, most of these dual degree programs take 5½ to 6 years to complete.

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 must take additional courses in chemistry and electives 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.
Center of Excellence, Advanced Manufacturing Institute
Bradley A. Kramer, 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. The MLC consists of a manufacturing plant equipped with modern manufacturing software and staffed with a dynamic 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. Through internships at AMI, undergraduate and graduate students obtain hands-on engineering experience and become productive engineers immediately upon graduation.

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 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.

Training includes the development of short courses, handbooks, manuals, and other training materials developed under the Traffic Assistance Services for Kansas and Superpave Certification Training for personnel engaged in the construction of Kansas’ highways.

The center conducts close to $400,000 annual research for the Kansas Department of Transportation under the Kansas Transportation and New Developments program.

The center also hosts an annual transportation conference for state and local public employees in the transportation sector.

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.

Civil Infrastructure Systems Laboratory
Lakshmi N. Reddi, 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.

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
Steven J. Eckels, Interim 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.

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
Richard Gallagher, Associate Dean
Ray E. Hightower, Assistant Dean
Tom C. Roberts, P.E., 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.

Fall semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 100</td>
<td>Expository Writing</td>
<td>3</td>
</tr>
<tr>
<td>CHM 210</td>
<td>Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Analytic Geometry and Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>DEN 160</td>
<td>Engineering Concepts</td>
<td>1</td>
</tr>
<tr>
<td>Humanities or social science elective</td>
<td></td>
<td>3</td>
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<tr>
<td>DEN 015</td>
<td>New Student Orientation</td>
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</table>

Spring semester

<table>
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<tr>
<th>Course</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>SFCH 105</td>
<td>Public Speaking 1A</td>
<td>2</td>
</tr>
<tr>
<td>CHM 230</td>
<td>Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Analytic Geometry and Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>Humanities or social science elective</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

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.
DEN 120. Emphasis on career exploration rec. a week.

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 II .......... 3
ET 512 Mechanics of Fluids .......... 3
ET 514 Energy Conversion Technology .......... 3
ET 534 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 ..................................................................................... 1

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 (deadlines, 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. Multicultural Engineering Enrichment Seminar. (1) I. Introduction to the academic and intellectual demands of an engineering curriculum from a multicultural perspective. Develop group cohesiveness 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 examination performance, promote optimum utilization of campus resources, develop leadership and communication skills and enhance self-esteem. Credit may not be applied toward 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 per week. 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. a week for ten weeks. (Includes examinations).

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. Multicultural 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.

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 lec. and one hour activity a week. Pr.: Sophomore standing.

DEN 299. Honors Seminar in Engineering. (1) I, II. Selected topics of general interest. Open to students in the engineering honors program for one semester, usually taken in the first semester enrollment at K-State.

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 lec. a week. Pr.: MATH 100, sophomore standing. Cross-listed with MGMT 300.

DEN 398. Problems in Engineering and Technology. (Var.) I, II. 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) I. 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. Open to engineering students. Two hours lec. a week.

DEN 450. Impact of Technology on Societies. (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 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, or conc.: 15 hours of approved courses in NRES secondary major. Cross-listed with DAS 582 and GENAG 382.

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 Frittenh, Head
Professors Bissey, Burton, Goddard, and Hayter; Associate Professors Frittenh, Riblett, Roberts, and Tredway; Assistant Professors Goodman, Hafling, Johnson, Knight, Kramer, Lewis–Smith, and Stephens; Instructors: Logan and Yunk; Emeriti: Professors Dahl, Hodges, Lindley, Mingle, and Thorson; Associate Professor Blackman.

E-mail: arecns@ksu.edu
www.ksu.edu/are-cns/

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**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MATH 220</td>
<td>Analytical Geometry and Calculus I</td>
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<tr>
<td>MATH 221</td>
<td>Analytical Geometry and Calculus II</td>
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<tr>
<td>MATH 222</td>
<td>Analytical Geometry and Calculus III</td>
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<td>MATH 240</td>
<td>Elementary Differential Equations</td>
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<td>CHEM 210</td>
<td>Chemistry I</td>
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<td>CHEM 230</td>
<td>Chemistry II</td>
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<td>PHYS 213</td>
<td>Engineering Physics I</td>
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<td>PHYS 214</td>
<td>Engineering Physics II</td>
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<td>ENVD 205</td>
<td>Graphics I</td>
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<td>ENVD 206</td>
<td>Graphics II</td>
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<tr>
<td>GEOL 100</td>
<td>Earth in Action</td>
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<tr>
<td>DEN 210</td>
<td>History of Building and Construction</td>
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<tr>
<td>ARE 100</td>
<td>Architectural Engineering Orientation</td>
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<tr>
<td>CNS 320</td>
<td>Construction Materials</td>
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<tr>
<td>CNS 210</td>
<td>Introduction to Construction ComputerProgramming</td>
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<tr>
<td>CE 333</td>
<td>Statics</td>
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<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
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<td>SPCH 105</td>
<td>Public Speaking I</td>
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<tr>
<td>ECON 110</td>
<td>Principles of Macro-Economics</td>
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**Construction science and management**

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<tr>
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<tr>
<td>MATH 220</td>
<td>Analytical Geometry and Calculus I</td>
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<tr>
<td>PHYS 113</td>
<td>General Physics I</td>
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<tr>
<td>PHYS 114</td>
<td>General Physics II</td>
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<td>ENVD 205</td>
<td>Graphics I</td>
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<tr>
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<td>GEOL 100</td>
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<tr>
<td>CNS 320</td>
<td>Construction Materials</td>
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<tr>
<td>CE 212</td>
<td>Elementary Surveying</td>
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<td>CE 231</td>
<td>Statics</td>
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<td>ECON 110</td>
<td>Principles of Macro-Economics</td>
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<tr>
<td>ACCGT 231</td>
<td>Accounting for Business Operations</td>
</tr>
</tbody>
</table>

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 a 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.

Courses in the lower-division program include:

- **Chemistry**
- **Physics**
- **Engineering**
- **Construction Materials**
- **Graphics**
- **Earth in Action**
- **History of Building and Construction**
- **Architectural Engineering Orientation**
- **Introduction to Construction Computer Programming**
- **Statistics**
- **Expository Writing**
- **Public Speaking**
- **Principles of Macro-Economics**
- **Accounting for Business Operations**

Courses in the upper-division program include:

- **Chemistry**
- **Physics**
- **Engineering**
- **Construction Materials**
- **Graphics**
- **Earth in Action**
- **History of Building and Construction**
- **Architectural Engineering Orientation**
- **Introduction to Construction Computer Programming**
- **Statistics**
- **Expository Writing**
- **Public Speaking**
- **Principles of Macro-Economics**
- **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.
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, 111 Market Place, Suite 105, Baltimore, MD 21202–4012. 410-347-7700

**Pre-professional program (PARE)**

**Freshman**

**Fall semester**

- ENVD 205 Graphics I ........................................... 2
- ENGL 100 Expository Writing I** .......................... 3
- CHM 210 Chemistry I ............................................ 4
- MATH 220 Analytic Geometry and Calculus I .......... 4
- DEN 210 History of Building and Construction ... 3
- ARE 100 Architectural Engineering Orientation .. 1
- ARE 020 Architectural Engineering Seminar .... 0

**Spring semester**

- ENVD 206 Graphics II ........................................ 2
- CHM 230 Chemistry II ....................................... 2
- MATH 221 Analytic Geometry and Calculus II .... 4
- ECN 110 Principles of Macroeconomics .......... 3
- SPCH 105 Public Speaking IAA ......................... 2
- ARE 020 Architectural Engineering Seminar .... 0

**Sophomore**

**Fall semester**

- MATH 222 Analytic Geometry and Calculus III .... 4
- PHYS 213 Engineering Physics I .......................... 5
- CNS 210 Introduction to Construction .............. 6
- CNS 320 Construction Materials ........................ 2
- ENGL 200 Expository Writing II** or
  - Humanities or social science elective* ... 3
- ARE 020 Architectural Engineering Seminar .... 0

**Spring semester**

- ART 100 2 D Design ...................................... 2
- ART 200 3 D Design ........................................ 3
- MATH 240 Elementary Differential Equations .... 4
- PHYS 214 Engineering Physics II ...................... 5
- GEOL 100 Earth in Action ............................... 3
- CE 333 Statics .......................................... 3
- ARE 020 Architectural Engineering Seminar .... 0

**Junior**

**Fall semester**

- CNS 321 Construction Techniques and Detailing .... 3
- ARE 532 Lighting Systems Design ...................... 2
- CE 533 Mechanics of Materials ....................... 3
- CE 534 Mechanics of Materials Lab .................. 1
- ME 513 Thermodynamics I ................................ 3
- ME 560 Engineering Economics ...................... 2
- ARE 020 Architectural Engineering Seminar .... 0

**Spring semester**

- ARE 325 Construction Drawing ........................... 3
- ARE 534 Thermal Systems .................................. 3
- CE 212 Elementary Surveying Engineering ....... 3
- CE 537 Introduction to Structural Analysis ........ 3
- EE 519 Electrical Circuits and Controls .......... 4
- ARE 020 Architectural Engineering Seminar .... 0

**Senior**

**Fall semester**

- ARE 411 Architectural Engineering Design ......... 3
- ARE 523 Timber Structures .............................. 2
- ARE 533 Building Electrical Systems .............. 3
- ARE 537 Acoustic Systems ................................ 3
- ENGL 415 Written Communication for Engineers** 3
- ME 512 Dynamics ........................................ 3
- ARE 020 Architectural Engineering Seminar .... 0

**Spring semester**

- ARE 524 Theory of Structures II ...................... 3
- ARE 536 Plumbing/Fire Protection Systems ....... 3
- ARE 640 Building Mechanical Systems .......... 3
- ME 571 Fluid Mechanics .................................. 3
- Complementary elective*** ............................ 3
- Humanities or social science elective (upper level)* ... 3
- ARE 020 Architectural Engineering Seminar .... 0

**Fifth year**

**Fall semester**

- ARE 528 Theory of Structures III .................. 3
- ARE 590 Integrated Building System Design .... 3
- CE 522 Soil Mechanics I .................................. 3
- Complementary elective*** ............................ 3
- Free elective ............................................ 4
- ARE 020 Architectural Engineering Seminar .... 0

**Spring semester**

- ARE 690 Senior Project .................................. 3
- ARE 539 Architectural Engineering Management .... 3
- Complementary elective*** ............................ 3
- Complementary elective*** ............................ 3
- Humanities or social science elective (upper level)* ... 3
- ARE 020 Architectural Engineering Seminar .... 0

*Humanities and social science electives must be selected from the official College of Engineering list. Advisors should be consulted to assure that the College of Engineering UGE requirements are also met (see University General Education section in the engineering portion of this catalog). The electives need not be taken during the semester shown in the curriculum.

**Pre-professional program (PCNSM)**

**Freshman**

**Fall semester**

- ENVD 205 Graphics I ........................................ 2
- MATH 220 Analytic Geometry and Calculus I .... 4
- DEN 210 History of Building and Construction ... 3
- ENGL 100 Expository Writing I ........................ 3
- GEOL 100 Earth in Action ............................... 3
- CNS 100 Construction Science and Management ... 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
- ECN 110 Principles of Macroeconomics ........ 3
- Humanities or social science elective* ............. 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† or
  - Humanities or social science elective* .......... 3
- SPCH 105 Public Speaking IA ................. 2
- CNS 016 Construction Seminar ....................... 0

**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

**Construction science and management**

The construction science and management program prepares students to be professional constructors, managers of personnel resources, financial resources, materials, and machines. The curriculum is an engineering-based management program designed to produce technically competent managers of construction. Entering students should have a background in mathematics and physics.

The program prepares graduates to execute the designs created by engineers and architects. Graduates may enter fields of general, commercial, residential, heavy and highway, utility, mechanical, or electrical construction. Their education provides the fundamental engineering and management skills necessary for success in any of the above areas.

Constructors work in many settings. For example, as a principal in a small construction firm, a constructor may engage in many of the activities in management, whereas a constructor in a large firm may concentrate exclusively on one or two of the activities. Most students in the program intend to enter building, heavy/highway, or utility construction fields. Other roles, such as construction education, will normally require an advanced degree and/or professional experience.

Through construction education, students attain a level of construction knowledge that would otherwise require decades of practical experience to develop. With this level of knowledge, graduates typically move rapidly into upper management positions in construction organizations.

**Curriculum in construction science and management (CNSM)**

Bachelor of science in construction science and management

134 hours required for graduation

Accredited by the American Council for Construction Education

**Pre-professional program (PCNSM)**

**Freshman**

**Fall semester**

- ENVD 205 Graphics I ........................................ 2
- MATH 220 Analytic Geometry and Calculus I .... 4
- DEN 210 History of Building and Construction ... 3
- ENGL 100 Expository Writing I ........................ 3
- GEOL 100 Earth in Action ............................... 3
- CNS 100 Construction Science and Management ... 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
- ECN 110 Principles of Macroeconomics ........ 3
- Humanities or social science elective* ............. 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† or
  - Humanities or social science elective* .......... 3
- SPCH 105 Public Speaking IA ................. 2
- CNS 016 Construction Seminar ....................... 0

**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
II. On sufficient demand. Basics of CAD and the applicability. One hour lec. a week. Pr.: ARE 100, 190, CNS 325.

ARE 499. Honors Research in Architectural 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 at the last semester. Pr.: ARE 532. Three hours rec. and three hours lab a week. Pr.: ARE 534.

ARE 720. Topics in Architectural Engineering. (V) I, II. A study of specific design problems in architectural engineering. Pr.: or conc.: ARE 590.

ARE 742. Advanced Sanitation Systems. (3) I. Water quality and treatment, pressure control, and hydraulics in domestic water and waste systems. Three hours rec. and three hours lab a week. Pr.: ARE 536 or CNS 356.

ARE 731. Advanced Lighting Design. (3) II. 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 552.

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 system design for buildings. Students are required to develop term research design projects. Two hours rec. and three hours lab a week. Pr.: ARE 640.

ARE 735. Electrical Systems Design. (3) II. Complete design and specifications of electrical systems for a selected structure. The course uses the National Electrical Code in conjunction with all the modern techniques of electrical 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 528 or equivalent first course in reinforced concrete design.

ARE 780. Theory of Structures IV. (3) II. Continuation of Theory II and III, with 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 899. Master’s Thesis. (Var.) I, II. S. A study of a specific problem under the direct supervision of a member of the architectural engineering faculty. Pr.: Approval of major professor. May be repeated.

ARCHITECTURAL ENGINEERING CURRICULUM

Fall semester
CNS 330 Site Construction ........................................ 3
MANGT 390 Business Law ........................................ 3
Humanities or social science elective (upper level) ? ......... 3
CNS 016 Construction Seminar ................................ 0

Senior
Fall semester
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 Acoustic Systems ........................................ 2
Management elective (general)? .................................. 3
CNS 016 Construction Seminar ................................ 0

Spring semester
CNS 523 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 .............................................. 3
Professional elective ............................................... 2
CNS 650 Construction Safety ..................................... 2
CNS 016 Construction Seminar ................................ 0

JUNIOR
Fall semester
CNS 524 Steel Construction ...................................... 3
CNS 640 Construction Operations .............................. 3
CNS 641 Construction Estimating ............................... 3
CNS 642 Construction Management ............................ 3
Management elective .............................................. 3
CNS 016 Construction Seminar ................................ 0

Spring semester
CNS 528 Concrete and Masonry Construction ................. 3
CNS 645 Construction Scheduling and Cost Control ......... 3
CE 322 Soil and Foundation Construction .................... 3
Management or professional elective ............................ 3
Professional elective ............................................... 2
Humanities or social science elective (upper level) ......... 3
CNS 016 Construction 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.

Humanities and social science electives must be selected from the official College of Engineering list. Advisors should be consulted to assure that the College of Engineering UGE requirements are also met (see University General Education section in the engineering portion of this catalog). The electives need not be taken during the semester shown in the curriculum.

Management electives and professional electives are to be selected from approved departmental lists.

ARCHITECTURAL ENGINEERING COURSES

ARE 020. Architectural Engineering Seminar. (0) I, II. Presentation of professional problems and practices by students, faculty, and professionals associated with the career of architectural engineering. One hour lec. a month.

ARE 100. Architectural Engineering Orientation. (1) I. Introduction to architectural engineering; emphasis on relationship of architectural engineering to the building industry. One hour lec. a week.

ARE 311. CAD in Engineering and Construction. (2) I, II. On sufficient demand. Basics of CAD and the applications to the engineering and construction industry. Two hours lecture and six hours lab a week (7 week course). Pr.: CNS 210.

ARE 411. Architectural Engineering Design. (3) I, II. Principles and elements of design; synthesis of structural, mechanical, electrical, lighting, sanitary, and construction systems, considering interrelationship in performance and economics. Two hours rec. and three hours lab a week. Pr.: ARE 100, CNS 325.

ARE 499. Honors Research in Architectural 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 at the last semester. Pr.: ARE 532. Three hours rec. and three hours lab a week. Pr.: ARE 534.

ARE 720. Topics in Architectural Engineering. (V) I, II. A study of specific design problems in architectural engineering. Pr.: or conc.: ARE 590.

ARE 742. Advanced Sanitation Systems. (3) I. Water quality and treatment, pressure control, and hydraulics in domestic water and waste systems. Three hours rec. and three hours lab a week. Pr.: ARE 536 or CNS 356.

ARE 731. Advanced Lighting Design. (3) II. 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 552.

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 system design for buildings. Students are required to develop term research design projects. Two hours rec. and three hours lab a week. Pr.: ARE 640.

ARE 735. Electrical Systems Design. (3) II. Complete design and specifications of electrical systems for a selected structure. The course uses the National Electrical Code in conjunction with all the modern techniques of electrical 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 528 or equivalent first course in reinforced concrete design.

ARE 780. Theory of Structures IV. (3) II. Continuation of Theory II and III, with 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 899. Master’s Thesis. (Var.) I, II. S. A study of a specific problem under the direct supervision of a member of the architectural engineering faculty. Pr.: Approval of major professor. May be repeated.

Construction science and management courses
CNS 016. Construction seminar. (0) I, II. Presentation of professional problems and practices by students, faculty, contractors, architects, and various organizations associated with the building industry. One hour lec. a month.

CNS 100. Construction Science and Management Orientation. (1) I. Introduction to construction science and management; emphasis on the relationship of the program to the construction industry. One hour lec. a week.

CNS 210. Introduction to Construction Computer Programming. (3) I, II. Computer operating systems, presentations, scheduling, flowcharting, spreadsheets, macros, and fundamental programming for engineering and construction applications. Two hours rec. and two hours lab a week. Pr.: MATH 150.
CNS 320. Construction Materials. (2) I, II. Study and analysis of construction materials, their properties, selection, and use. Two hours rec. a week. Pr.: ENVD 205.


CNS 330. Site Construction. (3) I, II. Study of site construction 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.

CNS 499. Honors Research in Construction Science. (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.


CNS 522. Theory of Structures. (3) I, II. Basic design and construction of building electrical, lighting, and masonry structures. Two hours lec. and three hours lab a week. Pr.: CNS 321 and 325. Conc.: CNS 461.


CNS 523. Timber Construction. (2) I, II. Principles of design, fabrication, and erection of timber structures including both solid and laminated materials. Two hours rec. a week. Pr.: CNS 322.

CNS 528. Concrete and Masonry Construction. (3) I, II. Principles of design, fabrication, and erection of concrete and masonry structures. Two hours lec. and three hours lab a week. Pr.: CNS 322.


CNS 535. Electrical Service and Installation. (3) II. Basic design and construction of building electrical, lighting, and distribution systems with emphasis on the National Electrical Code and installation. Three hours rec. a week. Pr.: PHYS 114 and CNS 321.

CNS 536. Water Supply and Plumbing. (3) I, II. Principles and practices of plumbing and fire protection systems in buildings including code requirements and estimating. Three hours rec. a week. Pr.: PHYS 113 and CNS 321.


CNS 544. Problems in Construction Science. (Var.) I, II, S. A study of specific design problems under the direct supervision of a member of the construction science faculty. Pr.: Junior standing.

CNS 545. Heavy Construction Methods. (3) I, Principles of asphalt, asphalt and concrete paving operations, concrete batch plant operations, heavy construction equipment, and applications. Three hours rec. a week. Pr.: CNS 325 and 540.


CNS 640. Construction Operations. (3) I, II. Shop drawing and submittal processes, field and office practices, change orders, construction safety standards and practice, pre-construction planning, expediting, short-interval planning. Two hours rec. and three hours lab a week. Pr.: CNS 325 and 540. Conc.: CNS 641.

CNS 641. Construction Estimating. (3) I, II. Understanding estimating procedures, quantity surveying, specification reviews, pricing of an estimate, market analysis, subcontractor and supplier solicitation, and risk management, following the CSI format. Nine hours lab a week. Pr.: CNS 325 and 540.


CNS 644. Topics in Construction Management. (V) I, II. On sufficient demand. Topical material of importance in the management of construction such as marketing, ethics, personnel management, etc. Pr. or conc.: CNS 642.


CNS 650. Construction Safety. (2) I, II. Introduction to safety and safety programs, workers’ compensation, OSHA organization and structure, safety policies and record keeping, safety standards. Emphasis will be on communication and job-site safety management. On-site safety inspections will be required with in class presentations and written reports to be submitted. Two hours rec. a week. Pr. or conc.: CNS 535 and 540.

CNS 738. Mechanical and Electrical Estimating. (2) I, II. Techniques of mechanical and electrical building systems estimating. Procedure for evaluating relative costs of different systems. Development of computer-aided finite and conceptual estimating techniques. Two-three hours lab a week. Pr.: ARE 534 or CNS 534, ARE 536 or CNS 536, and Pr. or conc.: ARE 533 or CNS 535.

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Biological and Agricultural Engineering

James K. Koelliker, Head
Professors Chung, G. Clark, Harner, Koelliker, Murphy, Powell, Rogers, Schrock, Slocombe, Spillman, Steichen, Taylor, and Zhang; Associate Professors Alam and Maghirang; Assistant Professors Barnes, Hutchinson, Mankin, Wang, and Wolf; Adjunct Professor Dowell; Adjunct Associate Professors Casada, Hagen, and Pearson; Adjunct Assistant Professor Wagner; Emeriti: Professors S. Clark, Fairbanks, Jepsen, Larson, Manges, and Wendling; Associate Professors Baugher, Stevenson, TenEyck, and Thierstein.

Biological and Agricultural Engineering

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. Four curriculum options are available.

General option

Biological and agricultural engineers develop techniques and equipment for using land and water resources to produce and process an array of biological products, including food, fiber, energy, chemical feedstocks, and pharmaceuticals. The increasing demand for agricultural products must be met within the constraints of greater competition for reduced land, water, and energy resources.

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 a broad range of technical elective courses that allow the student to pursue his or her specific interests.

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. Point and non-point pollution sources still impact the environment, requiring biological and agricul-
tural 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.

Processing option

Students pursuing the processing option can fulfill the requirements for a B.S. in biological and agricultural engineering with an emphasis on the processing, storage, and handling of biological products. Inherent in this program is the basic background of biological and agricultural engineering. The first three years of this option are similar to the other three options. Processing systems based electives from biological and agricultural engineering, chemical engineering, grain science, or animal science courses are selected from prepared lists to help students customize an engineering degree in their area of interest.

Machinery option

Many biological and agricultural engineers design, test, and evaluate the machines used in agriculture, construction, and related off-highway industries. The machinery option provides graduates with the analytical tools needed to develop machines that reduce the cost of production for both traditional and new crops, while operating within environmental and energy constraints. This option includes courses that emphasize mechanical design as well as the interaction of machines with soil and plant materials. Related technologies such as fluid power, instrumentation, and electronic controls are also included in this option.

Agricultural technology management

Description and curriculum outline are listed in the College of Agriculture section of this catalog.

Curriculum in biological and agricultural engineering (BAE)

Bachelor of science in biological and agricultural engineering

130 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, 111 Market Place, Suite 105, Baltimore, MD 21202-4012. 410-347-7700

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#### Fall semester
- **BAE 535**: Fundamentals of Structures and Environmental Engineering
- **BAE 536**: Agricultural Engineering Design I
- **BAE 651**: Air Pollution Engineering or Non-Pollution Engineering
- **ENGL 415**: Written Communications for Engineers
- **Course**: Environmental technical elective
- **BAE 020**: Engineering Assembly

#### Spring semester
- **BAE 636**: Agricultural Engineering Design II (or approved capstone course)
- **BAE 640**: Instrumentation and Control for Bio Systems
- **Environmental technical elective
- **BAE 020**: Engineering Assembly

#### Junior

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#### Fall semester
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- **BAE 651**: Air Pollution Engineering or Non-Pollution Engineering
- **BAE 530**: Natural Resource Engineering (spring semester course, if taken, use 3-hour tech elective in the fall)
- **BAE 536**: Agricultural Engineering Design I
- **ENGL 415**: Written Communication for Engineers
- **Course**: Technical elective
- **ME 560**: Engineering Economics
- **BAE 020**: Engineering Assembly

#### Senior

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- **BAE 536**: Agricultural Engineering Design I
- **FALL 415**: Written Communication for Engineers
- **Course**: Technical elective
- **ME 560**: Engineering Economics
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#### Fall semester
- **MATH 222**: Analytic Geometry and Calculus III
- **PHYS 213**: Engineering Physics I
- **BAE 350**: Agricultural Machinery Systems
- **ME 212**: Engineering Graphics
- **Course**: Humanities or social science elective
- **BAE 020**: Engineering Assembly

#### Spring semester
- **MATH 240**: Elementary Differential Equations
- **PHYS 214**: Engineering Physics II
- **BAE 350**: Agricultural Machinery Systems
- **ME 570**: Fluid Mechanics
- **Course**: Science or technical elective
- **BAE 020**: Engineering Assembly

### Freshman

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#### Fall semester
- **ENGL 100**: Expository Writing I
- **CHM 210**: Chemistry I
- **MATH 220**: Analytic Geometry and Calculus I
- **SPCH 205**: Public Speaking IA
- **BAE 200**: Engineering Methods
- **BAE 020**: Engineering Assembly

#### Spring semester
- **CHM 230**: Chemistry II
- **MATH 221**: Analytic Geometry and Calculus II
- **BIOL 198**: Principles of Biology

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### Machinery option

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#### Fall semester
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#### Spring semester
- **CHM 230**: Chemistry II
- **MATH 221**: Analytic Geometry and Calculus II
- **BIOL 198**: Principles of Biology

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#### Fall semester
- **MATH 222**: Analytic Geometry and Calculus III
- **PHYS 213**: Engineering Physics I
- **BAE 350**: Agricultural Machinery Systems
- **ME 212**: Engineering Graphics
- **BAE 020**: Engineering Assembly

#### Spring semester
- **CHM 230**: Chemistry II
- **MATH 221**: Analytic Geometry and Calculus II
- **BIOL 198**: Principles of Biology

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#### Fall semester
- **BAE 535**: Fundamentals of Structures and Environmental Engineering
- **BAE 651**: Air Pollution Engineering or Non-Pollution Engineering
- **BAE 530**: Natural Resource Engineering (spring semester course, if taken, use 3-hour tech elective in the fall)
- **BAE 536**: Agricultural Engineering Design I
- **BAE 636**: Agricultural Engineering Design II (or approved capstone course)
- **BAE 650**: Energy and Biofuel Engineering
- **Course**: Technical elective
- **BAE 020**: Engineering Assembly

#### Spring semester
- **BAE 640**: Instrumentation and Control for Bio Systems
- **BAE 636**: Agricultural Engineering Design II
- **BAE 650**: Energy and Biofuel Engineering
- **Course**: Technical elective
- **BAE 020**: Engineering Assembly

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### Junior

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#### Fall semester
- **MATH 222**: Analytic Geometry and Calculus III
- **PHYS 213**: Engineering Physics I
- **BAE 350**: Agricultural Machinery Systems
- **ME 212**: Engineering Graphics
- **BAE 020**: Engineering Assembly

#### Spring semester
- **CHE 320**: Introduction to Process Analysis
- **ECHE 519**: Electric Circuits and Control
- **ME 571**: Fluid Mechanics
- **Course**: Engineering UGE
- **BAE 020**: Engineering Assembly

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#### Fall semester
- **BAE 350**: General Organic Chemistry
- **BAE 356**: Agricultural Engineering Design I
- **ME 560**: Engineering Economics
- **BAE 020**: Engineering Assembly

#### Spring semester
- **BAE 636**: Agricultural Engineering Design II
- **BAE 640**: Instrumentation and Control for Bio Systems
- **BAE 650**: Energy and Biofuel Engineering
- **Course**: Science or technical elective
- **BAE 020**: Engineering Assembly

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- **PHYS 214**: Engineering Physics II
- **BAE 350**: Agricultural Machinery Systems
- **BAE 650**: Energy and Biofuel Engineering
- **Course**: Processing technical elective
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#### Fall semester
- **MATH 222**: Analytic Geometry and Calculus III
- **PHYS 213**: Engineering Physics I
- **BAE 350**: Agricultural Machinery Systems
- **ME 212**: Engineering Graphics
- **BAE 020**: Engineering Assembly

#### Spring semester
- **MATH 240**: Elementary Differential Equations
- **PHYS 214**: Engineering Physics II
- **BAE 350**: Agricultural Machinery Systems
- **BAE 650**: Energy and Biofuel Engineering
- **Course**: Processing technical elective
- **BAE 020**: Engineering Assembly

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### Senior

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- **Course**: Processing technical elective
- **BAE 020**: Engineering Assembly

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*Humanities and social science electives must be selected from the official College of Engineering list. Advisors should be consulted to assure that the College of Engineering UGE requirements are also met (see University General Education section in the engineering portion of this catalog). The electives need not be taken during the semester shown in the curriculum.
Biological and agricultural engineering courses

BAE 620. Engineering Assembly. (0) I, II, S. Presentation of professional problems and practices by students, faculty, and professionals associated with the career of biological and agricultural engineering. One hour lec. a month.

BAE 200. Introduction to Biological and Agricultural Engineering and Technology. (2) I. Introduction to discipline, department, profession. Gain skills through application-oriented problem solving, computer use, and written communication. Introduction to land surveying. One hour rec. and three hours lab a week. Open to ATM and BAE majors only.

BAE 350. Agricultural Machinery Systems. (2) I. Basic power and energy concepts. Machinery systems for tillage, planting, and harvesting crops. Impact of these systems on the environment and natural resources. Two hours rec. a week. Pr.: ATM 160 or PHYS 113 or one year of high school physics.

BAE 351. Agricultural Machinery Systems Lab. (1) I. Basic power and energy concepts. Machinery systems for tillage, planting, and harvesting crops. Impact of these systems on the environment and natural resources. Three hours lab a week. Must be taken in conjunction with BAE 350.

BAE 499. Honors Research in Biological and Agricultural 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.

BAE 500. Properties of Biological Materials. (2) II. Characterization of biological material properties that affect the design and analysis of material handling equipment and processes. Physical, electrical, thermal, mechanical, aerodynamic, hygroscopic, and rheological properties of grain and other agricultural products will be examined. One hour rec. and three hours lab a week. Pr.: PHYS 213.

BAE 530. Natural Resource Engineering. (3) II. Principles and measures for controlling storm water runoff and soil erosion including hydrology and surface water flow; design of water handling structures for land drainage, flood protection, and irrigation; pipeline flow and pump selection. Two hours rec. and three hours lab a week. Pr.: STAT 490. Pr. or conc.: ME 571.

BAE 531. Natural Resource Engineering Field Laboratory. (1) II. In-depth, field applications of natural resource engineering analysis and design for controlling storm water runoff and soil erosion, design of water handling structures for land drainage, flood protection, and irrigation; economic analysis of design options. Three hours lab a week. Pr.: AGRON 305 or CE 522. Pr. or conc.: ME 571. Conc. BAE 530.

BAE 535. Fundamentals of Structures and Environment Engineering. (3) I. Principles of environmental control for agricultural buildings and structures; analysis and design of structural systems and members for agricultural structures. Two hours rec. and three hours lab a week. Pr.: M E 513 and CE 333.

BAE 536. Agricultural Engineering Design 1. (2) I. Team-oriented design laboratory, with projects selected to address design of equipment or systems to produce or process food, fiber, and energy, or to preserve environmental quality, remote damage, and conserve natural resources. Two 3-hour labs a week. Pr.: ME 533 or BAE 530 or BAE 575.

BAE 575. Fundamentals of Agricultural Process Engineering. (3) I. Application of basic science and engineering fundamentals for the analysis and design of agricultural processes. Two hours rec. and three hours lab a week. Pr. or conc.: CHE 320 or ME 571.

BAE 620. Problems in Agricultural Engineering. (Var.) I, II, S. Problems in the design, construction or operation of machinery or power in agriculture, structures, modern conveniences, and rural electrification. Pr.: Approval of instructor.

BAE 625. Thermal Processing Operations in Food Engineering. (3) II, in odd years. Analysis of thermal processing operations such as drying, evaporation, canning, freezing, and freeze drying. Two hours rec. and three hours lab a week. Pr.: CHE 530 or BAE 579.

BAE 635. Food Plant Design. (3) II, in even years. Synthesis and design of different food processing plants such as cereal, dairy, fruit, and vegetable. Two hours rec. and three hours lab a week. Pr. or conc.: BAE 625.

BAE 636. Agricultural Engineering Design II. (2) I. A continuation of BAE 536. Completion of a team-oriented design project, with emphasis on construction, evaluation, documentation, and presentation of the design. Two 3-hour labs a week. Pr.: BAE 536.

BAE 640. Instrumentation and Control for Biological Systems. (3) I. Fundamentals of instrumentation and control engineering applied in biological and agricultural systems and processes. Time-domain analysis and frequency response methods. Sensors and actuators in feedback control systems. Control system design. Case studies. Two hours rec. and three hours lab a week. Pr.: EECE 510 or EECE 519 and MATH 240.

BAE 680. Energy and Biofuel Engineering. (3) II. Energy use and production in agriculture and related industries. Energy production, including crop energy conversion, energy and material balances of biomass energy production and processing systems, including energy embodied in fertilizers and pesticides. Review of the role of fossil fuels in agricultural and forestry operations, including opportunities for energy conservation. Impact of alternative fuels on internal combustion engine emissions. Three hours lecture a week. Pr. or conc.: ME 513.


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 551 or CE 551.

BAE 700. Agricultural Process Engineering. (3) III. 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, on sufficient demand. 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 530 and AGRON 305 or CE 522. Pr. or conc.: ME 571.

BAE 750. Analysis and Design of Off-Highway Vehicles. (3) II, on sufficient demand. Analytical study 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.

BAE 761. Natural Treatment Systems. (3) I. Even years. Engineering analysis, modeling, and design of natural systems for treating liquid and solid wastes. Applications of plant and microbial systems. Three hours rec. a week. Pr.: MATH 221 and one of the following courses: BAE 530, CE 563, BIOL 529 or 612, ATM 661.

Chemical Engineering

S. Gehrke, Head

Professors Erickson, Edgar, Fan, Gehrke, Glasgow, King, Schulp, and Walawender; Associate Professors Pfomrn and Rezac; Assistant Professor Hohn; Emeriti: Professors Akins, Kyle, and Matthews.

E-mail: chemai@cheme.ksu.edu
www.engg.ksu.edu/CHED/DEPT/home.html

Chemical engineers contribute to society by providing an essential link between the basic chemical sciences and commercial application and production. Chemical engineering is a core engineering discipline, firmly rooted in the basic sciences. As a result, chemical engineering graduates have a broad array of career choices available to them. Chemical engineers find employment in the chemical and allied industries including energy, petrochemical, biotechnology, agriculture, food, pharmaceutical, environmental, and microelectronics.

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, including medical school. The curriculum is well suited for motivated students with strong interest in and aptitude for 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 through a chemical process (CHE 320); analyze flows of fluids, heat, and matter (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 in concert 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 moti-
vated to make worthwhile contributions to the profession and society and to appreciate the value of life-long learning.

Dual degree program
A dual chemical engineering and science degree (such as chemistry) program can be earned at K-State, or arranged with other institutions. The College of Engineering assistant dean of student services can assist in arranging a program with the K-State College of Arts and Sciences, or with the pre-engineering advisor at a transfer institution. Information about these programs is available in the College of Engineering Dual Degrees section of this catalog.

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 of Engineering and Technology, 134 hours required for graduation

111 Market Place, Suite 105, Baltimore, MD 21202-4012.
410-347-7700

Freshman
Fall semester
ENGL 100 Expository Writing I* .................................. 3
CHM 220 Chemical Principles I* ............................... 5
MATH 220 Analytic Geometry and Calculus I .......... 4
Elective ................................. 3
SPCH 105 Public Speaking IA .................................. 2
CHE 015 Engineering Assembly ............................. 0

Spring semester
CHM 250 Chemical Principles II* .......................... 5
MATH 221 Analytic Geometry and Calculus II ....... 4
ECON 110 Principles of Macroeconomics I ......... 3
Elective .................................................. 6
CHE 015 Engineering Assembly ............................. 0

Sophomore
Fall semester
MATH 222 Analytic Geometry and Calculus III ...... 4
PHYS 213 Engineering Physics I .............................. 5
CHM 531 Organic Chemistry I .............................. 5
CHE 316 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
CHM 550 Organic Chemistry II .............................. 3
CHE 320 Introduction to Process Analysis ............. 3
CHE 532 Organic Chemistry Lab ............................. 2
CHE 015 Engineering Assembly .................................. 0

Junior
Fall semester
CHM 585 Physical Chemistry I .............................. 3
CHM 586 Physical Chemistry I Lab .......................... 2
CHE 520 Chemical Engineering Thermodynamics I ... 2
CHE 530 Transport Phenomena I ........................... 3
Elective .................................................. 6
CHE 015 Engineering Assembly .................................. 0

Spring semester
CHM 595 Physical Chemistry II ............................. 3
ENGL 415 Written Communication for Engineers* .... 3
CHE 522 Chemical Engineering Lab I ........................ 2
CHE 521 Chemical Engineering Thermodynamics I ... 2
CHE 531 Transport Phenomena II ............................ 3
Elective .................................................. 6
CHE 015 Engineering Assembly .................................. 0

Senior
Fall semester
CHE 516 Chemical Engineering Computational
Techniques II ................................................. 1
CHE 532 Chemical Engineering Lab II ..................... 2
CHE 560 Separational Process Design .................... 3
CHE 550 Chemical Reaction Engineering ............... 3
CHE 570 Chemical Engineering Systems Design I .. 3
Elective .................................................. 6
CHE 015 Engineering Assembly .................................. 0

Spring semester
CHE 542 Chemical Engineering Lab III .................... 3
CHE 561 Chemical Process Dynamics and Control .. 3
CHE 571 Chemical Engineering Systems Design II .. 3
Elective .................................................. 4
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 (CHM 210), Chemistry II (CHM 230), and Chemical Analysis (CHM 371).

Thirty-three hours of electives are required and they are to be selected in consultation with the student’s advisor. All electives must be on the list approved by the department or have the approval of the department head and must support the educational objectives of the chemical engineering program. Both the required and elective components of a student’s overall program of study should meet UGE criteria. The departmental requirements below must be satisfied.

1. Fifteen hours of social sciences and humanities electives, are required. These courses are to be selected from the list approved by the College of Engineering. At least six hours of 300-level or higher UGE courses must be included within these fifteen hours.

All courses must be taken for a letter grade.

2. Technical electives must total 12 credit hours and must include courses selected from at least two of the following three subject areas: engineering materials; analytical mechanics (both statics and dynamics must be represented); and circuits, fields, and electronics.

3. The remaining technical electives are to be selected to enhance the student’s professional development.

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 350. Engineering Materials. (2) I, II. Structures of metals, ceramics, glasses, polymers, semiconductors, and composites. Mechanical, electrical, and magnetic properties. Multiphase equilibrium and modification of properties through changes in microstructure. Two hours rec. a week and three hours lab a week. Pr.: CHE 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) Application of computational methods with emphasis on simulation to chemical engineering problems. Three hours lab a week. Pr.: CHE 316 and conc.: CHE 550 and 560.


CHE 521. ChE. Thermodynamics II. (3) A continuation of the study of the second law, thermodynamic analysis of processes, phase equilibrium, chemical reaction equilib- rium. Three hours rec. a week. Pr.: CHE 520.

CHE 522. Chemical Engineering Laboratory I. (2) I, 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, II. Laboratory experiments on heat and mass transfer. Five hours lab a week. Pr.: CHE 521 and 531.

CHE 542. Chemical Engineering Laboratory III. (3) I, II. Laboratory experiments on classical unit operations, e.g., distillation, adsorption, 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, II.
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. (3) I, II.
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) I, 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, S).
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 lec. a week. Pr.: CHE 350 or 352.

Topics in hazardous materials management and control, waste reduction and minimization, hazardous substance tracking, and hazardous waste engineering. One hour rec. a week. Pr.: CHM 230.

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.: CHE 350 or 352.

CHE 661. Processing of Materials for Solid State Devices. (3) I, II.
Structure, properties, and processing of materials for solid state devices. Crystal growth, epitaxy, oxidation, diffusion, lithography, and etching as applied to device fabrication. Three hours rec. a week. Pr.: CHE 350 or 352.

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.

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 lec. a week. Pr.: CHE 350 or 352.

CHE 682. Surface Phenomena. (2) I, II, S.
Principles and applications of interfacial phenomena, including capillarity, colloids, porosity, adsorption, and catalysis. Two hours rec. a week. Pr.: CHE 520.

CHE 715. Biomedical 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 725. Biotransport Phenomena. (3) I, II.

CHE 735. Chemical Engineering Analysis I. (3) I, II, S.
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 745. Analysis of Physiological Processes. (3) II.

CHE 750. Air Quality Seminar. (1) I.
Topics in air quality including health effects, toxicity, measurement, characterization, modeling, management, and control. One hour rec. a week. Pr.: CHE 230.

Civil Engineering

Lakshmi N. Reddi, Head
Professors Mathews, Reddi, Russell, and Stokes; Associate Professors Hossain, Melhem, and Najjar; Assistant Professors Bhandari, Peric, Peterman, Rasheed, Romanoschi, Starrett, and Stewart; Emeriti: Professors Cooper, Hu, McCormick, Smith, Snell, Swartz, and Williams.

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 four 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 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 Option elective .......................... 4
CE 415 Option elective .......................... 12-15
CE 417 Option elective .......................... 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
# 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
- **CHM 531**: Organic Chemistry I
- **CHE 352**: Engineering Materials I
- **CE 538**: Foundation Engineering
- **CE 544**: Structural Engineering in Concrete
- **CE 552**: Hydraulic Engineering
- **CE 565**: Water and Wastewater Engineering

**Option elective**

Students choosing the structural 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:

- **CE 411**: Route Location and Design
- **CE 732**: Advanced Structural Analysis I
- **CE 528**: Foundation Engineering
- **CE 542**: Structural Engineering in Steel
- **CE 572**: Highway Engineering and Management
- **CE 544**: Structural Engineering in Concrete

**Option elective**

# Curriculum in civil engineering (CE)

**Bachelor of science in civil engineering**

130 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology, 111 Market Place, Suite 105, Baltimore, MD 21202-4012. 410-347-7700

**Freshman**

| Fall semester | ENG 100 | Expository Writing I* | 3 |
| CHM 210 | Chemistry I | 4 |
| MATH 220 | Analytic Geometry and Calculus I | 4 |
| ECON 110 | Principles of Macroeconomics | 3 |
| ME 212 | Engineering Graphics I | 2 |
| DEN 015 | New Student Orientation Seminar | 0 |

| Spring semester | CHM 230 | Chemistry II | 4 |
| MATH 221 | Analytic Geometry and Calculus II | 4 |
| GEOL 100 | Earth in Action | 3 |
| NE 385 | Engineering Computational Techniques | 2 |
| Option elective* | 4 |
| CE 101 | Introduction to Civil Engineering | 1 |
| 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* | 5 |
| 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 | 1 |
| CE 333 | Statics | 1 |
| CE 380 | Computer Applications in Civil Engineering | 1 |
| DEN 275 | Introduction to Professional/Professional Development | 1 |
| Option elective** | 2 |
| 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 552 | Mechanics of Materials | 3 |
| CE 534 | Mechanics of Materials Lab | 1 |
| Option elective** | 4 |
| CE 015 | Engineering Assembly | 0 |

**Spring semester**

| CE 522 | Soil Mechanics I | 3 |
| CE 537 | Introduction to Structural Analysis | 3 |
| CE 563 | Environmental Engineering Fundamentals | 3 |
| ENGL 415 | Written Communication for Engineers* | 3 |
| ME 571 | Fluid Mechanics | 3 |
| CE 015 | Engineering Assembly | 0 |

**Senior**

| Fall semester | CE 015 | Engineering Assembly | 0 |
| Option elective** | 6 |
| Civil engineering electives* | 6 |
| Humanities or social science electives* | 3 |

**Spring semester**

| CE 015 | Engineering Assembly | 0 |
| CE 553 | Civil Engineering Project | 3 |
| Civil engineering electives* | 6 |
| Humanities or social science electives* | 3 |
| Option elective** | 3 |

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from Expository Writing I.

**Humanities and social science electives must be selected from the official College of Engineering list. Advisors should be consulted to assure that the College of Engineering UGE requirements are also met (see University General Education section in the engineering portion of this catalog). The electives need not be taken during the semester shown in the curriculum.

***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.

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**Civil engineering courses**

**CE 015**: Engineering Assembly, (0) I, II.

**CE 101**: Introduction to Civil Engineering, (1) II. Introduction to careers in civil engineering (environmental, geotechnical, structures, transportation, and water resources). Overview of CE educational requirements. History of the CE profession. Engineering ethics. One hour rec. a week.

**CE 212**: Elementary Surveying Engineering, (3) I, II. Coordinate systems, distances, and direction. Traverses. Boundary surveys. Leveling. National rectangular coordinate systems. Property descriptions: public land subdivision and metes and bounds. Topographic surveys. Surveying, planning, and mapping. Two hour lec. and three hours lab a week. Pr.: PHYS 113 and MATH 220 or conc.: MATH 211.

**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 force analyses of simple structures. Centroids; 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 cuts in embankments. Not open to engineering students. Two hours rec. and three hours lab a week. Pr. or conc.: GEOL 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. S. 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 PHY 213.

**CE 380**: Computer Applications in Civil Engineering, (1) III. Application of computers 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 railways. Two hours rec. and six hours lab a week. Pr.: CE 212, MATH 221, and PHY 213.

**CE 499**: Honors Research in Civil 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 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 533.

**CE 528**: Foundation Engineering, (3) I. 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. Three hours rec. a week. Pr.: CE 522. Pr. or conc.: CE 544.

**CE 530**: Statics and Dynamics, (3) I, II. A shortened combined course in (1) statics, including a study of force.
systems, free-body diagrams, and problems in equilibrium, friction, centroids, and moments of inertia; and (2) dynamics, including a study of the kinematics and kinetics of particles and rigid bodies using the methods of force-mass acceleration, work-energy, and impulse-momentum. Three 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 stress states, including specific materials that occur most frequently in engineering practice. Three hours rec. a week. Pr.: CE 333 or 530. Pr. or conc.: Math 222.

CE 534. Mechanics of Materials Laboratory. (1), I, II. Determination of selected mechanical properties of several engineering materials, including iron-carbon alloys, aluminum alloys, concrete, wood, and plastics; relationship between structure and mechanical properties of these materials; elementary problems in experimental stress analysis and structural behavior; test procedures, instrumentation, and interpretation of results. One hour lab instruction and two hours lab a week. Pr. or conc.: CE 533.

CE 537. Introduction to Structural Analysis. (3) I, II. Elastic analysis of determinate and indeterminate beams, frames, and trusses; construction of shear and moment diagrams and influence functions; design of beam work; solution of indeterminate structures by consistent deformation, slope-deflection, moment distribution, and matrix stiffness method; with computer applications. Three hours rec. a week. Pr.: CE 533. Pr. or conc.: CE 380.

CE 542. Structural Engineering in Steel. (3) II. Introduction to design of steel structures. Theoretical, experimental, and practical bases for proportioning members and their connections. Two hours rec. and three hours lab a week. Pr.: CE 537.

CE 544. Structural Engineering in Concrete. (3) I. A study of the theories of reinforced 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 551. Hydrology. (2), I, II. A study of the sources of supply and movement of underground and surface waters. Two hours rec. a week. Pr.: PHYS 113 or 213. Cross-listed with BAEE 551.

CE 552. Hydraulic Engineering. (3) II. Applications of the principles of fluid mechanics to control and use of water; reservoir, dam, and spillway design; enclosed conduits and open-channel forms; fluid flow in hydraulic machinery and hydro-power development; principles of fluid measurement; laboratory-flow and velocity measuring, hydraulic models, pipe losses, open-channel flow. Two hours rec. and three hours lab a week. Pr.: ME 571. Pr. or conc.: CE 551.

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 BAEE 200. Pr. or conc.: CE 551 or BAEE 551.

CE 560. Activity Center Traffic Analysis. (3) Introduction. The planning and design of any activity center (shopping mall, business center, sports stadium) include consideration of the location of streets and highways, water supply and sanitation facilities, drainage and public utilities; rights-of-way and easement. Two hours rec. and three hours lab a week. Pr.: CHM 230 and MATH 222.

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) Intercession. 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. Functions and models of mathematical programming. Three hours rec. and one hour lab a week. Pr.: CE 411 and 522.

CE 580. AI Applications in Civil Engineering. (2) Intercession. A review of the available techniques in artificial intelligence and a survey of applications in the different areas of civil engineering (structures, transportation/materials, geotechnical, hydraulic, waters 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 rec. for 10 days. Afternoon labs 1 hour 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-hour 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 materials. Concrete, composites, and bituminous concrete; standard specifications and methods of test; inspection and control; long-term protection and durability. Two hours rec. and three hours lab a week. Pr.: CE 534 and ENGL 415. Pr. or conc.: either CE 528 or 542 or 544.

CE 654. Design of Groundwater Flow Systems. (3) I. Introduction to fundamental, mathematical, and physical concepts of groundwater flow; application of simple analytic models; introduction to finite-difference and finite-element methods; application of computer modeling tools to address specific practical significance. Three hours rec. a week. Pr.: ME 571.

CE 663. Unit Operations and Processes in Environmental Engineering. (2) II. In alternate years. 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 654 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 financial control. 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. Engineering problems involved in regional planning; the design and location of streets and highways, water supply and sanitation facilities, drainage and public utilities; rights-of-way and easement. Two hours rec. and three hours lab a week. Pr.: Senior standing in engineering or graduate standing in regional and community planning. Three hours rec. a week. Pr.: Approval of instructor.

CE 690. Selected Topics in Civil Engineering. (Var.) I, II, S. Pr.: Approval of instructor.

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. A laboratory study of geosynthetics; overview of geosynthetic functions, applications, and properties; relationship between testing and applications. Designing with geotextiles, geonets, geomembranes, geosynthetic clay liners, and geocomposites. 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 551.

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; analysis of space frames and trusses. Three hours rec. a week. Pr.: CE 537.

CE 741. Civil Engineering Materials II. (3) II. 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 varied flow. Three hours rec. a week. Pr.: CE 552.

CE 752. Advanced Hydrology. (3) I. Review of basic principles of regional rainfall and flood frequency analyses; hydrologic and hydraulic flood routing; drainage and flood control facilities design; hydraulic modeling and simulation; flood plain analysis and planning. Three hours rec. a week. Pr.: CE 551.

CE 762. Water Treatment Processes. (3) I. Physical and chemical processes and their application to water treatment plant design. Three hours rec. a week. Pr.: CE 565.

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) I. Origin-destination surveys, land-use inventories, parking and transit studies; 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 subgrade, subbase, and base courses; critical analysis of the
methods of design for flexible and rigid pavements; methods of increasing the load-carrying capacity of highway and airport pavements. Two hours rec. and three hours lab a week. Pr.: CE 522.

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, II. In alternate years. Pavement management systems including pavement condition and structural evaluation, analysis, and optimization. Economic analysis and rehabilitation planning including computer applications. Three hours rec. a week. Pr.: CE 572.

CE 790. Problems in Civil Engineering. (Var.) I, II, S. Pr.: Approval of instructor.

Computing and Information Sciences

Virgil E. Wallentine, Head

Professors Gustafson, Hankley, Mizuno, Schmidt, Unger, and Wallentine; Associate Professors Banerjee, Bleyberg, Dwyer, Hatcliff, Howell, Sigh, and Stoughton; Assistant Professor Andreassen, DeLoach, Hsu, and Neilsen; Instructors Forgie and Shea; Emeriti: Professor van Swaay, Associate Professor Calhoun; Instructor Campbell.

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The creation and use of the best possible hardware and software is, broadly speaking, the field of computer science.

Two curricula, computer science and information systems, are offered by the Department of Computing and Information Sciences. Many other fields require a minor emphasis in computer science, and students working toward a dual degree (one in computer science and one in some other field) are common.

The department maintains state-of-the-art computing and networking laboratories. Large-computer facilities are provided by Computing and Network Services. Some students choose to own or share microcomputers because of the convenience and learning efficiency of personal interactive computing.

Students must earn a grade of C or better for each course they wish to use to satisfy requirements for their major. Students may enroll in CIS courses only if they have earned a grade of C or better for each prerequisite to those courses.

Computer science curriculum

The B.S. in computer science is accredited by the Computer Science Accreditation Commission of the Computing Sciences Accreditation Board, a specialized accrediting body recognized by the Council on Post-secondary Accreditation and the U.S. Department of Education.

The computer science curriculum emphasizes a broad foundation of computer organization, programming languages, software engineering, distributed computing systems, data systems, algorithms, data structures, programming systems and environments, and mathematics, together with electives that focus on some aspect or application of computers. The computer science curriculum is recommended for students planning graduate studies in computing.

Technical electives consist of a set of computer science courses that permit students to concentrate on an area of technical expertise. The most common technical areas are: software engineering, which involves management and development of large software systems; operating systems, which consists of the supervisory software that controls the operation of a computer; theoretical computer science; computer systems architecture, which involves design of centralized and distributed computer systems; programming languages and their compilers; data systems; and knowledge engineering (artificial intelligence).

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 Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, 410-347-7700.

Freshman year

Fall semester

CIS 015 Undergraduate Seminar .................. 0
CIS 200 Fundamentals of Software Design and Implementation .................. 4
MATH 220 Analytic Geometry and Calculus I ........ 4
ENGL 100 Expository Writing I .................. 3
SPCH 105 Public Speaking IA .................. 2
SPCH 106 Public Speaking I .................. 3

13-14

Spring semester

CIS 300 Data and Program Structures ............. 3
CIS 301 Logical Foundations of Programming ...... 3
MATH 221 Analytic Geometry and Calculus II ........ 4
Humanities/social science elective (first of five) .......... 3
ECON 110 Principles of Macroeconomics ............. 3

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Sophomore year

Fall semester

CIS 501 Software Architecture and Design ........ 3
EECE 241 Introduction to Computer Engineering ... 3
MATH 551 Applied Matrix Theory .................. 3
ENGL 200 Expository Writing II .................. 3
Natural science elective with laboratory (first of four) .... 4

16

Spring semester

CIS 450 Computer Architecture and Organization .................................................. 3
CIS 505 Programming Languages .................. 3
MATH 510 Discrete Mathematics .................. 3
Natural science elective with laboratory (second of four) ... 4
Humanities/social science elective (second of five) .......... 3

16

Junior year

Fall semester

CIS 520 Operating Systems I .................. 3
CIS 575 Introduction to Algorithm Analysis ....... 3
MATH 655 Elementary Numerical Analysis .......... 3
or
CIS 580 Numerical Computing.................. 3
Humanities/social science elective (third of five) .......... 3
Natural science elective with laboratory (third of four) ..... 3

15

Spring semester

CIS 560 Database System Concepts ................ 3
ENGL 516 Written Communications for the Sciences .................................................. 3
Technical elective (first of three) .................. 3
Humanities/social science elective (fourth of five) .......... 3
Free elective ......................................... 3

15

Senior year

Fall semester

CIS 540 Software Engineering Project I ............. 3
CIS 570 Introduction to Formal Language Theory .................................................. 3
Technical elective (second of three) .................. 3
Humanities/social science elective (fifth of five) .......... 3
Natural science elective (fourth of four) .................. 3

15

Spring semester

CIS 541 Software Engineering Project II ............. 3
CIS/PHILO 492 Computers and Society ............. 3
Technical elective (third of three) .................. 3
STAT 410 Probabilistic Systems Modeling .......... 3
Free elective ......................................... 2-1

14-13

All students new to the CIS department must complete CIS 015.

Natural science courses must meet the CSAB accreditation guidelines.

Humanities/social science electives must satisfy the College of Engineering requirements (including UGE requirements) and must include 6 hours selected from the following departments: English (literature only), history, modern languages (except English or the student’s native language), and philosophy (except 110, 220, and 510).

A free elective is any 100 or higher course, excluding courses listed as a prerequisite to a required course.

Required courses may not be taken under the A/Pass/F option.

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 needs of the industry. These specializations are information systems analyst/designer (analyzes information needs, designs, and maintains information systems, manages system projects), 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,
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**
- CIS 015 Undergraduate Seminar ........................................ 0
- CIS 200 Fundamentals of Software Design and Implementation ........................................ 4
- MATH 205 General Calculus and Linear Algebra ............ 3
- ENGL 100 Expository Writing I ........................................ 3
- SPCH 106 Public Speaking IA ......................................... 2
- or
- SPCH 106 Public Speaking I .......................................... 3
- Humanities/social science elective (first of six) .............. 3

**Spring semester**
- CIS 301 Logical Foundations of Programming ................. 3
- CIS 300 Data and Program Structures .............................. 3
- MATH 312 Finite Applications of Mathematics ................. 3
- Humanities/social science elective (second of six) .......... 3
- ECON 110 Principles of Macroeconomics ..................... 3

**Sophomore year**

**Fall semester**
- CIS 300 Software Architecture and Design ..................... 3
- EECE 241 Introduction to Computer Engineering ............... 3
- ENGL 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 505 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 Sciences ........ 3
- Natural science elective (third of four) ............................ 3
- Free elective .......................................................... 3

**Spring semester**
- CIS 462 Information Systems in Organizations ................. 3
- CIS 560 Database Systems Concepts .................................. 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
- Natural science elective (fourth of four) ......................... 3
- Humanities/social science elective (fifth of six) .............. 3

**Spring semester**
- CIS 541 Software Engineering Project II .......................... 3
- Humanities/social science elective (sixth of six) .............. 3
- Technical elective ...................................................... 3
- Free electives ........................................................ 4–3

**Minor in computer science**
- CIS 200 ............................................................................. 4
- CIS 300 .......................................................................... 4
- 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. Students enrolling in any CIS course are assessed $14 per credit hour plus a $1 per credit hour university technology fee. (Fees are subject to change.)

**Computer science courses**

**Undergraduate credit**
- CIS 015. Undergraduate Seminar. (0) 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 department. One hour lecture a month.
- CIS 101. Introduction to Information Technology. (1) I, II, S. Introduction to microcomputer hardware components and operating system. Windows as a graphical user interface and disk/file management tool; Internet, including World Wide Web and home pages, e-mail, telnet, and ftp. 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 102. Introduction to Microcomputer Spreadsheet Applications. (1) 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 112. Advanced Personal Computing. (3) 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 problems. Two hours lec. and four hours lab a week. Pr.: B or better in CIS 101 or permission of instructor.

**CIS 190. Undergraduate Seminar in Computing and Information Sciences.** (1) I. Topics of special interest in computing and information sciences.

**CIS 200. Fundamentals of Software Design and Implementation.** (4) I, II. Introduction to elementary software architectures and object-based program design. Library re-use, 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 lec., one hour lab each week. Pr.: MATH 100.

**CIS 208. C Language Laboratory.** (1) I, II. Fundamentals of use in programming in C. Applications. Three hours lab a week. Pr.: CIS 200.

**CIS 209. C++ Programming for Engineers.** (3) I, II. Application of computers to engineering problems. Abstraction and problem solving: algorithms; control structures; input/output; functions; arrays and array processing. Two hours lec., two hours lab each week. Pr.: MATH 220.

**CIS 300. Data and Program Structures.** (3) I, II. 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 involved in performance and software maintainability. Pr.: CIS 200.

**CIS 301. Logical Foundations of Programming.** (3) I, II. Logical formalisms used to model and reason about computer systems. Propositional and predicate logic: syntax, semantics, and proof theory; soundness and completeness issues. Mathematical induction and inductive definitions. Program verification: invariants and program logic. Verification of reactive systems: description languages, specification logics, and model checking tools. Pr.: CIS 200.

**CIS 362. Introduction to Business Programming.** (3) I. An introduction to basic business programming techniques including file manipulation operations and sorting. The COBOL language will be used as an implementation tool. Pr.: CIS 200.

**CIS 397. Honors Seminar in Computer Science.** (1–3).

**CIS 411. Global Information System.** (3) Structure of large computer networks; information available via networks; data bases, news groups, list servers, and hyper media. Handling of text, numeric, sound, and visual information. Application such as catalogs, distributed group work, and remote teaching. Issues of ethics, economics, and utility in use of networks; future technologies. Pr.: CIS 101 (undergraduates of use of personal computers and software.)

**CIS 450. Computer Architecture and Organization.** (3) I, II. Introduction to modern computer architectures: register transfer abstraction, addressing modes, basic operations (data transfer, arithmetic/logic, and control operations). Understanding relationships of higher-level language constructs to corresponding assembly instruction sequences generated by compilers. Relationships studied include storage classes to memory organization and function invocations to activation records. Introduction to interrupts and low-level I/O operations. Pr.: EECE 241 and CIS 300.

**CIS 462. Information Systems in Organizations.** (3) Role of information systems in organizations, representation of systems structures, decision processes, system evaluation, information system applications including file structures, and using a high level language in a system study. Pr.: CIS 362.

**CIS 490. Special Topics in Computer Science.** (2–4) Current topics in computer science. Pr.: Prerequisite varies with the announced topic.

**CIS 492. Computers and Society.** (1–3) A study of 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

CIS 505. Programming Languages. (3) I, II, History, processors, programming environments; types, scopes and extent, abstraction mechanisms, exceptions and concurrency; functional and object-oriented languages; formal syntax and semantics; structure of compilers for block-structured languages. Pr.: CIS 300, CIS 301.

CIS 520. Operating Systems I. (3) I, II. 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 EEEC 431; and CIS 501.

CIS 521. Real-Time Programming Laboratory. (3) I. Project-oriented introduction to asynchronous processes and related system software; device drivers, event-driven operations, hierarchical and time-sliced process scheduling, spooling operations, interjob and intermachine communications. Project will be built on a single-use environment. Conc.: CIS 520.

CIS 522. Introduction to Data Structures. (1) I. Introduction to basic data structures such as stacks, queues, lists, and priority queues, and algorithmic techniques for sorting, searching, and hashing. Emphasis on modularity and reuse. Introduction to the concept of object-oriented design and interface specifications. Not available to students with credit for CIS 300. Three hours rec. a week. Course meets in one contiguous block of five weeks. Pr.: C or C++ programming.

CIS 523. Introduction to Concurrent Programming. (1) I. Introduction to concurrent programming techniques based on message passing primitives (send/receive) and shared memory (semaphore-based PV operations and Monitor based wait/signal operations). Not available to students with credit for CIS 520. Three hours rec. a week. Course meets in one contiguous block of five weeks. Pr.: C or C++ programming and CIS 300 or 522.

CIS 525. Telecommunications and Data Communications Systems. (3) Basic concepts including OSI 7 layer model, data transmission methods, medium access, link control, connections management, network applications including electronic mail, file transfer, distributed computing, window systems; network management including OSI and Internet management frameworks. Pr.: CIS 300.

CIS 540. Software Engineering Project I. (3) I. Current practices of software development, requirements, design, prototyping, testing and methodology, specification, design, and prototyping of a software system. Pr.: CIS 501.

CIS 541. Software Engineering Project II. (3) I, II. Final implementation, integration, and testing of a software system. Introduction to configuration management, project management, and software maintenance. Pr.: CIS 540 (which must be taken in the preceding semester).

CIS 560. Database System Concepts. (3) I, II. Concepts, approaches, and techniques in database management. Representation of information as data, data storage techniques, foundations of logical data models, data retrieval, database design, transaction management, integrity and security. Pr.: CIS 501; CIS 301 or MATH 510.

CIS 570. Introduction to Formal Language Theory. (3) I. Formal languages, automata, regular expressions, grammar, introduction to computability theory. Reading and writing informal mathematical proofs pertaining to these topics. Pr.: MATH 510 and CIS 505.

CIS 575. Introduction to Algorithm Analysis. (3) I. An introduction to mathematical analysis of time- and space-complexity of algorithms, including worst-case, average-case, and amortized complexity. An examination of various algorithmic design, such as greedy algorithms, divide-and-conquer algorithms, and dynamic programming algorithms. Techniques for proving correctness of algorithms. Pr.: CIS 300, CIS 301, and MATH 510.

CIS 580. Numerical Computing. (3) I. Introduction to numerical algorithms fundamental to scientific computer work, including elements of error, numerical linear algebra, equations, interpolation, systems of equations, quadrature, and introduction to methods for solution of ordinary differential equations. Pr.: CIS 300 and MATH 221 and 551.

CIS 591. Computer Science Applications. (3) I, II, S. Programming, program libraries, and design of algorithms. For students with minimal background in computer science. Not for credit by CIS majors. Pr.: Graduate standing in student's own area and knowledge of at least one procedural programming language.

Undergraduate and graduate credit

CIS 604. Set Theory and Logic for CS. (3) Informal and axiomatic set theory, propositional and predicate logic, proof techniques. Pr.: Graduate standing.

CIS 621. Real-Time Programming Fundamentals. (1) I. Relationship between C/++ constructs and corresponding assembly code generated by compilers. Introduction to special techniques used to implement micro-controllers, such as initialization of programmable CPU modules/ peripheral devices, techniques to link assembly and C/++ codes, producing ROM-able code, and EPROM burning/Flash programming. Three hours rec. a week. Course meets in one contiguous block of five weeks. Pr.: C or C++ programming; CIS 523; either CIS 300 or 522.

CIS 622. Real-Time Operating Systems. (1) I. Basic real-time operating systems concepts and services; interrupt processing; process and thread models; real-time software architectures and development environments. Detailed study of the design and implementation of real-time applications using real-time operating systems. Three hours recitation per week. Course meets in one contiguous block of five weeks. Pr.: CIS 621.

CIS 625. Parallel Programming. (3) I. Basic concepts of concurrent and distributed programming; parallel computer architectures; real-time multiprocessing; parallel simulation; fault-tolerant programming; partitioning, mapping, and granularity of parallel programming such as communication systems; grid, N-bdy simulation, and many problems; and embedded systems control. Pr.: CIS 501 and 520.


CIS 636. Interactive Computer Graphics. (3) I, II. Devices and software for graphics display and user interaction, development of software for direct graphic manipulation applications. Pr.: CIS 300.

CIS 638. Multimedia Systems. (3) I. Introduction to computer graphics devices, user interaction; history and scope; multimedia structure, encoding methods and standards, mark-up and scripting languages, software tools, and applications; readings in current literature; class presentation; multimedia project. Pr.: CIS 300, senior standing.

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 501.

CIS 644. Object-Oriented Design and Development. (3) Object models, concepts of class objects, dynamic models, comparison of design methods, relationship to object-oriented languages, tools for design and program construction, design and prototype project. Three hours rec. a week. Pr.: CIS 300.


CIS 690. Implementation Projects. (3) I, II, S. The department will suggest various design or implementation projects for individuals or groups in areas such as translat- ors, interpreters, microprogramming, minicomputer operating systems, graphics, numerical software, etc. Pr.: Junior standing.


CIS 705. Programming Language Design. (3) Fundamental design principles: abstraction, parameterization, qualification, lambda-calculus and reduction, logic, and the meaning of programs. The role of data typing, predicate calculus-base typing. Intuitionistic Type Theory. Pr.: CIS 505.

CIS 706. Translator Design I. (3) Compilers and interpreters, including description of languages, finite state scanners, LL (1) parsing, symbol tables, syntax directed semantics, simple code generation. Constructing a simple compiler. Pr.: CIS 501 and 505.


CIS 720. Advanced Operating Systems. (3) Process synchronization and communication, distributed programming, virtual memory, 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 or both CIS 622 and EEEC 633.

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 decomposition, specification and verification, synthesis; protocols for high speed networks; parallel implementations, light-weight protocols. Pr.: CIS 520 and 525.

CIS 726. Advanced World Wide Web Technologies. (3) II. An advanced course on the technologies that make up the World Wide Web. WWW site designs and analysis, WWW software architecture, server-side technologies, dynamic executable scheduling, digital libraries, WWW security. Pr.: CIS 520, CIS 525.


CIS 732. Machine Learning and Pattern Recognition. (3) I. Theory and applications of machine learning, including decision trees, artificial neural networks, probabilistic and instance-based learning, and inductive and boosting; genetic algorithms and genetic programming; and applications to data mining. Pr.: CIS 501 or 575.


CIS 740. Software Engineering. (3) Software life cycle, requirements, specifications, design, validation, measures, and maintenance. Pr.: CIS 540.

CIS 746. Software Measurement. (3) Measurement theory, development, validation and use of software measures; software measures in the software life cycle, including cost estimation, design measures, software complexity and soft- ware reliability. Pr.: CIS 540.
CIS 748. Software Management. (3) Topics related to the management of software, including organization, project planning, process models, life cycle models, QSM, software quality assurance, cost estimation, configuration management. Three hours rec. a week. Pr.: CIS 740.

CIS 750. Advanced Computer Architecture Experiments. (3) On sufficient demand. Characteristics of various computers including those with execution support of multi-processing, multiprogramming, microprogrammable, high-level language, stack processing, and communication architectures. Two hours lec. and three hours lab a week. Pr.: CIS 450.

CIS 761. Data Base Management Systems. (3) Data models and languages, hierarchical, network, relational systems; implementation and operational requirements; programming projects using data base management systems. Pr.: CIS 560, 664.

CIS 762. Office Automation. (3) Characteristics of information work; modeling systems for characterizing aspects of office environment; form-based systems; office automation and description languages; ergonomics; local area networks and tools used in the automation of offices. Pr.: CIS 525, 560.


CIS 770. Formal Language Theory. (3) Regular languages, finite automata, context-free languages, pushdown automata, context-sensitive languages, linear bounded automata, recursively enumerable languages, Turing machines. Pr.: CIS 570.

CIS 771. Software Specification. (3) Formal logic for specification of software components: algebraic vs. model-based specifications; common abstract types; verification of properties of specifications; introduction to specification of concurrent systems. Pr.: CIS 604.

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. Pr.: Prerequisite varies with the announced topic.

Electrical and Computer Engineering

David L. Soldan, Head
Professors Carpenter, DeVault, Devore, Dillman, R. Dyer, S. Dyer, Gallagher, Lenhart, Morcos, Pahwa, Rys, and Soldan; Associate Professors Chandra, Day, Gruenbacher, Kuhn, Miller, Starrett, and Warren; Assistant Professor Das; Emeriti: Professors Fowler, Haft, Hummels, Johnson, Kirmser, Koepsel, Lucas, Rathbone, Simons, and Ward; Associate Professor Dollar; Assistant Professor Cottom; Instructor: Wakabayashi.

E-mail: undergrad@eece.ksu.edu
www.eece.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 microprocessors 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 curriculum 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)

Bachelor of science in electrical engineering 129 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology, 111 Market Place, Suite 105, Baltimore, MD 21202-4012. 410-347-7700

Freshman

Fall semester

ENGL 100 Expository Writing I** ......................... 3
ECON 110 Principles of Macroeconomics ............... 3
CHM 210 Analytic Geometry and Calculus I .......... 4
DEN 015 New Student Orientation ........................ 0

Total 14

Spring semester

CIS 209 C Programming for Engineers ................. 3
CHM 230 Chemistry II .................................. 4
MATH 221 Analytic Geometry and Calculus II ....... 4
SPCH 105 Public Speaking IA ......................... 2

Total 16

Sophomore

Fall semester

EECE 241 Introduction to Computer Engineering .... 3
MATH 222 Analytic Geometry and Calculus III ..... 4
PHYS 213 Engineering Physics I ....................... 5
CHE 350 Engineering Materials ....................... 2

Humanities or social science elective* ............... 3

Total 17

Spring semester

EECE 510 Circuit Theory I .................................. 3
MATH 240 Elementary Differential Equations ........ 4
PHYS 214 Engineering Physics II ..................... 5
STAT 510 Introduction to Probability and Statistics I .................. 3

DEN 275 Introduction to Personal and Professional Development .................. 1

Total 16

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
CE 530 Statics and Dynamics ......................... 3

Humanities or social science elective* ............... 3

Total 17

Spring semester

EECE 502 Electrical Engineering Lab II ............... 2
EECE 512 Linear Systems .................................. 3
EECE 526 Electronics II ................................... 3
EECE 557 Electromagnetic Theory I ................. 4
EECE 581 Energy Conversion I ......................... 3
ENGL 415 Written Communication for Engineers** .................................. 3

Total 18

Senior

Fall semester

EECE 530 Control Systems Design .................... 3
ME 513 Thermodynamics .................................. 3

Technical electives*** ...................................... 9

Total 15

Spring semester

EECE 590 Seminar ......................................... 1

Technical electives*** ...................................... 12

Humanities or social science elective* ............... 3

Total 16

*Humanities and social science electives must be selected from the official College of Engineering list. Advisors should be consulted to assure that the College of Engineering UGE requirements are also met (see University General Education section in the engineering portion of this catalog). The electives need not be taken during the semester shown in the curriculum.

**The prerequisite for ENGL 415 is satisfied with an A or B in ENGL 100 or by completing ENGL 200. Only three hours of ENGL 415 prerequisite courses may be applied to degree requirements.

***Technical electives must be selected from the appropriate department lists.

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 electronics, integrated circuits 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
## Computer engineering (CMPEN)

Bachelor of science in computer engineering

129 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology, 111 Market Place, Suite 105, Baltimore, MD 21202-4012.

410-347-7700

### Fall semester
- **Freshman**
  - **Eng 100** Expository Writing** .................. 3
  - **Chm 210** Chemistry I ......................... 4
  - **Math 220** Analytic Geometry and Calculus I .... 4
  - **Ece 241** Introduction to Computer Engineering ...... 3
  - **Den 201** New Student Orientation ................. 0

### Spring semester
- **Sophomore**
  - **Math 221** Analytic Geometry and Calculus II .... 4
  - **Cis 200** Fundamentals of Software Design and Implementation .......... 4
  - **Econ 110** Principles of Macroeconomics ......... 3
  - **Spch 105** Public Speaking IA ..................... 2
  - **Humans or social science elective** * .............. 3

### Junior
- **Eng 501** Electrical Engineering Lab I .......... 2
- **Ece 512** Linear Systems ............................ 3
- **Ece 557** Electromagnetic Theory I .................. 4
- **Ece 549** Computer Design I ....................... 3
  - **Technical electives** * ............................. 3
  - **Humans or social science elective* .................. 3

### Senior
- **Eng 590** Seminar .................................. 1
- **Ece 643** Computer Engineering Design Lab .......... 2
- **Ece 665** Digital Electronics ......................... 3
- **Technical electives** * ............................. 6
  - **Humans or social science elective* .................. 3

**Note:** Humans and social science electives must be selected from the official College of Engineering list. Advisors should be consulted to ensure that the College of Engineering UGE requirements are also met (see University General Education section in the engineering portion of this catalog). The electives need not be taken during the semester shown in the curriculum.

### Electrical and computer engineering courses

#### Ece 241. Introduction to Computer Engineering. (3) I, II. Simple coding schemes, Boolean algebra fundamentals, elements of digital building blocks such as gates, flip-flops, shift registers, memories, etc., basic engineering aspects of computer architecture. Two hours lec. and two hours lab a week.

#### Ece 431. Microcontrollers. (3) I, II. Architecture, assembly language, programming, serial and parallel input/output and applications. Two hours rec. and three hours lab a week. Pr.: Ece 241 and Cis 200 or 209.

#### Ece 499. Honors Research in Electrical and Computer 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.

#### Ece 501. Electrical Engineering Laboratory I. (2) I, II. Standard laboratory practices including lab notebook, lab reports, statistics, and circuit construction taught using laboratory experiments on basic electrical engineering topics. One hour lec. and three hours lab a week. Pr.: Ece 241 and Cis 200 or 209.

#### Ece 502. Electrical Engineering Laboratory II. (2) I, II. Continuation of Electrical Engineering Laboratory I. One hour lec. and three hours lab a week. Pr.: Ece 501, 511, and 525. Pr. or conc.: Ece 526.


#### Ece 521. Linear Systems. (3) I, II. An introduction to linear system fundamental concepts and analytical methods. Analytical concepts presented are signal representation and classification, statistical parameters, convolution, Fourier analysis, signal sampling, and discrete transforms. Three hours rec. a week. Pr.: Ece 511, and Cis 208 or 209.


#### Ece 525. Electronics I. (3) I, II. Fundamentals of electronic components, devices, and circuits. Three hours rec. a week. Pr.: Ece 510 or 519.

#### Ece 526. Electronics II. (3) I, II. Continuation of Electronics I. Three hours rec. a week. Pr.: Ece 511 and 525.

#### Ece 530. Control Systems Design. (3) I, II. Modeling, analysis, and design of control systems. Three hours rec. a week. Pr.: Ece 512.

#### Ece 533. Basic Real-Time Electronics. (1) I. Introduction to number systems, Boolean algebra, logic gates, logic family characteristics, and Programmable Logic Devices. Introduction to finite state machines, memories, analog-to-digital converters, and basic electronic circuit elements. This course is not available to students with credit in Ece 241. Two hours rec. and three hours lab a week. Course meets in one contiguous block of five weeks. Pr.: Phys 113 or 213.

#### Ece 555. Control Systems Laboratory. (3) I, II. The design and testing of feedback control systems. Two hours rec. and three hours lab a week. Pr.: Ece 431 and Ece 502. Pr. or conc.: Ece 530.

#### Ece 541. Design of Digital Systems. (3) I, II. Design of combinatorial and sequential systems and peripheral interfaces. Emphasis is placed on hardware description languages, computer-aided design tools and simulations. Three hours rec. a week. Pr.: Ece 431 and Ece 510 or Ece 431 and Phys 214.

#### Ece 542. Local Area Networking. (3) I, II. An introduction to data communication concepts used in the network, data link, and physical layers of the Open Systems Interconnection (OSI) model. Hardware and software aspects of data communications as well as modern Local Area Network (LAN) standards will be emphasized. Two hours rec. and three hours lab a week. Pr.: Ece 241, high-level programming language.

#### Ece 543. Computer System Interfacing Labs. (1) I, II. Practical aspects of computer system interfacing including concepts of hardware and software design and debugging. Additionally implementations of interrupts and device drivers will be covered. Three hours lab a week. Pr.: Cis 208 or 209 and Ece 541.


#### Ece 571. Introduction to Biomedical Engineering. (1) I. Introduction to quantitative analysis techniques as applied to the study of physiological systems and their associated biological signals. One hour rec. a week. Pr.: Math 222.

#### Ece 581. Energy Conversion. (3) I, II. Energy conversion principles and their application to electric energy converters operating in the static and dynamic modes. Three hours rec. a week. Pr.: Ece 510 or Ece 519.

#### Ece 589. Circuits and Machines Labs. (2) I, II. Practical aspects of electrical circuits, transformers, and electrical motors and generators. One hour lec. and two hours lab a week. Not open to Ece students. Pr.: Ece 519.


#### Ece 603. Advanced Electrical Engineering Laboratory. (2) On sufficient demand. A project-oriented laboratory in which a small group of students works with a
EECE 624. 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 supplies; rectifiers, converters and inverters, using diodes, diacs, thyristors, triacs, and power transistors. Three hours rec. a week. Pr.: EECE 502 and 526.

EECE 631. Microcomputer Systems Design. (3) I. Design for fixed and floating point operations. Hardware microcomputers to instrumentation and control. Investigate the relationship of the C language and assembly language. Timing and other interfacing problems will be covered. Two hours rec. and three hours lab a week. Pr.: EECE 502 and 526.

EECE 640. Advanced Digital Design using Logic Synthesis. (3) I. Applications of hardware description languages (HDLs) for the design of complex digital systems. Topics include designing and implementing using HDLs, logic synthesis into FPGAs and ASICs, optimization techniques, timing issues, hardware verification, and design for testability. Two hours rec. and three hours lab a week. Pr.: EECE 541.

EECE 643. Computer Engineering Design Lab. (2, 1) I, II. The design and construction of small computer systems covering necessary practical considerations 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 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 models of communication systems, noise in communication links, and calculation of performance measures for practical links. Three hours rec. a week. Pr. or conc.: EECE 512.

EECE 661. Communications Systems II. (3) I. Analysis and design of digital communications 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 of communication circuits and systems operating from baseband to UHF frequencies. Topics include tunable filters, high level filters such as LC and ceramic bandpass filters, and demodulator circuits. Projects involve the design and performance testing of a complete radio receiver using surface mount discrete and IC components. Two hours rec. and three hours lab a week. Pr.: EECE 526 and 502.

EECE 663. Digital Error Control Coding. (3) I, in odd years. An introduction to the subject of error-correcting and error-detecting codes, both block and convolutional. Emphasis is placed on practical means of encoding and decoding the most commonly used codes such as Hamming, BCH, and Reed-Solomon codes. Three hours rec. a week. Pr.: EECE 241, STAT 510, and CIS 208 or 209.

EECE 664. Design of Microwave Circuits. (3) I. The design of communication circuits and systems operating at microwave frequencies. Topics include antennas, transmission lines, microstrip matching networks, S-parameters, frequency synthesizers, and downconverter components such as LNAs, mixers, and microstrip bandpass filters. Projects involve design, simulation with Electronic Design Automation tools, and laboratory measurements. Two hours rec. and three hours lab a week. Pr.: EECE 502, 512, 526, and 557.

EECE 670. Engineering Applications of Machine Intelligence. (3) I, II. Introduction to artificial intelligence and fuzzy logic concepts and applications in engineering problem domains. As a term project, develop a fuzzy expert system for a specific problem domain that runs on a personal computer and develop the supporting documentation. Pr.: CIS 208 or 209, and PHYS 214. Three hours rec. a week.

EECE 681. Wind Engineering. (3) I. On sufficient demand. Wind characteristics, turbine performance, synchronous and asynchronous electrical loads, stiting, economics, and wind farm design. Three hours rec. a week. Pr.: ME 512 or CE 530; and EECE 525 or 519.

EECE 684. Power Laboratory. (3) II. Introduction to power system and device analysis course. Includes lecture and laboratory experience in aspects of power flow, system operation, power quality, power electronics, and economic analysis. Two hours rec. and three hours lab a week. Pr.: EECE 501, 525, and 581.

EECE 685. 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. Vector-matrix descriptions are emphasized. Three hours rec. a week. Pr.: EECE 581.

EECE 686. Power Systems Protection. (3) I, II. Analysis of symmetrical and asymmetrical faults on power systems using symmetrical components technique. Study of protective relaying for protection of power systems against faults. Vector-matrix descriptions and computer solutions are emphasized. Three hours rec. a week. Pr.: EECE 581.

EECE 690. Problems in Electrical and Computer Engineering. (Var) I, II, S.


EECE 696. Integrated Circuit Design. (3) I. Study of silicon integrated circuits with emphasis on CMOS analog and digital applications. The course covers basic device structure and modeling, circuit analysis, system design, IC design methodologies, 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.: EECE 241 and 525.

EECE 725. Integrated Circuit Devices and Processes. (3) I. 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.: EECE 696 and CHE 350.

EECE 728. Mixed Signal Measurements. (3) I. Signal classification, noise and uncertainty, TRMS conversion, quantization and ADCs, repetitive sampling and signal recovery techniques, vector visualization, basis network analyzers. Three hours rec. a week. Pr.: EECE 530 or ME 640. Same as ME 730.

EECE 731. Advanced Microcomputer System Design. (3) I, 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.: EECE 631.

EECE 733. Real-Time Embedded Systems Design. (3) I. Design and implementation of a comprehensive team project of a complete embedded real-time system. Two hours rec. and three hours lab a week. Pr.: CIS 721.


EECE 746. Fault Diagnosis in Digital Systems. (3) I. 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.: EECE 541 or 631.

EECE 747. Digital Signal Processing Laboratory. (3) I. Digitization of analog signals; demonstration of aliasing problems; spectral analysis of digital signals using Fourier and other signal representation techniques; digital filtering problems; applications related to biomedical and speech data. Two hours lab. and three hours lab a week. Pr.: EECE 512. Pr. or conc.: EECE 647.

EECE 749. Computer Design II. (3) I. Study of alternate computer hardware structures. Investigation of engineering tradeoffs in implementation of alternative instruction sets and computer architectures. Emphasis will be placed on a quantitative approach to cost/performance evaluations including simulation of hardware structures. Three hours rec. a week. Pr.: EECE 649.

EECE 758. Electromagnetic Theory II. (3) I. In odd years. Continuation of EECE 557. Three hours rec. a week. Pr.: EECE 557.

EECE 765. Digital Radio Hardware Design. (3) I. On sufficient demand. Advanced topics in digital radio communication systems. Topics include the design and application of state-of-the-art RF and baseband circuits found in products ranging from cordless and cellular phones to wireless local area networks. Systems-level issues including coding, duplexing, and multiple access techniques are also covered, and a team-based project provides experience with RF hardware research and development activities. Three hours a week. Pr.: EECE 662, 668, or consent of instructor.

EECE 771. Control Theory Applied to Bioengineering. (3) I. Development of mathematical models used in the study and analysis of physiological control systems providing techniques for varying pertinent biological parameters. Three hours a week. Pr. or conc.: EECE 530 or ME 640, and a basic physiology course.

EECE 772. Theory and Techniques of Bioinstrumentation. (2) I. Theoretical aspects of biological signals, electrocardiograms, transducers, digital imaging, and computer-based data acquisition directed toward EECE and other science and engineering majors. Two hours rec. a week. Pr.: Conc. enrollment in EECE 773 (EECE majors only) and AP 773.

EECE 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.: EECE 502; conc. enrollment in EECE 772 and AP 773.
Industrial and Manufacturing Systems Engineering

Bradley A. Kramer, Head

Professors Harnett and E.S. Lee; Associate Professors Ben–Arieh, Chang, Kramer, Rys, and Wu; Assistant Professors Easton, Hanna, Lei, and Pei; Adjunct Professors Amos and Galitzer; Emeriti: Professors D. Grosh, Konz, and Tillman; Associate Professors Hansen, L. Grosh, Willems, and Wilson.

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Degrees
The department of industrial and manufacturing 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 designs, 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
129 hours required for graduation
Accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology, 111 Market Place, Suite 105, Baltimore, MD 21202–4012. 410–347–7700

Freshman
Fall semester
CHM 210 Chemistry I .......................... 4
MATH 220 Analytic Geometry and Calculus I .............. 4
ENGL 100 Expository Writing I** .................. 3
IMSE 201 Introduction to Industrial Engineering ... 3
Humanities or social science elective* .................. 3
IMSE 015 Engineering Assembly .................. 0

Spring semester
CHM 230 Chemistry II .......................... 4
MATH 221 Analytic Geometry and Calculus II .......... 4
CIS 209 C Programming for Engineers ................. 3
ME 212 Engineering Graphics I .................. 2
Humanities or social science elective* .................. 3
IMSE 015 Engineering Assembly .................. 0

Sophomore
Fall semester
MATH 222 Analytic Geometry and Calculus III ...... 4
PHYS 213 Engineering Physics I .................. 5
ACCTG 231 Accounting for Business Operations ... 3
ECON 120 Principles of Microeconomics ............ 3
IMSE 015 Engineering Assembly .................. 0

Spring semester
MATH 551 Applied Matrix Theory .................. 3
PHYS 214 Engineering Physics II .................. 5
IMSE 250 Introduction to Manufacturing Processes and Systems .......... 2
IMSE 251 Manufacturing Processes Lab ............. 1
CHE 352 Engineering Materials I .................. 3
SPCH 105 Public Speaking IA .................. 2
IMSE 015 Engineering Assembly .................. 0

Junior
Fall semester
IMSE 530 Industrial Project Evaluation .............. 3
IMSE 560 Introduction to Operations Research I ... 3
IMSE 623 Industrial Ergonomics .................. 3
EECE 519 Electric Circuits and Controls .......... 4
STAT 510 Introduction to Probability and Statistics II .................. 3
IMSE 015 Engineering Assembly .................. 0

Spring semester
IMSE 660 Introduction to Operations Research II ... 3
CE 530 Statics and Dynamics .................. 3
ENGL 415 Written Communication for Engineers** .......... 3
IMSE 015 Engineering Assembly .................. 0
STAT 511 Introduction to Probability and Statistics II .................. 3
IMSE 050 Industrial Plant Studies .................. 0
Literature humanities elective* .................. 3

Senior
Fall semester
IMSE 541 Statistical Quality Control .............. 3
IMSE 591 Senior Design Project I# .............. 2
IMSE 633 Production Planning and Inventory Control .................. 3
IMSE 643 Industrial Simulation .................. 3
IMSE elective** .................................. 3
Humanities or social science elective* .................. 3
IMSE 015 Engineering Assembly .................. 0

Spring semester
IMSE 501 Industrial Management .................. 3
IMSE 555 Industrial Facility Layout Design .......... 3
IMSE 592 Senior Design Project II# .................. 2
IMSE electives** .................................. 6
Humanities or social science elective* .................. 3
IMSE 015 Engineering Assembly .................. 0

*Humanities and social science electives must be selected from the official College of Engineering list. Advisors
should be consulted to assure that the College of Engineering UGE requirements are also met (see University General Education section in the engineering portion of this catalog). The electives need not be taken during the semester shown in the curriculum.

Literature humanities elective must be selected from ENGL 262, 272, 320, 330, 340, or 390.

**The prerequisite for ENGL 415 is satisfied with an A or B in ENGL 100 or by completing ENGL 200. Only three hours of ENGL 415 prerequisite courses may be applied to degree requirements.

***An IMSE elective is any course in industrial engineering below the 800 level.

#IMSE 591 and IMSE 592. Students should sign up in the IMSE department office at the beginning of the fall semester if they intend to take IMSE 590 in the following spring semester.

### Manufacturing systems engineering (MFSE)

Bachelor of science in manufacturing systems engineering, 130 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology, 111 Market Place, Suite 105, Baltimore, MD 21202-4012. 410-347-7700

#### Fall semester

- **IMSE 100** Expository Writing I** .................................................. 3
- **CHM 101** Chemistry I ................................................................. 4
- **MATH 220** Analytic Geometry and Calculus I .......................... 4
- **SPCH 105** Public Speaking IA .................................................. 2
- **Humanities or social science elective** ........................................ 3
- **IMSE 015** Engineering Assembly ........................................... 0

**IMSE 580 may be substituted for IMSE 591 and IMSE 592. Students should sign up in the IMSE department office at the beginning of the fall semester if they intend to take IMSE 590 in the following spring semester.**

#### Spring semester

- **CHM 230** Chemistry II ............................................................. 4
- **MATH 221** Analytic Geometry and Calculus II ........................ 4
- **CIS 209** C Programming for Engineers .................................... 3
- **ME 212** Engineering Graphics I ................................................ 2
- **Humanities or social science elective** ........................................ 3
- **IMSE 015** Engineering Assembly ........................................... 0

**Freshman**

#### Sophomore

**Fall semester**

- **MATH 222** Analytic Geometry and Calculus III .......................... 4
- **PHYS 213** Engineering Physics I .............................................. 5
- **ECON 201** Principles of Microeconomics ............................... 3
- **Literature humanities elective** .................................................. 3
- **IMSE 015** Engineering Assembly ........................................... 0

**IMSE 250. Introduction to Manufacturing Processes. (2)** I, II. 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. Three hours lab a week.

**IMSE 250. Introduction to Manufacturing Processes. (2)** I, II. Production of machined parts. Includes metalworking, safe machining practices, read shop drawings, and good machining practices. Three hours lab a week.

**IMSE 541. Statistical Quality Control** ........................................ 3
**IMSE 564. Product and Process Engineering** ............................... 3
**IMSE 633. Production Planning and Inventory Control** .................. 3
**IMSE 643. Industrial Simulation** .............................................. 3
**IMSE 662. Computer Aided Manufacturing** ................................. 3
**IMSE elective** **................................................................. 2
**IMSE 015. Engineering Assembly** ........................................... 0

*Humanities and social science electives must be selected from the official College of Engineering list. Advisors should be consulted to assure that the College of Engineering UGE requirements are also met (see University General Education section in the engineering portion of this catalog). The electives need not be taken during the semester shown in the curriculum.

**IMSE 590. Industrial Plant Studies** ........................................... 0
**STAT 511. Introduction to Probability and Statistics** .................... 3
**IMSE elective** **................................................................. 3
**IMSE 015. Engineering Assembly** ........................................... 0

**Senior**

#### Fall semester

- **IMSE 541** Statistical Quality Control ....................................... 3
- **IMSE 564** Product and Process Engineering ............................... 3
- **IMSE 633** Production Planning and Inventory Control .................. 3
- **IMSE 643** Industrial Simulation .............................................. 3
- **IMSE 662** Computer Aided Manufacturing .................................. 3
- **IMSE elective** **................................................................. 2
- **IMSE 015. Engineering Assembly** ........................................... 0

**Spring semester

- **IMSE 555. Industrial Facility Layout Design** ............................ 3
- **IMSE 580. Manufacturing Systems Design and Analysis** ................. 4
- **IMSE 685. Manufacturing Information Systems** ........................... 3
- **IMSE elective** **................................................................. 3
- **Humanities or social science elective** ........................................ 3
- **IMSE 015. Engineering Assembly** ........................................... 0

**Spring semester

- **IMSE 555. Industrial Facility Layout Design** ............................ 3
- **IMSE 580. Manufacturing Systems Design and Analysis** ................. 4
- **IMSE 685. Manufacturing Information Systems** ........................... 3
- **IMSE elective** **................................................................. 3
- **Humanities or social science elective** ........................................ 3
- **IMSE 015. Engineering Assembly** ........................................... 0

*Humanities and social science electives must be selected from the official College of Engineering list. Advisors should be consulted to assure that the College of Engineering UGE requirements are also met (see University General Education section in the engineering portion of this catalog). The electives need not be taken during the semester shown in the curriculum.

**IMSE 590. Industrial Plant Studies** ........................................... 0

**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, their products and operations. Required every semester.

**IMSE 050. Industrial Plant Studies**, (0) I, II. 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, II. Introduction to the major functions of industrial engineers with emphasis on the analysis, design and control of production systems. Two hours rec. and two hours lab week.

**IMSE 250. Introduction to Manufacturing Processes and Systems**, (2) I, 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 rec. and two hours lab week.

**IMSE 250. Introduction to Manufacturing Processes and Systems**, (2) I, II. General introduction to foundry, welding, and machining. Includes safe manufacturing practices, metrology, and hands-on experience in foundry, welding, and machining operations. Three hours lab a week. Pr. or conc.: IMSE 250.

**IMSE 525. Welding Laboratory**, (1) I. Introduction to welding. Includes safe welding practices and lab experiences in gas, spot, and arc welding. Three hours lab a week. Pr. or conc.: IMSE 250, ME 212.

**IMSE 525. Welding 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 525. Machining Laboratory**, (1) I, II. Production of machined parts. Includes metallography, 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**, (Vac. I, II. Individual research program 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.

**IMSE 501. Management**, (3) I, II. Basic functions in an industrial organization and their interrelationship, 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 competing 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 frequency distributions. Seven process improvement tools. Control charts on means and variances for variables and attributes. Design of experiments for process and product design. Acceptance sampling plans. Two hours rec. and two hours lab. a week. Pr.: CIS 209, Pr. or conc.: STAT 511.

**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 530 and 623.

**IMSE 560. Introduction to Operations Research L**, (3) I, II. A study of the methods of operations research including model formulation and optimization. Topics include: assignment/transportation problems, linear programming, network flows. Three hours rec. a week. Pr.: MATH 222 and 551.

**IMSE 563. Manufacturing Processes Engineering**, (4) I, II. The effects of operating variables on manufacturing processes such as machining, metal forming, casting, welding, plastics, etc. Emphasizes are on manufacturing process theory, process variables measurement, and the technical inferences of collected data. Strength of materials, manufacturing process theory, instrumentation, computer data acquisition, and data analysis concepts are included. Laboratory testing of manufacturing processes and the engineering design of experiments for process variable measurements are used to develop efficient manufacturing processes. Three hours rec. and three hours lab a week. Pr.: IMSE 250 and IMSE 251, CHE 152, CE 530 or statics equiv.

**IMSE 564. Product and Process Engineering**, (3) I, II. Study of the interrelationships between product design and production process selection. Emphasis is on the development of economic production systems for discrete products in a competitive manufacturing environment. Concepts of design for manufacturing and assembly, tool engineering, and manufacturing systems design are included. Two hours rec. three hours lab per week. Pr.: IMSE 250 and IMSE 530.

**IMSE 580. Manufacturing Systems Design and Analysis**, (4) I, II. Comprehensive design and analysis of a manufacturing system: integration of the undergraduate industrial engineering and manufacturing engineering courses. Two hours rec. and four hours lab a week. Pr. or conc.:
IMSE 564, 662; and IE students Pr. or conc.: IMSE 530, 541, 623, and 633.

IMSE 591. Senior Design Project I. (2) I, II. Students organize themselves in teams, not exceeding five students in each team. Teams select a general subject, formulate a specific design project, and gather data and resources needed to support the project. Two hours rec. a week. Pr. or conc.: IMSE 530, 541, 623, and 633.

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 555 and 643.

IMSE 602. Topics in Industrial Engineering. (Var) I, II. Lectures on recent topics in industrial engineering.

IMSE 604. Independent Study of Industrial Engineering. (Var) I, II, S. This course involves independent study of recent topics in industrial engineering.

IMSE 605. 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) II. An overview of factors affecting safety in organizations, emphasizing analysis techniques and design strategies. Topics include occupational safety, accidents, fire protection, industrial hygiene, hazardous waste, toxicology, radiation safety, product liability, and federal standards. A project involving a hazard analysis and the design of 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.: CHM 230.

IMSE 623. Industrial Ergonomics. (3) I. 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 510.

IMSE 625. Work Environments. (3) II. Basic structure and performance of the human, viewed as a component in information processing and control systems. Effect of visual, auditory, toxic, and thermal environments. Two hours rec. and two hours lab a week. Pr.: IMSE 250 and IMSE 251.

IMSE 633. Production Planning and Inventory Control. (3) I, II. Principles, techniques, and applications of production planning and inventory control. Design of control systems. Three hours rec. Pr. or conc.: IMSE 560.

IMSE 641. Statistical Process Control in Manufacturing. (3) 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 511.

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 build, 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 511.

IMSE 660. Introduction to Operations Research II. (3) I, II. Continuation of IMSE 560. Topics are decision theory, nonlinear programming, dynamic programming, Markovian decision processes, and queuing theory. Three hours lec. a week. Pr.: IMSE 530, IMSE 560, STAT 510.

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 CIS 209 or equiv.

IMSE 671. Topics in Automated Factory Concepts. (3) I. Introduction to concepts of automation, automatic transfer lines, and CAD/CAM. 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) II. History, development of the work environment for robots, their applications, and implementation. Concepts of control and sensory feedback in robots are covered. Three hours lec a week. Pr.: IMSE 250 and IMSE 251 and CIS 209.

IMSE 685. Principles of Manufacturing Information Systems. (3) I. Introduction to the theory and concepts of information for manufacturing. Design of manufacturing systems such as MRPII, SPC, CAD/CAM, etc. Concerns of integration and man-machine interface in manufacturing systems. Three hours lec. a week. Pr. or conc.: IMSE 633.

IMSE 751. Applied Decision Theory. (3) III. In alternate years. Bayes’ theorem, Bayesian estimators, utility, loss function and risk, minimax strategies, elementary game theory. Three hours rec. a week. Pr.: STAT 511 or equiv.

IMSE 780. Methods of Operations Research. (3) II. This course is intended to give an overview of OR at the graduate level. After this course, the student will have the basic knowledge in OR and a better idea about the usefulness and interrelationships of the various subjects in OR. Topics to be covered include the various optimization techniques, stochastic processes and optimization, and the various approaches in the treatment of uncertainty. Three hours rec. per week. Pr.: IMSE 560 and STAT 510.

Mechanical and Nuclear Engineering

J. Garth Thompson, Head


E-mail: info@mne.ksu.edu
www.mne.ksu.edu

Mechanical engineering is a broad profession that traditionally comprises three primary subfields: energy, mechanisms and machinery, and controls. The work done by mechanical engineers includes the design, construction, and use of systems for the conversion of energy available from natural sources (water, fossil fuels, nuclear fuels, solar radiation) to other forms of useful energy (for transportation, heat, light, power); design and production of machines to lighten the burden of servile human work and to do work otherwise beyond human capability; processing of materials into useful products; and creative planning, design, development, and operation of systems using energy, machines, and resources; and manufacturing.

The curriculum includes engineering science courses in the sophomore and junior years, and engineering application courses in the junior and senior years. Laboratory courses and humanities and social science electives are found throughout the curriculum. The laboratory and application courses provide opportunities for development of student creativity, use of design methodology, and other aspects of engineering design.

The entire curriculum serves as preparation for the industrial design project where a team of three to five students is assigned to work on a realistic engineering problem supplied by an industrial sponsor. This internships gives new mechanical engineering graduates the experience and confidence to move quickly into productive and satisfying careers.

Because of the broad and fundamental nature of the curriculum, mechanical engineering provides an excellent background for careers in such fields as law, medicine, social services, urban design, and business management in addition to traditional engineering professions.

MNE program objectives

Students will gain a strong foundation in: pure sciences (chemistry and physics), mathematics, and engineering science and analysis; modern computational methods and tools; methods, standards, and conventions followed in the practice of engineering; theory and practice of engineering experimental methods; skills and knowledge required to formulate and solve team-oriented, realistic design problems; skills of individual and team-oriented communication, both writing and speaking; and professional responsibilities and ethics, with a special emphasis on social, environmental, and economic interactions.

Our graduates have an ability to: apply knowledge of mathematics (through multivariate calculus and differential equations, statistics, and linear algebra), science (including chemistry and calculus-based physics with depth in one), and engineering; design and conduct experiments, as well as to analyze and interpret data; design a system, component, or process to meet desired needs; function on multidisciplinary teams; identify, formulate, and solve engineering problems; understand professional and ethical responsibility; communicate effectively; understand the impact of engineering solutions in a global and societal context; recognize the need for, and develop an ability to engage in life-long learning; know contemporary issues; use the techniques, skills, and modern engineering tools necessary for engineering practice; and work at a professional level for both thermal and mechanical systems including the design and realization of such systems.
## Individual programs

The electives in the curriculum provide the opportunity for students to develop skills of individual interest. Students with clear career objectives may be permitted to substitute appropriate courses for some of the required courses. For example, students interested in the aerospace industry can choose elective courses in propulsion, aerodynamics, aircraft stability and control, and composite materials. A special interest in automobiles may prompt students to choose elective courses in internal combustion engines, machine vibrations, composite materials, and thermodynamic analysis. The combinations are extensive.

The nuclear engineering option prepares students for professional positions in industry, government, private practice, and postgraduate studies in the application of nuclear technology. Engineering fundamentals are emphasized throughout the curriculum with the nuclear engineering courses in the junior and senior years. Students may organize a program suited to their particular needs and interests. Students may elect a program leading to specialized engineering practice or to postgraduate study in engineering, science, medicine, business, or law.

### Curriculum in mechanical engineering (ME)

Bachelor of science in mechanical engineering 134 hours required for graduation

Accredited by the Engineering Accreditation Commission of the Accreditation Board of Engineering and Technology, 111 Market Place, Suite 105, Baltimore, MD 21202-4012. 410-347-7700

### Freshman

**Fall semester**

- CHM 210 Chemistry I .............................................. 4
- ENGL 100 Expository Writing I* .................................. 3
- MATH 221 Analytic Geometry and Calculus I .................. 4
- SPCH 105 Public Speaking IA ..................................... 2
- Humanities or social science elective ............................ 3
- ME 015 Mechanical Engineering Seminar ....................... 0

**Spring semester**

- CHM 230 Chemistry II .............................................. 4
- MATH 222 Analytic Geometry and Calculus II ................... 4
- ME 212 Engineering Graphics ...................................... 2
- ECON 110 Principles of Macroeconomics ......................... 3
- Humanities or social science elective ............................ 3
- ME 015 Mechanical Engineering Seminar ....................... 0

### Sophomore

**Fall semester**

- MATH 223 Analytic Geometry and Calculus III ............... 4
- PHYS 213 Engineering Physics I ................................. 5
- IMSE 250 Manufacturing Processes Lab ......................... 2
- IMSE 251 Manufacturing Processes Lab .......................... 2
- CIS 209 C Programming for Engineers ......................... 3
- ME 015 Mechanical Engineering Seminar ....................... 0

**Spring semester**

- MATH 224 Analytic Geometry and Calculus IV .................. 4
- PHYS 214 Engineering Physics II .................................. 5
- IMSE 250 Manufacturing Processes Lab .......................... 2
- ME 212 Engineering Graphics ..................................... 2
- ME 015 Mechanical Engineering Seminar ....................... 0

### Junior

**Fall semester**

- MATH 300 Introduction to ME Design ............................ 2
- CE 333 Statics .................................................... 3
- NE 495 Elements of Nuclear Engineering ......................... 3
- NE 495 Elements of Nuclear Engineering ......................... 3
- STAT 490 and 491 Introduction to Statistics and Probability 1 ......................................... 1
- ME 512 Thermodynamics ......................................... 3
- ME 513 Thermodynamics ......................................... 3
- ME 513 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 015 Mechanical Engineering Seminar ....................... 0

**Spring semester**

- MATH 400 Computer Application in ME ......................... 2
- ME 400 Introduction to ME Design ............................... 2
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 015 Mechanical Engineering Seminar ....................... 0

### Senior

**Fall semester**

- MATH 500 Computer Application in ME .......................... 2
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 015 Mechanical Engineering Seminar ....................... 0

**Spring semester**

- MATH 500 Computer Application in ME ......................... 2
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 015 Mechanical Engineering Seminar ....................... 0

### Nuclear engineering option (NE)

Bachelor of science in mechanical engineering 134 hours required for graduation

**Freshman**

**Fall semester**

- CHM 210 Chemistry I .............................................. 4
- ENGL 100 Expository Writing I* .................................. 3
- MATH 221 Analytic Geometry and Calculus I .................. 4
- SPCH 105 Public Speaking IA ..................................... 2
- Humanities or social science elective ............................ 3
- ME 015 Mechanical Engineering Seminar ....................... 0

**Spring semester**

- CHM 230 Chemistry II .............................................. 4
- MATH 221 Analytic Geometry and Calculus II ................... 4
- ME 212 Engineering Graphics ..................................... 2
- ECON 110 Principles of Macroeconomics ......................... 3
- Humanities or social science elective ............................ 3
- ME 015 Mechanical Engineering Seminar ....................... 0

**Sophomore**

**Fall semester**

- MATH 222 Analytic Geometry and Calculus III ............... 4
- PHYS 213 Engineering Physics I .................................. 5
- IMSE 250 Manufacturing Processes Lab .......................... 2
- IMSE 251 Manufacturing Processes Lab .......................... 2
- ME 212 Engineering Graphics ..................................... 2
- ME 015 Mechanical Engineering Seminar ....................... 0

**Spring semester**

- MATH 224 Analytic Geometry and Calculus IV .................. 4
- PHYS 214 Engineering Physics II .................................. 5
- IMSE 250 Manufacturing Processes Lab .......................... 2
- ME 212 Engineering Graphics ..................................... 2
- ME 015 Mechanical Engineering Seminar ....................... 0

**Junior**

**Fall semester**

- MATH 300 Introduction to ME Design ............................ 2
- CE 333 Statics .................................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 015 Mechanical Engineering Seminar ....................... 0

**Spring semester**

- MATH 400 Computer Application in ME .......................... 2
- ME 400 Introduction to ME Design ............................... 2
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 015 Mechanical Engineering Seminar ....................... 0

**Senior**

**Fall semester**

- MATH 500 Computer Application in ME .......................... 2
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 015 Mechanical Engineering Seminar ....................... 0

**Spring semester**

- MATH 500 Computer Application in ME ......................... 2
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 512 Thermodynamics ......................................... 3
- ME 015 Mechanical Engineering Seminar ....................... 0

*Expository Writing II is optional if prerequisites for Written Communication for Engineers (ENG 415) are met from Expository Writing I.

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 from the College of Engineering list of UGE courses.)

**Engineering/science electives:**

- Students will take two of the following three choices:
  - CHE 350 ..................................................... 2
  - or ME 400 ..................................................... 2
  - or STAT 490 and 491 ........................................ 2

Two courses must be chosen from an approved list of design technical electives. The other course must be at the 400 level or above with a math, engineering, or physical science prerequisite.

Electives must be selected to ensure that a minimum of 16 design credits and 16 (including ECON 110) humanities and social science credits are included in the program of study. All electives are to be chosen with the advice and approval of the faculty advisor and department head.
ME 512. Dynamics. (3) I. 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.: ME 212, PHYS 213 and IMSE 241.

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.: Approval of instructor. A monthly assembly of all undergraduates enrolled in the mechanical engineering curriculum for the purpose of exchanging information on academic, technical, social, ethical, and professional matters between students, faculty, and practicing professionals. One hour of lec. a month.

ME 212. Engineering Graphics. (2) I, II. Technical drawing, study of principles of perspective geometry, multiview drawings, pictorials, reading and interpreting drawings, introduction to CAD, sectioning, dimensioning. Three hours lab and one hour rec. a week. Pr.: Plane geometry.

ME 300. Introduction to ME Design. (2) I, II. Introduction to the design process, dimensioning and tolerancing, drawings, introduction to CAD, sectioning, dimensioning. Three hours lab and one hour rec. a week. Pr.: ME 400, 513, and EECE 519, and STAT 491.

ME 560. Engineering Economics. (2) I. 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 machine elements, such as shafting, screws, springs, belts, brakes, clutches, gears, and bearings, with emphasis on strength, rigidity, and wear qualities. Three hours rec. a week. Pr.: CE 533 and ME 533.

ME 570. Mechanical System Dynamics. (4) I, II. Basic linear systems modeling and equation formulation techniques. Time response of low-order linear systems. Model- ing 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. Fluid Mechanics. (3) I, II. S. Physical properties, fluid statics, dynamics of ideal and real fluids (for incompressible and compressible flow); impulse and momentum; laws of similitude; dimensional analysis; flow in pipes; flow in open channels; flow about immersed objects. 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 dimensional analysis. Three hours rec. a week. Pr.: ME 571, MATH 240.

ME 574. Interdisciplinary Industrial Design Projects I. (3) I. A general introduction to 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. (2) I, 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. (3) I. 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. (3) I, II. Analysis of cycles, design, and performance characteristics. Three hours rec. a week. Pr.: ME 523.

ME 622. Environmental Engineering I. (3) I, II. Psychrometry, heat and moisture transfer, heat and mass exchanger design and dimensional analysis basics. Three hours rec. a week. Pr. or conc.: ME 573.

ME 628. Aerodynamics. (3) I. 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. (3) I. Mechanics and thermodynamics of aircraft and missile propulsion systems; combustion; air-breathing jet engines; rockets; propellant characteristics; performance and design of propulsion systems. Three hours rec. a week. Pr.: ME 523, 571, and MATH 240.

ME 633. Thermodynamics of Modern Power Cycles. (3) I. 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. (3) I. Scope of computer-aided design, computer-aided design workstations, interactive programming, numerical methods, and computer graphics in computer-aided design, applications to design problems, introduction to finite elements, and optimal design. Pr.: ME 400 and senior standing in engineering.

ME 651. Introduction to Composites. (3) I. 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. (3) I. A 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. (3) I. Computer control of mechanical systems, including thermal and fluid and as electro-mechanical, discrete modeling, and analysis of dynamic physical systems. Sampling and data conversion and reconstruction. Stability and performance specifications. Real time implementation. Digital controller design and implementation. Laboratory exercises in control applications and design. Two hours rec. and three hours lab per week. Pr.: ME 640.


ME 716. Intermediate Dynamics. (3) I. General vector principles of the dynamics of particles and rigid bodies; applications to orbital calculations, gyrodynamics, and rocket performance; introduction to the energy methods of advanced dynamics. Three hours rec. a week. Pr.: ME 512 and MATH 240.

ME 720. Intermediate Fluid Mechanics. (3) I. A 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 721. Thermal Systems Design. (3) I. Thermal systems design including economics, simulation, and optimization. Includes heating, ventilation, and air conditioning (HVAC) design and control. Pr.: ME 573.

ME 722. Environmental Engineering II. (3) I, in even years. Characteristics of air conditioning compressors, condensers, evaporators; system characteristics; air conditioning system controls; refrigeration systems; acoustics. Three hours rec. a week. Pr.: ME 622.

ME 730. Control Systems Analysis and Design. (3) II. 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. (3) II, in even years. 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.
Nuclear engineering courses

NE 385. Engineering Computational Techniques. (2) I, II. Application of digital computer methods to the solution of engineering problems. Two hours lec. a week. Pr.: MATH 220.

NE 415. Introduction to Engineering Analysis. (3) I. Introduction to analytical, statistical, and numerical analysis, including computer programming, as applied to engineering. Three hours rec. a week. Pr.: MATH 211 or 221.

NE 495. Elements of Nuclear Engineering. (3) I, II. Survey of nuclear engineering concepts and applications. Nuclear reactions, radioactivity, radiation interaction with matter, reactor physics, risk and dose assessment, applications in medicine, industry, agriculture, and research. Three hours lec. a week. Pr.: MATH 221, PHYS 213.

NE 500. Applied Engineering Analysis. (3) II. Methods and applications of analytical, statistical, and numerical analysis in engineering, including computer programming. Three hours rec. a week. Pr.: NE 415.

NE 512. Principles of Radiation Detection. (3) II. Operating principles and general properties of devices used in the detection and characterization of ionizing radiation. Two hours rec. and three hours lab a week. Pr.: NE 495.

NE 550. Radiation Protection Engineering. (2) II. Basic principles and concepts of radiation protection. Analysis of radioactive-decay systematics, dose and risk concepts, description of natural and other sources of ionizing radiation, basic procedures of external and internal dose evaluation, waste storage and disposal. Two hours rec. a week. Pr.: MATH 240, NE 495. Pr. or conc.: NE 512.

NE 620. Problems in Nuclear Engineering. (Var.) I, II, S. Specific studies in current and advanced problems in various phases of nuclear engineering. Pr.: Consult head of department.
Human Ecology

Carol E. Kellett, Dean
Virginia M. Moxley, Associate Dean
Karen Pence, Assistant Dean

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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 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 have not yet decided on their major in the College of Human Ecology should request admission to 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 lifelong 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.

| General studies (39 hours minimum) |
| Communications (6–9)               |
| 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 |
| Quantitative studies (6)             |
| MATH 100  College Algebra            3 |
| or                                            |
| A college-level calculus course       3 |
| Statistics course                     3 |
| Social science (6)                   |
| (To include course work in economic systems and human behavior.) |
| Humanities (6)                       |
| Electives*                           6 |
| Natural sciences (7)                 |
| (To include course work in life science and physical science; one course with a laboratory.) |
| Additional integrative studies courses 6 |
| GNHE 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.)        |
| Total hours for graduation          120 or more |
* 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. Degree requirements for College of Human Ecology programs include courses to meet UGE requirements.

As required by the university, students must complete 18 credits in approved UGE courses, including at least 6 credit hours at the 300 level or above. Required credits are adjusted for transfer students and students who have completed credit by examination (AP, IB, CLEP, DANTES). Only courses completed at Kansas State University and approved for UGE can be used to meet these requirements.

Approved UGE courses are marked with a ◆ in course descriptions. For a current list of approved UGE 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 UGE course in four of the following areas:

• Quantitative studies
• Economics
• Social sciences
• Humanities
• Life sciences
• Physical sciences
• Courses from professional colleges

Students required to complete only 9 credits in UGE courses must have three of these areas represented. Students required to complete only 6 credits must have two of these areas represented. Only courses outside the department or school which offers the student’s major can be applied toward the student’s UGE requirement.

Grade requirement
Grades of C or higher are required in all professional studies and supporting courses in College of Human Ecology degree programs.

Transfer courses
Careful planning enables students to transfer courses from another college or university that will apply toward specific degree requirements at K-State. Information about the transferability to Kansas State University of specific courses offered by most Kansas higher education institutions is available at www.ksu.edu/admittrans.html on the World Wide Web. Contact the College of Human Ecology Dean’s Office with questions about transfer courses.

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 continuing 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.

<table>
<thead>
<tr>
<th>Programs</th>
<th>Degrees</th>
<th>School/departments/areas</th>
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</thead>
<tbody>
<tr>
<td>Apparel marketing and design</td>
<td>Bachelor of science in apparel and textiles</td>
<td>Apparel, textiles, and interior design</td>
</tr>
<tr>
<td>Apparel marketing</td>
<td></td>
<td></td>
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<tr>
<td>Apparel design and production</td>
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<tr>
<td>Athletic training</td>
<td>Nondegree</td>
<td>Human nutrition</td>
</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>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 teacher licensure</td>
<td>Bachelor of science in human ecology</td>
<td>General human ecology</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>
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<tr>
<td>Family and consumer economics (with family financial planning emphasis)</td>
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<tr>
<td>Family life and community services</td>
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<tr>
<td>Life span human development</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 human 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 human nutrition</td>
<td>Human nutrition</td>
</tr>
<tr>
<td>Public health nutrition</td>
<td>Bachelor of science in human 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.

**Manhattan Christian College**
The College of Human Ecology cooperates with Manhattan Christian College to plan dual degree programs that enable students to earn degrees from both institutions. Students 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.

**Secondary majors**
Certain departmental courses have been approved for credit toward secondary majors in American ethnic studies, international studies, women’s studies, and gerontology. A list of approved courses is in the Secondary Majors section of this catalog.

**Minors**
The College of Human Ecology offers the following minors:
- Apparel and textiles
- Communication sciences and disorders
- Family financial planning

For more information, see the minors section of this catalog and consult an academic advisor and the director of the specific minor program.

With careful planning, students may be able to complete requirements for a minor within the B.S. degree requirements or with a few additional courses. The hotel and restaurant management degree program includes the courses required for a concurrent minor in business.
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 may 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 professional 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 Marketing and Design Alliance
- Family and Consumer Sciences Association
- Family Studies and Human Services Association
- Future Financial Planners
- Hospitality Management Society
- Human Ecology Association
- International Interior Design Association
- Kansas State Student Speech, Hearing, and Language Association
- Student Dietetic Association
- Student Occupational Therapy Association
- Student Physical Therapy Association
- Student Speech Language Association

Undergraduate students may be elected to membership in the Human Ecology College Council, the official student government. All students may participate in the College of Human Ecology Open House, which is held each fall. 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.

Galicia Center on Aging
Lyn Norris-Baker, Director

The Galicia 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 and Edgar Chambers IV, Co-directors

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 application 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, Ramaswamy, and White; Associate Professors Dickson, Huck, LeHew, and Munson; Assistant Professors Adityavarman, Anderson, Harr, Kaup, Meyer, Shim, and Villasi; Emeriti: Professors Brockman, Slinkman, Stowe, and Tucker; Associate Professors J. Howe and Peterson; Assistant Professors Annis and Newby.

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 have opportunities to study abroad and 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 (IIDA), the American Association of Textile Chemists and Colorists (AATCC), and Apparel Marketing and Design Alliance 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.

<table>
<thead>
<tr>
<th>General requirements (45–48 hours)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>ENGL 110 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>
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<tr>
<td>SPCH 106 Public Speaking I ..................</td>
<td>3</td>
</tr>
<tr>
<td>MATH 100 College Algebra ...................</td>
<td>3</td>
</tr>
<tr>
<td>MATH 220 Analytical Geometry and Calculus I ...</td>
<td>4</td>
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<tr>
<td>STAT 350 Business and Economic Statistics ....</td>
<td>3</td>
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<tr>
<td>CIS 101 Introduction to Information Technology ...........................................</td>
<td>1</td>
</tr>
<tr>
<td>CIS 102 Introduction to Microcomputer .....</td>
<td>1</td>
</tr>
<tr>
<td>CIS 104 Introduction to Microcomputer Word Processing Applications ..........................</td>
<td>1</td>
</tr>
<tr>
<td>ECON 110 Principles of Macroeconomics .....</td>
<td>3</td>
</tr>
<tr>
<td>PSYCH 110 General Psychology ...............</td>
<td>3</td>
</tr>
<tr>
<td>SOCIO 211 Introduction to Sociology ..........</td>
<td>3</td>
</tr>
<tr>
<td>HIST 101 History elective ....................</td>
<td>3</td>
</tr>
<tr>
<td>Humanities elective ..............................</td>
<td>3</td>
</tr>
<tr>
<td>Biological science elective ...................</td>
<td>3-4</td>
</tr>
<tr>
<td>CHM 101 General Chemistry ...................</td>
<td>3</td>
</tr>
<tr>
<td>CHM 111 General Chemistry Lab ...............</td>
<td>1</td>
</tr>
<tr>
<td>CHM 210 Chemistry I ............................</td>
<td>4</td>
</tr>
</tbody>
</table>
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. 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.

Entering students participate in joint first-year courses with students in the College of Architecture, Planning, and Design.

Admission

Admission to the interior design program is selective and limited. High school applicants who seek admission to the program must submit an application and an official sixth- or seventh-semester high school transcript and ACT or SAT scores.

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 before enrollment in IDH 425 Space and Activity Planning II.

Supervised internships, study abroad opportunities, study tours in the United States, and participation in the student chapters of the American Society of Interior Designers, and the International Interior Design Association, enhance the program.

General requirements (42–43 hours)

ENGL 100 Expository Writing I ................. 3
ENGL 200 Expository Writing II ................. 3
SPCH 105 Public Speaking IA ................... 2
SPCH 106 Public Speaking I ..................... 3
ECON 110 Principles of Macroeconomics ... 3
ECST 120 General Chemistry ................. 5
SOCIO 211 Introduction to Sociology ....... 3
ART 196 Survey of Art History II ............. 3
HIST 101 Western Civilization: Rise of Europe ... 3
Life science elective .............................. 3

Unrestricted electives ........................................ 8–15

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).
Unrestricted electives ........................................ 4-7
Total for graduation ............................................. 125

**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 courses 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.

The textiles program is being revised. Contact the department for current degree requirements.

General requirements (46–50 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
ECON 110 Principles of Microeconomics ............ 3
PSYCH 110 General Psychology ......................... 3
SOCI 211 Introduction to Sociology .................... 3
Humane electives .............................................. 6
Life science elective ........................................... 3–4

CHM 210 Chemistry I* ...................................... 4
or
CHM 220 Chemical Principles I ........................... 5
MATH 100 College Algebra ................................. 3
or
MATH 220 Analytical Geometry and Calculus II* .... 4
STAT 320 Elements of Statistics .......................... 3
CIS 101 Introduction to Information Technology .... 3
CIS 102 Information Technology: Spreadsheet Applications ............................................. 1
CIS 103 Information Technology: Database Applications .................................................. 1
CIS 104 Information Technology: Word Processing Applications ...................................... 1
GNHE 310 Human Needs .................................... 3
or
FHS 350 Family Relationships and Gender Roles ......................................................... 3
University general education elective .................... 3

*Required for textile science option

**Required for supporting courses in textile chemistry

**Apparel and textiles courses (16–18 hours)

AT 430 History of Apparel Fashion: (3). I.
AT 545 Global Apparel and Textile Production and
AT 746 Textile Dyeing and Printing ............... 4
AT 747 Textile Finishes .................................. 3
AT 765 Chemical and Optical Analysis of Textiles .......... 3

Supporting courses (22–28 hours)

Select Option I or II

AT 440 Fundamentals of Apparel Evaluation ...... 3
CHM 230 Chemistry II ..................................... 4
CHM 350 General Organic Chemistry ................ 3
CHM 351 General Organic Chemistry Lab ......... 2
ECON 120 Principles of Microeconomics ............ 2
PHYS 115 Descriptive Physics ........................... 3

Two courses from the College of Business

Administration .................................................. 6

Option II: textile chemistry (25–28 hours)

CHM 230 Chemistry II ..................................... 4
and
CHM 371 Chemical Analysis ............................... 4
or
CHM 250 Chemical Principles II ......................... 5
CHM 531 Organic Chemistry I ............................ 3
CHM 532 Organic Chemistry Lab ....................... 2
CHM 550 Organic Chemistry II ......................... 3
CHM 566 Instrumental Methods of Analysis ........ 3
CHM 567 Instrumental Methods of Analysis Lab ................. 1
MATH 221 Analytical Geometry and Calculus II .... 4
PHYS 113 General Physics I ................................ 4
or
PHYS 115 Descriptive Physics I ........................... 4

Unrestricted electives ........................................... 9–21

Total for graduation ............................................. 125

Optional: Additional courses for a minor in chemistry may be applied as unrestricted electives

CHM 500 General Chemistry III ......................... 3
PHYS 114 General Physics II ............................ 4

Apparel and textiles courses

AT 200 Apparel Design and Production I .................... 3
AT 263 Textiles ............................................. 2
AT 266 Textiles lab .......................................... 1
AT 245 Apparel and Textile Marketing ..................... 3

Choose two of the following:

AT 330 Apparel Consumers and Society .................. 3
AT 360 Intermediate Textiles ................................ 3
AT 430 History of Apparel Fashion: Renaissance to Present .................................. 3
AT 440 Fundamentals of Apparel Evaluation ........... 3
AT 545 Global Apparel and Textile Production and Distribution .................................. 3

Apparel and textiles courses

AT 200 Apparel Design and Production I (3). I.
AT 205 Apparel Design and Production II ........... 3
AT 215 Introduction to Apparel Production; basic
AT 225 Quantitative Merchandising Analysis: (2). I.
Computer-aided mathematics emphasizes related to the profit
profitable purchase and management of apparel and textile
AT 245. Apparel and Textile Marketing: (3). III.
Surveys of the processes and principles involved in the
Costs of apparel and textile products. Pr.: MATH 100 or 220, CIS 104.
AT 260. Textiles for Interiors: (3). II. Fundamentals
Textiles for Interiors. (3). II. Fundamentals of
textile industries. Three hours of lec. per week. Pr.: Sophomore standing.
AT 265. Textiles, (2). I. Fundamentals of textiles as related to the
Textiles, (2). I. Fundamentals of textiles as related to the
and conc. enrollment in AT 266.
AT 266. Textiles Lab. (1). I. Laboratory experiences related to the
Laboratory experiences related to the care and performance of
textile and fiber industries. Conc. enrollment in AT 265.
AT 300. Apparel Design and Production II. (3). I.
Fundamentals of apparel production; garment sizing and
AT 325. Apparel and Textile Store Operations. (3). I.
Analysis of the elements, processes, and controls involved
and conc. enrollment.
AT 330. Apparel Consumers and Society. (3). II.
Cultural, social, psychological, and economic aspects of
and conc. enrollment.
AT 360. Intermediate Textiles. (3). I. Understanding of
textile fibers, dyes, and finishes; color theory and colorimetry;
textile production; introduction to pattern drafting and pattern
Two hours lec. and four hours of lab a week. Pr.: AT 265 and 266 or conc.
AT 400. Apparel Design and Production III. (3). II.
In-depth study of fashion illustration, technical apparel
design, and line development using traditional and computer
methods. Two hours lec. and four hours lab a week. Pr.: AT 200, ART 100, ART 190, sophomore standing.
AT 425. Apparel and Textile Promotion. (3). II. Promotion
of apparel and textile products including advertising, display, special events, and public relations. Pr.: AT 200 and 325.
AT 430. History of Apparel Fashion: Renaissance to
Interrelationships of costume and social, cultural, political, and economic environments from when fashion in apparel products began in the Renaissance to present day. Pr.: AT 330.
AT 440. Fundamentals of Apparel Evaluation. (3). II.
Identification of textile product features; evaluation of quality in ready-to-wear apparel; evaluation of the interrelationships of performance, quality, and cost in textile products; specification development; standards relating to textile products. Three hours of lec. per week. Pr.: AT 360.
AT 450. Apparel and Textile Marketing Internship. (5).
S. Supervised work experience in the apparel and textile industry. Pr.: AT 425; junior or senior in AM specialization, 2.5 cumulative GPA, and 3.0 GPA in professional courses. Instructor permission required.
S. Experiential learning in an apparel and textile establishment. Pr.: AT 425, sophomore or higher in AM specialization, 2.0 cumulative GPA. Instructor permission required.
AT 499. Problems in Apparel and Textiles. (Var.) I, II. S.
Independent study. Pr.: Consent of instructor.
AT 525. Principles of Apparel Buying and Forecasting. (3).
I. Concepts, practices, and procedures of apparel and textile merchandise management and forecasting including principles of buying, forecasting, vendor negotiation, and profit control and planning. Pr.: ACCTG 231, AT 425, 430, 545, 625 (or conc. enrollment).
AT 521. Apparel and Textile Merchandising Lab. (1). I.
Computer-aided laboratory experiences related to the profitable management and purchase of apparel and textile products. Pr.: ACCTG 231; CIS 102; MKTG 400; and conc. enrollment in AT 520.
AT 545. Global Apparel and Textile Production and
Distribution. (3). I. Analysis of global fiber, textile, and apparel production and distribution; structure of industry and distribution channels; impact of culture, economics, and government regulations on production and distribution. Pr.: AT 200, 245, and ECON 110.
AT 559. Apparel Design Field Experience. (5). II. S. Pre-planned and supervised off-campus work experience in the apparel industry. Pr.: AT 670, junior or senior standing in apparel design; 2.5 cumulative GPA; 3.0 GPA in professional course work; consent of instructor.
AT 580. Internships in Textiles. (Var.) I, II. S. Professional work experience in the fiber-textile-apparel indus-
try, related government agencies, dyestuff/chemical compa-
nies, museums, Cooperative Extension Service under facul-
ty supervision. May be repeated for up to 12 credits. Pr.: AT
680, 2.5 GPA.

AT 610. Computer-Aided Design of Apparel. (3 II. Over-
view of computer-aided design as it relates to the apparel
industry, steps in application of computer hardware and soft-
ware to apparel design, including apparel illustration, pattern
design, pattern grading, and pattern marker development by
computer. Six hours lab per week. Pr.: CTS 101, 102, and 104.

AT 620. Textile Yarn and Fabrics. (3 II. Technological,
structural, and functional aspects of yarn and fabrics. Pr.: AT
265 and 266.

AT 625. Apparel and Textile Store Planning. (3 I. Eval-
uation of the planning process utilized to develop suc-
cessful apparel and textile retail organizations; considera-
tion given to the unique challenges encountered by a firm
with fashion-related products. Pr.: AT 325 and 525 (or
conc. enrollment).

AT 642. Textile Fibers. (3) I in alternate years. Study of
the fundamental concepts associated with fiber chemistry;
fiber microstructure and macrostructure; mechanical, physi-
cal, and chemical properties of fibers and newer technolo-
gies in fiber science. Pr.: AT 265 and 266; and CHM 350.

AT 645. Private Label Apparel Product Development
(3) II. Capstone course using a team approach to synthesize
and perform activities used by apparel retailers to create a
line of private label merchandise for a targeted consumer
market. Pr.: AT 440; AT 625 or 670.

AT 650. Apparel and Textiles Study Tour. (1–3) I, II.
S. Supervised off-campus tour of facilities or equivalent ex-
perience where textile products are designed, manufactured,
tested, marketed, exhibited, and/or conserved. Pr.: AT 265,
266, and 6 hours apparel and textiles.

AT 655. Apparel Design and Production IV. (3) I.
Principles and techniques of flat pattern design; basic pat-
ttern drafting; development of knit slopers. Use of flat pat-
tern and drafting to achieve original designs in knit and
woven fabrics. Two hours lec. and four hours lab a week. Pr.: AT
400.

AT 670. Apparel Design and Production V. (3) II.
Advanced pattern theory and development; computer appli-
cation of flat pattern and drafting to original design devel-
opment; development of original designs, including jackets
and pants. Two hours lec. and four hours lab a week. Pr.: AT
655.

AT 680. Physical Analysis of Textiles. (4) I. Theory,
principles, and procedures in evaluating the physical properties
of textile fibers, yarns, fabrics, and products for apparel,
interior furnishings, and industrial uses. Three hours lec.
and three hours lab per week. Pr.: AT 265 and 266.

AT 695. Apparel Design and Production VI. (3) I.
Apparel product development by drafting to achieve origi-
nal designs; pattern grading and market techniques; line
development for a variety of markets; portfolio and resume
evaluation. Two hours lec. and four hours lab a week. Pr.: AT
300, 655.

AT 720. Functional Apparel Design. (3) II. The design
process; criteria for design and evaluation of clothing sys-
tems for protection from various environmental hazards;
design and evaluation of clothing systems with emphasis on
functional aspects. Two hours of lec. and two hours rec.
Pr.: AT 265 and 266.

AT 725. Strategic Planning in the Apparel and Textile
Industry. (3) II. Theoretical and applied analysis of apparel
and textile industry market strategies. Examination of nor-
mative strategic planning models and effectiveness of mar-
ket orientation in the apparel and textile industry: discus-
sion of current external environmental and industry trends
influencing strategy decisions by firms in the apparel distri-
bution channel. Pr.: MKTG 400; AT 545.

AT 730. Textile Conservation. (3) S. Alternate years.
Scientific theories of textile conservation related to fiber
degradation, storage, repair, cleaning, and exhibition of his-
toric items. Laboratory experience in solving conservation
problems related to historic textiles. Two hours lec., two
hours lab per week. Pr.: AT 430 or IDH 680.

AT 746. Textile Dyeing and Printing. (4) II. alternate
years. In-depth study of color systems, colorimetry, physi-
cal and chemical properties of dyes, methods of dye-fiber
association, and industrial dyeing and printing methods.
Two hours lec. and six hours lab per week. Pr.: AT 642.

AT 747. 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 765. Chemical and Optical Analysis of Textiles. (3)
I. alternate years. Application of chemical, optical, spectro-
sopic, and chromatographic analysis of fibers, dyes, and
finishes. Two hours lec. and three hours lab per week. Pr.: AT
642.

AT 775. Experimental Textiles. (Var.) On sufficient
demand. Individual investigation into textile research. Pr.: AT
642 or 680.

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. DSNF 203 also is offered only in the fall and
should be taken concurrently with DSNF 201.

DSNF 201 and 202. Environmental Design Studio I (4)
and Environmental Design Studio II. (4 II. 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 Human Ecology interior design program or
the College of Architecture and Design or permission of
the dean of either college.

DSNF 203. Survey of the Design Profession. (1) I.
Overview of the design professions. Comparative study of the
working methods, and societal and occupational roles of
the architect, interior architect, interior designer, landscape
architect, and planner. Two lec. per week for 8 weeks.

Interior design and housing courses
IDH 210. Design and Behavior in the Interior Environ-
mant. (3) I. Developing awareness of aesthetic and behav-
ioral relationships fundamental to interior design. Three
hours lec. per week.

IDH 215. Interior Design Graphics. (3) II. Develop-
ment of graphic communication skills used by interior
design professionals. Six hours studio per week.

IDH 210. 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 DSNF 201 and 202.

IDH 315. Advanced Interior Design Graphics. (3) I.
Design presentation techniques for interiors: Perspectives,
lighting, and atmospheric effects. Study of advanced
computer systems for presentation of design ideas. Six hours
studio per week. Pr.: IDH 315, 345, 435, and
admitted to the interior design major.

IDH 310. Interior Design Practices and Procedures. (3)
II. Ethical and business procedures for professional develop-
ment; contract services and administration; and 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 345. Senior Interior Design Studio I. (3) I.
Advanced design problems dealing with human activities
in the living environment. Solutions for systems and prod-
acts 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. S. 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 445.

IDH 600. International Studies: British Cultural Sur-
vay. (3) I. An interdisciplinary study course to acquaint
students 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 Theory. (3) I.
Analyti-
cal study of appliance design, performance, and evaluation
concepts for application in consumer decision-making. Not
Family Studies and Human Services

Bill Meredith, Director


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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 may combine degree programs in early childhood education and elementary education.

The school places great importance on labora-
tory and field experiences, along with class-
room experiences. On-campus field experi-
ces 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 edu-
cation, the Early Childhood Laboratory and the
Hoeflin Stone House Child Care Center pro-
vide 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 indivi-
duals or families. Agency staff and school fac-
ulty guide students in the planning, direction,
evaluation of these supervised experi-
ences. 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 experi-
ences 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. Determina-
tion of the student’s program of study and the completion of all requirements for certifi-
cation are the responsibility of the student and the
advisor.

Students participate in observations of a vari-
ety of disorders and age groups in the Kansas
State University Speech and Hearing Center.
Students may, on invitation of the faculty, par-
ticipate in supervised direct clinical experi-
ence in the Speech and Hearing Center.

General requirements (33–34 hours)

Communications (6–9)
ENGL 100 Expository Writing I ......................... 3
ENGL 200 Expository Writing II .................... 3
SPCH 105 Public Speaking IA .......................... 3
or
SPCH 106 Public Speaking I .......................... 3

Social sciences (6)
ECON 110 Principles of Macroeconomics ............. 3
PSYCH 110 General Psychology .......................... 3

Humanities electives (6)
Students planning for educational certification in states other than Kansas are encouraged to take courses in western history/culture to meet this requirement.

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

Integrative studies (6 hours)
GNHE 310 Human Needs .................................. 3
or
FHS 350 Family Relationships and Gender Roles ........ 3

University general education elective ...................... 3

Professional studies (41 hours)
(Grades of C or higher required.)
FHS 110 Introduction to Human Development ... 3
FHS 310 Early Childhood .................................. 3
FHS 301 Helping Relationship ............................ 3
or
FHS 420 Interaction Techniques With
Young Children .............................................. 3

FHS 347 Introduction to Phonetics ..................... 3
FHS 348 Laboratory in Acoustic Phonetics .............. 1
FHS 360 Anatomy of Speech Mechanism ............... 4
FHS 361 Hearing Science .................................. 3
FHS 442 Developmental Psycholinguistics ............... 3
FHS 443 Language Assessment and
Intervention I .............................................. 3
FHS 446 Disorders of Articulation
and Phonology ............................................. 3
FHS 449 Clinical Procedures in
Communication Disorders ............................. 3
FHS 560 Clinical Research in Communication
Sciences and Disorders ................................. 3
FHS 567 Basic Audiology .................................. 3
SPCH 320 Theories of Human Communication ....... 3
or
SPCH 322 Interpersonal Communication .......... 3
or
SPCH 323 Nonverbal Communication ................. 3
or
SPCH 480 Intercultural Communication ............. 3

General education (11 hours)

Humanities (6)
ENGL 110 Introduction to English................. 3
SPCH 106 Public Speaking I .............. 3
or
SPCH 105 Public Speaking IA ............... 3

Natural sciences (5)
A college-level biology course .................... 3
A college-level chemistry course ........................ 3
Professional electives (24 hours)

Choose 24 hours from the following:

FSHS 343 Communication Sciences and Disorders ............................................. 3
FSHS 415 Manual Communication .................................................................. 3
FSHS 506 Middle Childhood and Adolescence ... 3
FSHS 510 Human Development and Aging .................................................. 3
FSHS 550 The Family ...................................................................................... 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
EDCP 315* Educational Psychology ............................................................... 3
EDCP 310 Foundations of Education ....................................................... 3
EDCP 455* Teaching in a Multicultural Society ... 1-2
EDSP 324* Exceptional Child in the Regular Classroom ................................ 3
or
EDSP 500 Introduction to Human Exceptionality ... 3
or
EDSP 710* Education of Exceptional Individuals ... 3
ANTH 220 Introduction to Linguistic Anthropology .................................. 3
ANTH 280 Introduction to Physical Anthropology ...................................... 3
ANTH 281 Introduction to Physical Anthropology Lab ................................ 1
ANTH 420 Enthnography of Language ....................................................... 3
BIOL 340 Structure and Function of the Human Body .................................. 8
BIOL 404 The Biology of Aging ..................................................................... 3
GERON 315 Introduction to Gerontology ...................................................... 3
PSCH 202 Drugs and Behavior ................................................................. 3
PSCH 280 Psychology of Childhood and Adolescence ............................ 3
PSCH 470 Psychobiology ............................................................................ 3
PSCH 505 Abnormal Psychology ............................................................... 3
PSCH 518 Introduction to Health Psychology ............................................. 3
PSCH 535 Social Psychology ....................................................................... 3
PSCH 540 Psychology of Women ................................................................. 3
PSCH 543 Women’s Mental Health Issues .................................................. 3
PSCH 630 Human Neuropsychology .......................................................... 3
PSCH 650 Psychology of Language .............................................................. 3
PSCH 715 Psychopathology ........................................................................ 3

Any one course in a foreign language

Any one course that deals with world cultures

Unrestrictive electives .............................................................................. 15–16

Total for graduation .................................................................................. 120

*These courses require admission to the Teacher Education Program. Students planning for educational certification should consult with advisor.

Note: Educational certification requires one course in human development, one course in western/culture, and one course in world cultures. These courses may count toward other requirements. Additional requirements toward certification are taken as part of the master’s program.

Note: National certification requires a course on culturally diverse populations.

Communication sciences and disorders minor

A total of 18 hours is required, of which 6 must be chosen from the list of introductory and basic communication science courses, and 6 from the list of advanced courses in communication sciences and disorders. Students must choose the remaining 6 hours from either list. All courses are at or above the 300 level.

Students must receive a C or higher in courses used to satisfy the minor requirements.

Students must plan their minor with a faculty advisor from communication sciences and disorders.

Introductory courses in communication sciences and disorders (minimum of 6 credit hours)

FSHS 343 Communication Sciences and Disorders ............................................ 3
FSHS 347 Introduction to Phonetics ................................................................... 3
FSHS 348 Laboratory in Acoustic Phonetics ................................................... 1
FSHS 360 Anatomy of Speech Mechanism .................................................... 4
FSHS 361 Hearing Science ............................................................................ 3
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 450 Clinical Research in Communication Sciences and Disorders .......................... 3
FSHS 567 Basic Audiology ............................................................................ 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 725 Augmentative and Alternative Communication .................................. 2
FSHS 741 Fluency Disorders ........................................................................ 3
FSHS 742 Language Assessment and Intervention II ...................................... 3
FSHS 744 Aural Rehabilitation ........................................................................ 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 licensure by the Kansas State Department of Education in Early Childhood Education. Early childhood special education licensure 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, 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 of initial enrollment.

Requirements for admission to early childhood teacher education program may be found in the College of Education section.

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.

Licensure

To be eligible for licensure 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 Principles of Learning and Teaching test as described in the College of Education section of this catalog.

Application for licensure must be made during the semester in which the degree will be received. 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)

(Grades of C or higher required.)

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)

ECON 110 Principles of Macroeconomics .................................................. 3
PSCH 110 General Psychology ................................................................... 3
SOCI 211 Introduction to Sociology ......................................................... 3

Humanities electives (6)

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)

(Grades of C or higher required.)

MATH 100 College Algebra ................................................................. 3
or
A college-level calculus course ................................................................. 3

Any 3-unit introductory statistics course ....................................................... 3
### Human Ecology

#### Integrative studies (6 hours)
- GNHE 310 Human Needs ........................................ 3
- or
- FSHS 350 Family Relationships and Gender Roles .......... 3
- University general education elective (300 level or above, outside of FSHS) ........................................ 3

#### Professional studies (50 hours)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>FSHS 110</td>
<td>Introduction to Human Development ...</td>
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<tr>
<td>FSHS 200</td>
<td>Sexuality and Health</td>
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<tr>
<td>FSHS 310</td>
<td>Early Childhood</td>
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<td>FSHS 313</td>
<td>Preschool Child Lab</td>
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<tr>
<td>FSHS 420</td>
<td>Interaction Techniques with Young Children</td>
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<td>FSHS 524</td>
<td>Professional Seminar in Early Childhood</td>
<td>3</td>
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<tr>
<td>FSHS 528</td>
<td>Exceptional Development in Early Childhood</td>
<td>3</td>
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<tr>
<td>FSHS 540</td>
<td>Curriculum for Cognitive and Language Development for Young Children</td>
<td>3</td>
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<tr>
<td>FSHS 541</td>
<td>Curriculum for Emotional, Social, and Physical Development of Young Children</td>
<td>3</td>
</tr>
<tr>
<td>FSHS 545</td>
<td>Early Childhood Program Lab I</td>
<td>1</td>
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<tr>
<td>FSHS 546</td>
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<td>FSHS 565</td>
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<td>FSHS 589</td>
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<tr>
<td>FSHS 598</td>
<td>Direct experiences*</td>
<td>8</td>
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<tr>
<td>FSHS 670</td>
<td>Working With Parents</td>
<td>3</td>
</tr>
<tr>
<td>HN 132</td>
<td>Basic Nutrition</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Professional electives (12 hours)
- ACCTG 231 Accounting for Business Operations ... 3
- ACCTG 241 Accounting for Investing and Financing ........................................ 3
- AGEC 202 Small Business Operations                                             | 3            |
- EDETC 318 Instructional Media and Technology                                   | 2            |
- EDSP 500 Introduction to Human Exceptionality                                  | 3            |
- EDSP 710 Education of Exceptional Individuals                                 | 3            |
- EDSP 724 Characteristics of Mental Retardation                                 | 3            |
- EDSP 728 Characteristics of Emotional and Behavioral Disorders                | 3            |
- EDSP 777 Behavior Management for Exceptional Individuals                      | 3            |
- FSHS 300 Problems in FSHS: Preschool Lab Experience .................................. 3
- FSHS 302 You and Your Sexuality                                                | 3            |
- FSHS 312 Infant Observation Lab                                               | 1            |
- FSHS 350 Family Relationships and Gender Roles                                 | 3            |
- FSHS 400 Family and Consumer Economics                                         | 3            |
- FSHS 506 Middle Childhood and Adolescence                                     | 3            |
- FSHS 510 Human Development and Aging                                           | 3            |
- FSHS 704 Topics in FSHS                                                       | 3            |
- FSHS 710 Child Care: Components and Issues                                    | 3            |
- FSHS 728 Assessment of Young Children                                         | 3            |
- FINAN 450 Introduction to Finance                                             | 3            |
- MANGT 420 Management Concepts                                                 | 3            |
- MKTG 400 Marketing                                                            | 3            |

#### Additional requirements for licensure (14 hours)
- Social science elective**                                                   | 3            |
- Literature elective***                                                      | 3            |

Select additional electives from the areas of humanities, social sciences, sciences, mathematics, general religion, philosophy, art and music history, and appreciation of art, architecture, music, or theatre to fulfill the general education requirements for teaching licensure in early childhood education ........................................ 8

#### Unrestricted electives ........................................ 6–7

#### Total for graduation .................................................................. 125

*First aid/CPR certification required before enrollment in FSHS 598. This requirement can be met by successful completion of Red Cross or American Heart Association courses.

**A minimum of 9 hours other than psychology is required for certification.

***Literature for Children and Literature for Adolescents may not be used as literature electives but may be used to fulfill additional general education requirements.

### Family and consumer economics

#### Bachelor of science in family studies and human services

The emphasis of this program is personal and 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 courses which satisfy the CFP™ Board’s education requirement for the CFP®/CERTIFIED FINANCIAL PLANNER™ certification.

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

#### General requirements (39–40 hours)

##### Communications (6–9 hours)
- ENGL 100 Expository Writing I ........................................ 3
- ENGL 200 Expository Writing II ....................................... 3
- SPCH 103 Public Speaking IA ........................................ 2
- or
- SPCH 106 Public Speaking I ........................................... 3

##### Social sciences (9 hours)
- ECON 110 Principles of Macroeconomics ................................ 3
- PSYCH 110 General Psychology ......................................... 3
- SOCIO 211 Introduction to Sociology .................................. 3

##### Humanities (6 hours)
- Natural sciences (7 hours)
  - Life science and physical science electives
    (One course must be taken from each area; one course must include a laboratory.)
  - Quantitative studies (9 hours)
    - CIS 101 Introduction to Information Technology .............. 1
    - CIS 102 Introduction to PC/Spreadsheet ........................ 1
    - CIS 103 Introduction to PC/DataBase ............................ 1
    - MATH 100 College Algebra .......................................... 3
      or
    - A college-level calculus course .................................. 3
    - STAT 350 Business and Economics Studies ........................ 3
  - Humanities electives (6)
  - Life science and physical science 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 300-level statistics course .......... 3

#### Professional studies (61 hours)

##### Family Financial Planning (31 hours)
- FSHS 100 Family Financial Planning as a Career .................. 1
- FSHS 105 Introduction to Personal and Family Finance .......... 3
- FSHS 110 Introduction to Human Development ...................... 3
- FSHS 301 The Helping Relationship ................................... 3
- FSHS 400 Family and Consumer Economics ............................ 3
- FSHS 405 Advanced Personal and Family Finance               | 3            |
- FSHS 550 The Family .................................................. 3
- FSHS 595 Professional Seminar in Family Financial Planning  | 3            |
- FSHS 760 Families, Employment Benefits and Retirement Planning ........................................ 3
- FSHS 764 Estate Planning for Families ............................. 3

#### Integrative studies (6 hours)
- FSHS 350 Family Relationships and Gender Roles .................. 3
- University general education elective (300 level or above) ................................................................................. 3

#### Other supporting courses (24 hours)
- ACCTG 231 Accounting for Business Operations ... 3
- ACCTG 241 Accounting for Investing and Financing .................. 3
- ACCTG 342 Taxation I .................................................. 3
- ECON 120 Principles of Microeconomics ................................ 3
- ECON 530 Money and Banking ........................................... 3
- FINAN 450 Introduction to Finance .................................... 3
- or
- AGEC 513 Agricultural Finance ........................................ 3
- FINAN 460 Insurance .................................................... 3
- MANGT 390 Business Law I ............................................. 3

#### Total for graduation .................................................................. 120

### 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 760 Families, Employment Benefits, and Retirement Planning ........................................ 3
- FSHS 764 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 103 Public Speaking IA ........................................ 2
- or
- SPCH 106 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)
- Natural sciences (7 hours)
  - Life science and physical science 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 300-level statistics course .......... 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 103 Public Speaking IA ........................................ 2
- or
- SPCH 106 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)
- Natural sciences (7 hours)
  - Life science and physical science 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 300-level statistics course .......... 3
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FSHS 301 Helping Relationship .............................. 3
FSHS 302 You 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 .................... 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 204 Introduction to Cultural Anthropology ....... 3

Integrative studies (12 hours)
(Grades of C or higher required.)
FSHS 350 Family Relationships and Gender Roles ........ 3
HN 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

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 (44–45 hours)
Communications (8–9)
ENGL 100 Expository Writing I ............................... 3
ENGL 200 Expository Writing II ............................... 3
SPCH 105 Public Speaking I .................................... 2
or
SPCH 106 Public Speaking I .................................... 3

Social sciences (9)
ECON 110 Principles of Macroeconomics .................... 3
or
ECON 120 Principles of Microeconomics .................... 3
PSYCH 110 General Psychology ............................. 3
SOCIO 211 Introduction to Sociology ......................... 3

Humanities electives (9)
Natural sciences (10)
BIOL 198 Principles of Biology ............................... 4
BIOL 310 Bioethics ................................................. 3
Physical science course ........................................... 3
Quantitative studies (8)
MATH 100 College Algebra .................................... 3
or
A college-level calculus course .............................. 3
Any 3-unit introductory statistics course ................. 3
CIS 101 Introduction to Information Technology .......... 1
CIS 102 Introduction to PC/Spreadsheet .................... 1
or
CIS 103 Introduction to PC/Database ....................... 1

Professional studies (36 hours)
(Grades of C or higher required.)
FSHS 110 Introduction to Human Development .......... 3
FSHS 301 Helping Relationship ............................. 3
or
FSHS 420 Interaction Techniques with Young Children . 3
FSHS 302 You 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
HN 132 Basic Nutrition ....................................... 3
HN 352 Personal Wellness ..................................... 3
Elective: any course in the American ethnic studies secondary major 3

Integrative studies (6 hours)
(Grades of C or higher required.)
FSHS 130 Family Relationships and Gender Roles ........ 3
University general education elective
(300 level or above) ................................................. 3

Professional electives (18 hours)
(Grades of C or higher required.)
FSHS or social science electives (300 level or above) .... 3
Unrestricted electives .............................................. 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 also are 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 requirements (52–53 hours)
ENGL 100 Expository Writing I ............................... 3
ENGL 200 Expository Writing II ............................... 3
SPCH 105 Public Speaking I .................................... 2
or
SPCH 106 Public Speaking I .................................... 3

Social work professional courses (44 hours)
SOCWK 260 Introduction to Social Work Major .......... 3
SOCWK 510 Social Welfare as a Social Institution ....... 3
SOCWK 515 Human Behavior in the Social Environment . 3
SOCWK 519 Methods of Social Work Research ........... 4
SOCWK 525 Human Behavior in the Social Environment II . 3
SOCWK 550 Field Practicum Research ....................... 2
SOCWK 562 Field Experience .................................. 10
SOCWK 564 Social Work Professional Seminar .......... 2
SOCWK 565 Program and Policy Formulation and Analysis .... 3
SOCWK 568 Social Work Practice II .......................... 3
SOCWK 570 Social Work with Groups I ................. 1
SOCWK 571 Social Work with Groups II .................... 1

Total for graduation ............................................. 131–132

See Department of Sociology, Anthropology, and Social Work, College of Arts and Sciences, regarding acceptance into the social work component of this program.

Family studies and human services courses
FSHS 100. Family Financial Planning as a Career. (1) I.
This course is an introduction to career opportunities in the field of financial planning for families with an emphasis on academic preparation, acquisition of professional credentials, and career opportunities. A survey of the history, scope, and trends of the financial planning industry will be explored.

FSHS 105. Introduction to Personal and Family Finance. (3) I, II.

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

FSHS 200. Sexuality and Health. (2) I, II.
Introduction to human sexuality and health, including sexually transmitted diseases and AIDS. Attributes of comprehensive programs, K–12, that incorporate state-defined goals for sexuality education and health needs of children and adolescents.

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

FSHS 301. The Helping Relationship. (2–3) I, II. S.
Characteristics of the helping relationship; consideration of personal qualities necessary for recognizing needs of individuals and families; identification of effective procedures for referral to appropriate professions and agencies. Pr.: FSHS 110 or PSYCH 110.
FSHS 302. You and Your Sexuality. (3) I, II. Study of the role and meaning of human sexuality in relation to oneself, as well as in interrelationships with others. Pr.: FSHS 110 or PSYCH 110.

FSHS 310. Early Childhood. (3) I, II. Principles of growth and development of children from conception through age five (five-hour lab required). Consideration of premartial, marital, and parent-child relationships. Pr.: FSHS 110 or PSYCH 110 or SOCIO 211.

FSHS 312. Infant Observation Lab. (1) I, II. Observation of the behavior and development of children from infancy through toddlerhood. Prior or concurrent enrollment with FSHS 310.

FSHS 313. Preschool Child Lab. (1) I, II. On sufficient demand. Observation of the development and guidance of children from 18 months to five years of age, with emphasis on observation of children in groups. Prior or concurrent enrollment with FSHS 310.

FSHS 343. Communication Sciences and Disorders. (3) I, II. A survey of normal communication processes and disorders and an introduction to the fields of speech pathology and audiology that are responsible for the clinical management of these disorders.

FSHS 347. Introduction to Phonetics. (3) I. Basic information about speech sounds and their use in human languages, including physiological, perceptual, and acoustic phonetics. Transcription of English will be emphasized. Conc. enrollment in FSHS 348 is required. Pr.: Junior standing.

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


FSHS 361. Hearing Science. (3) I. An introduction to hearing science concepts. Areas of focus include anatomy and physiology of the hearing mechanism, quantification of sound, sound generation, and sound transmission. Information on the role of the auditory system in the encoding and processing of simple and complex signals is also presented. Pr.: Junior standing.

FSHS 400. Family and Consumer Economics. (3) I. Issues and problems confronting consumers. Emphasis on current economic issues and their potential for impacting families and society. Pr.: ECON 110 or conc. enrollment.

FSHS 405. Advanced Personal and Family Finance. (3) II. In-depth applications of personal and family money management principles with emphasis on credit, savings, insurance, and budgeting. Pr.: FSHS 105.

FSHS 415. Manual Communication. (3) I, II. Study of background information in current trends in the use of sign language. Restriction is sign language used in the United States. Includes instruction in the American Manual Alphabet and Vocabulary for about 700 signs. Primary focus will be application of beginning skills for communication within those who depend on this form of communication.

FSHS 420. Interaction Techniques with Young Children. (3) I, S. A developmental approach to the acquisition of interaction techniques conducive to healthy emotional and social growth of the child from birth to five years. Two hours rec. and one hour lab. Pr.: FSHS 310.

FSHS 440. Human Development Facilitation. (2) I, II. Applied study of leadership skills in small discussion groups, with emphasis on learning and facilitating Introduction to Human Development concepts. Taken conc. with FSHS 441. Pr.: FSHS 110, preparatory workshop, and consent of instructor.

FSHS 441. Human Development Facilitation Lab. (1) I, II. Recitation group leader for FSHS 440. Assists students in discussion and preparing group presentations; evaluates written work and course participation of students in group. Conc. with FSHS 440.

FSHS 442. Developmental Psycholinguistics. (3) I. Review of child language theory and development of language comprehension and production, including vocalization, phonology, morphology, syntax, semantics, and pragmatics. Includes discussion of the relationship between cognition and language, as well as other variables influencing language acquisition. Pr.: FSHS 347 or conc. enrollment.

FSHS 443. Language Assessment and Intervention I. (3) II. The characteristics and nature of language disorders in the preschool-age populations, as well as general principles of language assessment and intervention are presented. Specific language assessment and intervention procedures for individuals 0-8 years of age are reviewed. Communication profiles associated with a variety of language impairments are examined. Pr.: FSHS 442 and junior standing.

FSHS 446. Disorders of Articulation and Phonology. (3) I. Theory, research, and principles of (a) normal/abnormal phonetic and phonologic development, (b) assessment of speech sound disorders, and (c) intervention for speech sound disorders. Pr.: FSHS 347 and junior standing.

FSHS 449. Clinical Procedures in Communication Disorders. (3) I, II. Core course to prepare students for entrance into graduate schools in speech-language pathology and audiology. Principles of speech-language pathology and audiology as they relate to clinical practice. Pr.: Consent of instructor.


FSHS 506. Middle Childhood and Adolescence. (3) I, II, S. Principles of growth and development during middle childhood and adolescence, including familial, societal, and other ecological factors involved in development of youth. Pr.: FSHS 110 or PSYCH 110.

FSHS 507. Middle Child Lab. (1) I. Analysis of situations facing children age six to twelve and design of interventions to enable these children to cope with these situations. Prior or conc. enrollment in FSHS 506.

FSHS 508. Adolescent Lab. (1) I. Analysis of situations facing adolescents and design of interventions to enable adolescents to cope with these situations. Prior or conc. enrollment in FSHS 506.

FSHS 510. Human Development and Aging. (3) I, S. Survey of issues, research, and problems in aging and human development throughout adulthood, with particular emphasis upon the later years. Pr.: FSHS 110 or PSYCH 280.

FSHS 524. Professional Seminar in Early Childhood Education. (3) I. Examination of programs for young children, including philosophical and theoretical foundations. Implementation and evaluation of program models and related issues and research. Pr.: FSHS 310 or PSYCH 280.

FSHS 528. Exceptional Development in Early Childhood. (3) II. Exceptional development in early childhood (birth to five years), including sensory impairments, physical impairments, communication disorders, mental retardation, behavioral problems, and gifted performance; formal and informal assessment in all developmental areas; the family’s role in the assessment/referral/intervention process. Pr.: FSHS 310.

FSHS 540. Curriculum for Cognitive and Language Development of Young Children. (3) I. For planning the enrichment of cognitive and language development. The application of child development theory to the planning of programs for young children within the major curriculum areas. Conc. with FSHS 545 or 546. Prior or conc. with FSHS 565. Pr.: FSHS 310 and 313 and admission into teacher education.

FSHS 541. Curriculum for Emotional, Social, and Physical Development of Young Children. (3) II. For planning the enrichment of physical, social, and emotional development. The application of child development theory to the planning of programs for young children within the major curriculum areas. Conc. with FSHS 545 or 546. Pr.: FSHS 310 and 313 and admission into teacher education.

FSHS 545. Early Childhood Program Lab I. (1) I, II. Application of principles and techniques to planning, implementing, and evaluating developmentally-appropriate activities for young children in a supervised lab setting and in recitation sessions. Conc. with FSHS 540 or 541. Pr.: FSHS 310 and 313 and admission into teacher education.

FSHS 546. Early Childhood Program Lab II. (2) I, II. Advanced application of principles and techniques for developmentally-appropriate programs for young children. Planning, implementing, and evaluating activities in a supervised lab setting. Conc. with FSHS 540 or 541. Pr.: FSHS 545 and admission into teacher education.

FSHS 550. The Family. (3) I. Consideration of the family throughout the family life cycle; developmental tasks at each stage. Use and impact of family support services. Pr.: Nine hours in FSHS or other social science and junior standing.

FSHS 560. Clinical Research in Communication Sciences and Disorders. (3) I. Logic and methods of clinical research, with emphasis on those most frequently used in speech-language pathology and audiology. Experience formulating, doing, and evaluating research. Pr.: STAT 330 or equiv.

FSHS 565. Language Development. (3) Survey of the development of speech and language skills in children. Pr.: FSHS 310 or EDUL 300.

FSHS 567. Basic Audiology. (3) I. An introduction to audiology concepts and basic audiology testing procedures. Areas covered include disorders of the auditory system, testing procedures, and audiometric interpretation. Pr.: FSHS 361.

FSHS 579. Pre-Directed Field Experience Orientation. (1) I. I, II. Consideration and application of professional knowledge and skills necessary for selection and placement in a social agency for a supervised experience in direct service to clients. Pr.: Senior standing and permission of the instructor.

FSHS 580. Directed Field Experience. (8) I, II, S. A block field placement in local agencies. Faculty-supervised experience in direct service to clients: individuals, groups, and communities. Weekly seminar during placement emphasizes theory underlying the practice. Pr.: FSHS 301 or PSYCH 280; FSHS 550 and 579; GPA in FSHS foundation and professional courses; and consent of instructor.

FSHS 585. Professional Seminar in Family Life Education. (3) I, II, S. Consideration of professional philosophy, identity, ethics, career development, and characteristics of client populations. Development of skills for family life educators working in agencies with various socioeconomic, age, and ethnic groups. Pr.: Conc. enrollment in FSHS 580.

FSHS 589. Administration of Early Childhood Programs. (3) I. Rationale for and techniques of administering programs for preschool children, including health, education, social services, parent involvement. Pr.: Nine hours in FSHS or other social science and junior standing.

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) I. 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.: Senior standing and FSHS 405.

FSHS 596. Directed Experiences in Early Childhood Education. (8) I, II, S. Participation in a preschool program: planning, instruction, evaluation. Prearrangement
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 6 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 SSE system. Introduction to elementary ASL techniques. Discussion of different augmentative communication systems. Research will be conducted in the use of various manual communication systems with special emphasis on aphasia, language disorders, disabled, mentally handicapped, and others. Pr.: FSHS 415 or basic sign language skills.

FSHS 624. Fundamentals of Family Financial Planning. (3) I. This course provides an overview of family financial planning by integrating concepts and issues with planning and counseling applications. Students will be introduced to the key concepts of family financial planning, including: income, insurance, estate planning, and retirement planning. Pr.: FSHS 415 or SOCIO 640.

FSHS 670. Working with Parents. (3) I, II. 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 355.

FSHS 675. Field Study in Family Economics. (1–3) I, II. Supervised experiences in financial planning, 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 related 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 567 or conc. enrollment and consent of instructor.

FSHS 708. Topics in Family Studies and Human Services. (2–3) I, II, S. 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 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 725. Augmentative and Alternative Communication. (2) I. This course examines the area of augmentative and alternative communication (AAC) from theoretical and practical perspectives. The etiologies and communicative needs of current and prospective AAC system users, as well as procedures used in evaluation, are addressed. Pr.: FSHS 615 or consent of instructor.

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 310.

FSHS 735. Clinical Speech Science. (3) I. Research and theory dealing with the physiological and acoustic aspects of speech production. Instrumentation and procedures for observing and measuring aspects of speech breathing, phonation, velopharyngeal function, and articulation will be discussed. Pr.: FSHS 360.

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) I, II. Theory and research concerning language disorders in school-aged children are presented. Specific language assessment and intervention methodologies for this population are reviewed. Pr.: FSHS 443.

FSHS 744. Aural Rehabilitation. (4) S. Study of and techniques for the habilitation or rehabilitation of speech and language problems of the hearing impaired. Pr.: FSHS 567.

FSHS 745. Neuromotor Speech Disorders. (3) I. An introduction to motor speech disorders including an overview of the neurological system. Research and practical knowledge concerning etiologies, evaluation, and principles of treatment are addressed. Pr.: FSHS 360.

FSHS 750. Voice Disorders. (3) I. Research and theory dealing with the etiologies, characteristics, assessment, and management of individuals with laryngeal disorders. Pr.: FSHS 735.

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

FSHS 758. Housing/Real Estate. (3) I. An overview of the role housing and integrating concepts and issues with planning the financial planning process from a theoretical perspective. Taxation, legal aspects, mortgages, and financial calculations related to home ownership and real estate investments are included. New and emerging issues in the context of housing and real estate will be emphasized. The role of ethics in family financial planning with housing and real estate also will be included.

FSHS 760. Families, Employment Benefits, and Retirement Planning. (3) I. Study of micro and macro considerations for retirement systems. Survey of various types of retirement plans, ethical considerations in providing retirement planning services, assessing and forecasting financial needs in retirement, and integration of retirement plans with government benefits. Pr.: FSHS 405.

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

FSHS 764. Estate Planning for Families. (3) I. Introduction to fundamentals of the estate planning process. Includes property transfer, tax consequences, probate avoidance, powers of appointment, and various tools/techniques used in implementing an effective estate plan. Pr.: FSHS 405.

FSHS 766. Insurance Planning for Families. (3) II. An in-depth study of risk management concepts, tools, and strategies for individuals and families, including: life insurance; property and casualty insurance; liability insurance; accident, disability, health, and long-term care insurance; and government-subsidized management will be discussed. Case studies will provide experience in selecting insurance products suitable for individuals and families.


FSHS 772. Personal Income Taxation. (3) II. This course provides in-depth information on income tax practices and procedures including tax regulations, tax return preparation, the tax audit process, the appeals process, preparation for an administrative or judicial forum, and ethical considerations of taxation. New and emerging issues related to taxation will be covered. Family/individual case studies provide practice in applying and analyzing tax information and recommending appropriate tax strategies.

General Human Ecology

Professors Kellett and Moxley; Instructor Pence.

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E-mail: heinfo@ksu.edu
www.ksu.edu/humec/

General human ecology programs prepare students for careers in education, extension, and communication.

General human ecology

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
nutrition; or hotel, restaurant, institution management and dietetics. In mass communications they may choose advertising, print or electronic journalism, public relations, or radio-television.

Enrollment in first-level writing courses in the School of Journalism and Mass Communications requires a passing score on the JMC composition skills test and a minimum 2.5 GPA upon completion of 15 or more credit hours.

General requirements (42–43 hours)
University general education requirements must be completed.

Communications (8–9 hours)
- ENGL 100 Expository Writing I
- ENGL 200 Expository Writing II
- SPCH 105 Public Speaking IA
- SPCH 106 Public Speaking I

Social sciences (9 hours)
A course in economic systems
A course in human behavior
MC 235 Mass Communication and Society
Humanities (6 hours)
Humanities electives
Natural sciences (7 hours)
A course in life sciences
A course in physical science
Quantitative studies (6 hours)
MATH 100 College Algebra
A college-level calculus course
Any 3-hour introductory statistics course

Additional integrative studies (6 hours)
FSHS 350 Family Relationships and Gender Roles
A university general education elective course

Professional studies (60 hours)
(Grades of C or higher required.)

Human ecology courses (45 hours)
AT 330 Apparel Consumers and Society
or
AT 440 Fundamentals of Apparel Evaluation
AT 265 Textiles
and
AT 266 Textiles Lab
FSHS 110 Introduction to Human Development
GNHE 310 Human Needs
FSHS 105 Introduction to Personal and Family Finance
or
FSHS 400 Family and Consumer Economics
FSHS 550 The Family
FSHS 670 Working with Parents
IDH 410 Housing and Its Environment
HN 132 Basic Nutrition
or
HN 400 Human Nutrition
HN 301 Food Trends, Legislation and Regulation
or
HN 413 Science of Food

Human ecology electives (17–18 hours from at least two departments)
Students seeking licensure in family and consumer sciences education may apply 1–4 hours of specified EDSEC courses.

Select in consultation with advisor.

Supporting courses (15 hours)
In consultation with advisor choose 15 hours, 300-level or higher, in areas other than human ecology.

Unrestricted electives

Total for graduation

*Students seeking licensure in family and consumer sciences education must meet licensure standards as well as degree requirements. See family and consumer sciences education licensure 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 in mass communications according to their individual interests. In human ecology they may specialize in apparel, textiles, and interior design; family studies and human services; human

Select one of the following:
- MC 650 Newspaper Management
- MC 710 History of Journalism
- MC 720 Ethics in Mass Communications
- MC 730 Seminar in Future of the Media

MC electives* at least 3 hours must be at the 500 level or above.

2. Electronic journalism
- MC 400 News and Feature Writing
- MC 500 Advanced News and Feature Writing
- MC 505 Electronic News Reporting
- MC 565 Law of Mass Communications
- MC 585 Advanced Electronic News Reporting
- MC 595 Mass Communication Research

Select one of the following:
- MC 550 Journalism Internship
- MC 570 Audio Techniques
- MC 580 Video Techniques
- MC 600 Public Affairs Reporting

Select one of the following:
- MC 685 Electronic Media Management
- MC 715 History of Electronic Media
- MC 720 Ethics in Mass Communications
- MC 730 Seminar in Future of the Media

MC electives* at least 3 hours must be at the 500 level or above.

3. Advertising
- MC 320 Principles of Advertising
- MC 420 Advertising Writing
- MC 545 Advertising Media Planning
- MC 555 Advertising Techniques
- MC 565 Law of Mass Communications
- MC 595 Mass Communication Research
- MC 640 Advertising Campaigns
- MC 520 Advertising Sales

MC electives* at least 3 hours must be at the 500 level or above.

4. Public relations
- MC 325 Fundamentals of Public Relations
- MC 400 News and Feature Writing
- MC 445 Editing and Design
- MC 445 Public Relations Writing
- MC 550 Public Relations Internship
- MC 565 Law of Mass Communications
- MC 595 Mass Communication Research
- MC 635 Public Relations Techniques
- MC 645 Public Relations Campaigns

MC electives* at least 3 hours must be at the 500 level or above.

5. Radio-television
- MC 410 Writing for the Electronic Media
- MC 475 Concepts of Electronic Media
- MC 490 Junior Seminar in Electronic Media
- MC 550 Radio-TV Internship
- MC 565 Law of Mass Communications
- MC 595 Mass Communication Research
- MC 635 Public Relations Techniques
- MC 645 Public Relations Campaigns

MC electives* at least 3 hours must be at the 500 level or above.

6. Total for graduation
Family and consumer sciences education licensure requirements

Bachelor of science in human ecology

This licensure program is for students who plan to teach family and consumer sciences at the middle, junior high, senior high, or post-secondary levels. Family and consumer sciences education directly addresses the needs of individuals and families related to nurturing relationships, parenting education, healthy lifestyles, and resource management. Graduates of the program work in middle and secondary schools, cooperative extension, business, and industry.

Upon successful completion of the teacher education program and the Principles of Learning and Teaching test, graduates are eligible to license 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)
(Grades of C or higher required.)
Communications (8–9 hours)
ENGL 100 Expository Writing I ............................................ 3
ENGL 200 Expository Writing II ............................................ 3
SPCH 106 Public Speaking IA .............................................. 3
or
SPCH 106 Public Speaking I .............................................. 3
Humanities (6 hours)
ART 100 2D Design .............................................. 3
Literature (any literature course except ENGL 355 or 545) ................. 3
or
Humanities elective (ENGL 230, 231, 233, or 234) .................. 3
or
Any philosophy course except PHILO 110 or 220 ................. 3
or
Any modern language course ............................................. 3
Natural sciences (13–17 hours)
BIOI 198 Principles of Biology ............................................ 4
and
CHM 110 General Chemistry ............................................ 3
and
CHM 111 General Chemistry Lab ........................................... 1
and
BIOCHE 265 Introductory Organic and Biochemistry .................. 5
or
CHM 210 Chemistry I .................................................. 4
and
CHM 230 Chemistry II .................................................. 4
and
CHM 350 General Organic Chemistry ................................... 3
and
CHM 351 General Organic Chemistry Lab ................................ 2
Quantitative studies (6 hours)
(Grades of C or higher required.)
MATH 100 College Algebra ............................................. 3
or
College-level calculus course .............................................. 3

STAT 330 Elements of Statistics for Social Science ................. 3
or
300-level or higher statistics course ...................................... 3

Additional integrative studies (6 hours)
FSHS 350 Family Relationships and Gender Roles ....................... 3
PSYCH 110 General Psychology ............................................ 3

Professional studies (78 hours)
(Grades of C or higher required.)
Human ecology (35 hours)
AT 265 Textiles ............................................................ 1
and
AT 266 Textiles Lab .......................................................... 1
AT 440 Fundamentals of Apparel Evaluation ......................... 3
HN 400 Human Nutrition .................................................. 3
HN 413 Science of Food .................................................. 4
FSHS 105 Introduction to Personal and Family Income .................. 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
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)
EDSEC 102 Teaching as a Career* ....................................... 1
FSHS 110 Introduction to Human Development* ....................... 3
Block I
EDCEP 315 Educational Psychology** ................................... 3
EDSP 323 Exceptional Students in the Secondary School** ............... 2
EDSEC 376 Core Teaching Skills and Lab** ............................. 3
Block II
EDGEC 477 Middle Level/Secondary Reading** ....................... 2
EDSEC 500 Content Area Methods in the Secondary School: Family and Consumer Sciences** ........................................... 2
EDSEC 520 Block II Lab** .............................................. 1
Block III
EDSEC 621 Program Planning in Vocational Education** ............... 2
EDCIP 455 Teaching in a Multicultural Society** ...................... 1
EDCEP 525 Interpersonal Relations in the School** ...................... 1
EDSEC 586 Teaching Participation in the Secondary School and Professional Development Seminar** .......................... 12
Non-blocked courses:
EDSEC 620 Principles and Philosophy of Vocational Education ........... 3
EDECT 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.


Human Ecology ● 227

Hotel, Restaurant, Institution Management and Dietetics

Virginia Moxley, Interim Head

Professors Canter, Moxley, and Shanklin; Associate Professors Barrett and Gould; Assistant Professor Back; Instructors Freyenger and Pesci; Emerita: Professors Miller and Spears–Ralston; Associate Professors Riggs and Roach.

785-532-5521
Fax: 785-532-5522
E-mail: hrmd@hnumec.ksu.edu
www.ksu.edu/hnumec/hrmd/

The programs in the Department of Hotel, Restaurant, Institution Management and Dietetics prepare 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 continuing accreditation by the Commission on Accreditation/Approval for Dietetics Education of The American Dietetic Association, 216 W. Jackson Blvd., Chicago, IL 60606–6995, 312–899-5400.

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 February 15 for fall semester admission and by September 25 for spring semester admission. Criteria for admission to the senior year are:

1. Have an overall minimum grade point average of 2.75 on a 4.0 scale. No grade less than a C is allowed in any natural sciences or professional studies courses.
2. Submit verification of a minimum of 400 hours of dietetics-related work experience, either paid or volunteer. Documentation must include inclusive dates of the experience, name and address of facility, brief description of job duties and experiences, number of hours, and a letter (on letterhead) from the supervisor verifying the information submitted. Contact information for the supervisor (phone number, e-mail address) also is required. The work experience must include:
   • A minimum of 100 hours of community nutrition experience.
   • A minimum of 150 hours of food service experience (preferably with the K-State residence hall dining service operations as a student employee). A maximum of 50 hours may be counted from work in the “front-of-the-house” as a waiter/waitress, host/hostess, cashier, checker, or similar position. At least 100 hours of experience should be hands-on, “back-of-the-house” food production experience.
   • A minimum of 150 hours of experience in a healthcare setting. As many hours as possible should be obtained in shadowing or observing clinical dietitians working with clients/residents/patients. Students should attempt to observe several different clinical dietitians to see different counseling and patient education styles and methods. Work experience in a variety of healthcare settings with patient and resident contact is encouraged.
3. Submit one official recommendation form from an individual who is acquainted with the student’s knowledge of food, nutrition and food service management, and the student’s work history and work ethic.
4. Complete an interview with the admissions committee for the coordinated program in dietetics. Dates for interviews are announced each semester.

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 continuing accreditation by the Commission on Accreditation for Dietetics Education of The American Dietetic Association, 216 W. Jackson Blvd., Chicago, IL 60606–6995, 312–899–5400. 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 requirements (64–66 hours)**

- **Communications (8–9 hours)**
  - ENGL 100 Expository Writing I 3
  - ENGL 200 Expository Writing II 3
  - SPCH 104 Public Speaking I 2
  - or
  - SPCH 106 Public Speaking I 3

- **Social sciences (6 hours)**
  - ECN 110 Principles of Macroeconomics 3
  - PSYCH 110 General Psychology 3
  - or
  - SOCIO 111 Introduction to Sociology 3

- **Natural sciences (29–30 hours)**
  - (Grades of C or higher required.)
  - BIOL 198 Principles of Biology 4
  - BIOL 340 Structure and Function of the Human Body 8
  - HRIMD 220 Environmental Issues in Hospitality I 2
  - and
  - HRIMD 420 Environmental Issues in Hospitality II 1
  - or
  - BIOL 455 General Microbiology 4
  - CHM 210 Chemistry I 4
  - CHM 230 Chemistry II 4
  - CHM 350 General Organic Chemistry 3
  - BIOCH 521 General Biochemistry 3

- **Quantitative studies (9 hours)**
  - MATH 100 College Algebra 3
  - or
  - MATH xxx College-level calculus

- **Complete 3 hours in computer science**
  - CIS 101 Introduction to Information Technology 1
  - CIS 102 Information Technology: Spreadsheet Applications 1
  - CIS 103 Information Technology: Database Applications 1
  - CIS 104 Information Technology: Word Processing Applications 1
  - CIS xxx Microcomputer applications course 3

Complete 3 hours in statistics

**STAT 320 Elements of Statistics 3**

or

**STAT 330 Elements of Statistics for the Social Sciences 3**

or

**STAT 340 Biometrics I 3**

or

**STAT 350 Business and Economic Statistics I 3**

**Humanities electives (5 hours)**

- **Integrative studies (6 hours)**
  - GPH 101 Human Needs 3
  - or
  - FSHS 350 Family Relationships and Gender Roles 3

- **ACCTG 213 Accounting for Business Operations 3**

Choose one of the professional programs: I, II.

**Program I: Coordinated program in dietetics**

**Professional studies (58 hours)**

- (Grades of C or higher required.)
  - HN 132 Basic Nutrition 3
  - HN 400 Human Nutrition 3
  - HN 413 Science of Food 4
  - HN 450 Nutritional Assessment 2
  - HN 600 Public Health Nutrition 3
  - HN 610 Life Span Nutrition 3
  - HN 620 Nutrient Metabolism 4
  - HN 630 Clinical Nutrition 5
  - HRIMD 130 Careers in Nutrition and Dietetics 1
  - HRIMD 341 Principles of Food Production Management 3
  - HRIMD 342 Food Production Management Operations 3
  - HRIMD 422 Cost Controls in Hospitality Management 3
  - HRIMD 515 Counseling Strategies in Dietetic Practice 3

**Management semester**

- HRIMD 560 Management in Dietetics 3
  - HRIMD 561 Management in Dietetics Practicum 6

**Clinical semester**

- HRIMD 520 Applied Clinical Dietetics 3
  - HRIMD 521 Clinical Dietetic Practicum 6

**Unrestricted electives 1–3**

**Total hours for graduation 125**

**Program II: Didactic program in dietetics**

**Professional studies (43 hours)**

- (Grades of C or higher required.)
  - HN 132 Basic Nutrition 3
  - HN 400 Human Nutrition 3
  - HN 413 Science of Food 4
  - HN 450 Nutritional Assessment 2
  - HN 600 Public Health Nutrition 3
  - HN 610 Life Span Nutrition 3
  - HN 620 Nutrient Metabolism 4
  - HN 630 Clinical Nutrition 5
  - HRIMD 130 Careers in Nutrition and Dietetics 1
  - HRIMD 341 Principles of Food Production Management 3
  - HRIMD 342 Food Production Management Operations 3
  - HRIMD 445 Organization and Management of Foodservice Operations 3
  - HRIMD 515 Counseling Strategies in Dietetic Practice 3

**Unrestricted electives 16–18**

**Total hours for graduation 125**

**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/hrimd) 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. Students gain valuable experience in commercial properties under the supervision of managers and faculty supervisors.

The hotel and restaurant management program prepares students for managerial careers in the hospitality industry. See information earlier in this section.

General requirements (49–52 hours)

Communications (8–9 hours)

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<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>ENGL 100</td>
<td>Expository Writing 1</td>
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<tr>
<td>ENGL 200</td>
<td>Expository Writing 2</td>
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<tr>
<td>SPCH 105</td>
<td>Public Speaking IA</td>
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<td>or</td>
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<td></td>
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<tr>
<td>SPCH 106</td>
<td>Public Speaking I</td>
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<td>ENGL 516</td>
<td>Written Communications for Sciences</td>
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Quantitative studies (9 hours)

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<tr>
<td>MATH 100</td>
<td>College Algebra</td>
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<tr>
<td></td>
<td>College-level calculus</td>
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<tr>
<td>STAT 350</td>
<td>Business and Economic Statistics I</td>
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<tr>
<td>CIS 101</td>
<td>Information Technology</td>
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Select two of the following:

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<thead>
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<th>Course Code</th>
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<tbody>
<tr>
<td>CIS 102</td>
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<td>CIS 103</td>
<td>Information Technology: Database Applications</td>
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<td>CIS 104</td>
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Social sciences (9 hours)

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<tr>
<td></td>
<td>Introduction to Sociology</td>
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<tr>
<td>ECON 110</td>
<td>Principles of Macroeconomics</td>
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<td>ECON 120</td>
<td>Principles of Microeconomics</td>
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Humane sciences (minimum 7–8 hours)

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<tr>
<td>Foreign language elective</td>
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<td>Humanities elective</td>
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Natural sciences (10–11 hours)

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<tr>
<td>Physical science elective</td>
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<tr>
<td>BIOC 198                      Principles of Biology</td>
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<td>HN 132                       Basic Nutrition</td>
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Integrative studies (3 hours)

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<td>GNHE 310</td>
<td>Human Needs</td>
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<tr>
<td>FSHS 350</td>
<td>Family Relationships and Gender Roles</td>
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Professional studies (35 hours)

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<td>HRIMD 302</td>
<td>Introduction to Food Science</td>
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<tr>
<td>HRIMD 220</td>
<td>Survey of the Hospitality Industry</td>
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<td>HRIMD 221</td>
<td>Topics in Hospitality</td>
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<tr>
<td>HRIMD 341</td>
<td>Principles of Food Production Management</td>
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<tr>
<td>HRIMD 342</td>
<td>Food Production Management</td>
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<td>HRIMD 361</td>
<td>Principles of Lodging Operations</td>
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<td>HRIMD 362</td>
<td>Lodging Practicum</td>
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<td>HRIMD 420</td>
<td>Environmental Issues in Hospitality II</td>
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<tr>
<td>HRIMD 421</td>
<td>Hospitality Service Systems</td>
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<td>HRIMD 422</td>
<td>Cost Controls in Hospitality Operations</td>
<td>3</td>
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<tr>
<td>HRIMD 475</td>
<td>Field Experience in Hotel, Restaurant Management, and Dietetics</td>
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<tr>
<td>HRIMD 621</td>
<td>Hospitality Law</td>
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<td>HRIMD 664</td>
<td>Lodging Management Theory</td>
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<tr>
<td>MANGT 531</td>
<td>Personnel and Human Resource Management</td>
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<tr>
<td>PSYCH 560</td>
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Professional electives (12 hours)

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<tbody>
<tr>
<td>ASI 308</td>
<td>Survey of Hospitality Industry</td>
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<td>ASI 309</td>
<td>Contemporary Issues in Controlled Beverages</td>
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<td>HRIMD 423</td>
<td>Facilities Planning and Risk Management</td>
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<td>HRIMD 424</td>
<td>Hospitality Marketing and Sales</td>
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<td>HRIMD 425</td>
<td>Current Issues in Hospitality and Dietetics</td>
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<td>HRIMD 463</td>
<td>Convention Services and Meeting Planning</td>
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<td>HRIMD 624</td>
<td>Procurement in the Hospitality Industry</td>
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<td>HRIMD 640</td>
<td>Consultation in Hotel, Restaurant Management and Dietetics</td>
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<td>HRIMD 665</td>
<td>Gaming Management</td>
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<td>ASI 671</td>
<td>Meat Selection and Utilization</td>
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<td>MANGT 590</td>
<td>Business Law</td>
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<td>MANGT 520</td>
<td>Organizational Behavior</td>
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<td>MANGT 530</td>
<td>Industrial and Labor Relations</td>
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<td>MANGT 550</td>
<td>Organizational Training and Development</td>
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<td>MANGT 595</td>
<td>Business Strategy</td>
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<td>MKTG 450</td>
<td>Consumer Behavior</td>
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<td>MKTG 543</td>
<td>Integrated Marketing Communications</td>
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<td>MKTG 544</td>
<td>International Marketing</td>
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<tr>
<td>SOCI 320</td>
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<td>GEOG 300</td>
<td>Geography of Tourism</td>
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<td>IMSE 652</td>
<td>Industrial Ergonomics</td>
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Business supporting courses (15 hours)

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<tbody>
<tr>
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<tr>
<td>ACCTG 241</td>
<td>Accounting for Investing and Financing *</td>
<td>3</td>
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<td>MKTG 400</td>
<td>Marketing *</td>
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<tr>
<td>MANGT 420</td>
<td>Management Concepts *</td>
<td>3</td>
</tr>
<tr>
<td>FIN 450</td>
<td>Introduction to Finance *</td>
<td>3</td>
</tr>
</tbody>
</table>

* Required for business minor

Unrestricted electives

6–9 hours

Total for graduation

120 hours

Hotel, restaurant, institution management and dietetics courses

HRIMD 120. Survey of Hospitality Industry. (1) I.

Overview of the hospitality industry. Survey of the history, scope, trends, and career opportunities that comprise the four segments of the industry: food service, lodging, travel and tourism, and meeting and convention planning.

HRIMD 130. Careers in Nutrition and Dietetics. (1) I.

An introduction to career opportunities in the field of nutrition and dietetics with emphasis on academic preparation, acquisition of professional credentials, and career ladder.

Guest speakers from various areas of professional practice will supplement lectures and student assignments.

HRIMD 220. Environmental Issues in Hospitality I. (2) I.

Principles of foodborne disease function and transmission, bloodborne pathogens, Hazard Analysis Critical Control Point (HACCP) system, food safety principles and applications, workplace safety. Pr.: HRIMD 120.

HRIMD 221. Topics in Hospitality. (1) I, II.

An introduction to professional challenges in the hospitality industry.

Development of professional skills as they relate to hospitality including leadership, change management, time management, diversity issues, business etiquette, and ethics. Pr.: HRIMD 120, major in HRM.

HRIMD 230. Issues in Tourism. (2) I.

Social, legislative, environmental, economic, and technological issues that impact the development and maintenance of a destination. Includes traveler needs and safety and rural tourism ventures.

HRIMD 340. Contemporary Issues in Controlled Beverages. (2) I, II.

The study of historic, social, ethical, physiological, and legal issues relating to alcoholic beverage service and use in contemporary America with emphasis on responsible and knowledgeable service of beer, wine, and spirits in hospitality operations. Pr.: PSYCH 110 or SOCIO 211.

HRIMD 341. Principles of Food Production Management. (3) I, II.

Basic principles and theories of foodservice systems; menu planning; development, standardization, adjustment, and costing of quantity recipes; procurement and production of quality food; foodservice computer applications. Pr.: HRIMD 220 or conc. enrollment, ASI 302 or conc. enrollment, or HN 413 (dietetic students).

HRIMD 342. Food Production Management. (3) I, II.

Application and principles of food production that includes procurement, quality food production and controls, work simplification, food service systems, quality food; commercial equipment use, and Hazard Analysis Critical Control Point (HACCP) system. Two hours lec., 4 hours lab. Pr.: HRIMD 341.

HRIMD 361. Principles of Lodging Operations. (2) I.

Operational theory of lodging and an exploration of the lodging industry in terms of the nature of work, organizational structure of lodging segments, and evaluation of the market place. Pr.: HRIMD 220, 221, and sophomore standing.

HRIMD 362. Lodging Practicum. (1) I, II.

Supervised experiences in housekeeping, maintenance and other operational areas in a lodging property. Forty hours of practicum experience within an assigned property. Pr.: HRIMD 361 or conc. enrollment.

HRIMD 420. Environmental Issues in Hospitality II. (1) I.

Principles of conservation of natural resources, solid waste management, air quality, safety, and governmental regulations in the hospitality industry. Pr.: HRIMD 342 or 362.

HRIMD 421. Hospitality Service Systems. (3) I, II.

Examination of the complexities of quality and service within all segments of the hospitality industry. Focus on developing problem solving skills, process management skills, workflow processes, team development skills, and evaluation of service systems. Pr.: HRIMD 342.

HRIMD 422. Cost Controls in Hospitality Operations. (3) I.

Application accounting principles to analyze control measures used in lodging and commercial and noncommercial foodservice operations. Pr.: ACCTG 231, HRIMD 342.

HRIMD 424. Hospitality Marketing and Sales. (3) II. Application of marketing principles to lodging, foodservice, and tourism industry through analysis of marketing mix, marketing strategies, and sales techniques. Pr.: MKTG 400.


HRIMD 463. Convention Services and Meeting Planning. (2) II. Analysis of meeting planning from inception to delivery. Explores perspectives and responsibilities of the hotel staff and meeting planner. Pr.: HRIMD 362.


HRIMD 475. Field Experience in Hotel, Restaurant Management, and Dietetics. (1–3) I, II. S. Planned and supervised experience in a hotel, restaurant, or dietetic operation; minimum of 400 hours. Pr.: For HRM students: junior standing, HRIMD 421; and 400 hours of work experience in a hospitality operation, exclusive of course work; consent of program director.

HRIMD 480. Management in the Hotel and Restaurant Industry. (3) Offered on demand. Management of personnel and other resources in the hotel and restaurant industry. Emphasis on employee development and training. Pr.: HRIMD 361 or 421 and MANGT 420.

HRIMD 482. Employee Development for the Hospitality Industry. (3) I, II. Emphasizes the role of the hospitality manager and dietitian as facilitator, trainer, and motivator of employees. Focuses on the fundamentals of successful training and development of a service-oriented work force. Special attention is given to the unique problems associated with the labor intensive hospitality and foodservice industries. Pr.: HRIMD 342.

HRIMD 495. Golf Course Internship in Hospitality Management. (3) I, II. S. Four hundred hours of supervised hospitality experience in a golf industry setting. Pr.: FINAN 450; MKTG 400; HRIMD 421; Completion of junior year, consent of instructor, enrollment in golf course management program.

HRIMD 499. Problems in Hotel, Restaurant, Institution Management and Dietetics. (Var.) I, II. S. Independent study under the supervision of a faculty member. Pr.: Consent of instructor.

HRIMD 510. Introduction to Clinical Dietetics. (1) Offered on demand. Application of concepts and skills in clinical dietetics in a simulated practice environment. One hour rec. per week. Pr.: HN 400; BIOCH 521; and BIOL 340; and conc. enrollment in HN 630.

HRIMD 515. Counseling Strategies in Dietetic Practice. (3) II. Application of counseling, counseling, and educational techniques in dietetics, including individual and group methods. Three hourslec. per week. Pr.: PSYCH 110; HN 450 or conc. enrollment. Enrollment restricted to dietetics majors or nonmajors completing ADA requirements, or consent of instructor.

HRIMD 520. Applied Clinical Dietetics. (3) I, II. Application of clinical nutrition principles through case studies, independent research, discussion, groups, and oral presentations. Case studies will focus on medical nutrition therapy and education of patients throughout the life cycle and nutrition intervention for individuals with multiple disease states in various healthcare settings. Pr.: HN 600 and 630; and admission to the coordinated program in dietetics.

HRIMD 521. Clinical Dietetic Practicum. (1–6) I. Supervised clinical/community experience in the nutritional care of patients/clients. Practicum experiences are arranged with participating healthcare facilities. Successful completion of 6 credit hours of Clinical Dietetics Practicum is required in the coordinated program in dietetics. Consent of instructor is required for enrollment in fewer than 6 credit hours per semester. May be repeated for a maximum of 6 credit hours. Pr.: HN 600 and 630; HRIMD 515; must be taken conc. with or following HRIMD 520; and admission to the coordinated program in dietetics.


HRIMD 561. Management in Dietetics Practicum. (6) I. Supervised practice experience in the application of management principles in foodservice operations or other dietetics practice settings. Pr.: HRIMD 422, ACCGT 231, admission to the coordinated program in dietetics, and previous or conc. enrollment in HRIMD 560.

HRIMD 570. Seminar in Hotel, Restaurant Management and Dietetics. (1) I, II. Current trends, research, and developments in hotel and restaurant management and dietetics. Pr.: Senior standing in hotel/restaurant management or dietetics programs.

HRIMD 621. Hospitality Law. (3) II. Legal aspects of managing hospitality operations and responsibilities for the operations, patron civil rights, governmental regulations, franchising, and commercial transactions. Pr.: HRIMD 342, 362.

HRIMD 624. Procurement in the Hospitality Industry. (2) I. Principles and theories of procurement of food and supplies for hospitality operations. Includes management, financial, safety, and ethical considerations in the procurement process. Pr.: HRIMD 342.

HRIMD 625. Foodservice Equipment and Layout. (2) I, II. Factors affecting the selection and arrangement of equipment in foodservice systems. Field trip required. Pr.: HRIMD 342.

HRIMD 640. Consultation in Hotel/Restaurant Management and Dietetics. (3) On sufficient demand. Development and management of small businesses or private practice within the dietetics or hospitality industry. Business plan development, marketing, cost considerations. Overview of consulting to healthcare and hospitality operations and examination of skills required for success. Pr.: HRIMD 342, ACCGT 231.

HRIMD 664. Lodging Management Theory. (3) II. Application of management theories to the lodging industry including yield management, multicultural issues, marketing strategies, environmental issues, and future trends. Pr.: HRIMD 362.


HRIMD 705. Computer Implementation in Foodservice and Hospitality Operations. (3) S. In alternate years. Review of computer development in foodservice and hospitality operations; development of criteria for implementation of a computer system; analysis of foodservice and hospitality hardware and software. Pr.: CIS 101; and HRIMD 480 or 560 or MANGT 420.

HRIMD 710. Readings in Foodservice and Hospitality Management. (1–3) I, II. S. Directed study of current literature in foodservice and hospitality management and related areas. Pr.: HRIMD 480 or 560 or MANGT 420.

HRIMD 720. Current Issues in Hotel, Restaurant, Institution Management and Dietetics. (1–3) Recent professional developments and concerns related to management of foodservice and hospitality operations. Pr.: HRIMD 480 or 560 or MANGT 420.

HRIMD 785. Practicum in Foodservice Systems Management. (1–6) I, II. S. Professional experiences in approved foodservice organization as a member of the management team under faculty supervision. Or: or conc.: HRIMD 342; and HRIMD 480 or 560 or MANGT 420.

Human Nutrition

Denis M. Medeiros, Head
Professors E. Chambers, Grunewald, Holcomb, Koo, and Medeiros; Associate Professors Baybutt, Lohse Knous, and Peters; Assistant Professors D. Chambers, Haub, Higgins, and Remig; Instructors Ferguson, Graham, Jordan, and Morcos; Emeriti: Professors Bowers, Caul, Clarke, Fryer, Newell, Reeves, Setser, and Tinklin; Associate Professors Atkinson, Harber, and Smith.

785-532-5508
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www.ksu.edu/humec/hn/

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. In addition the department offers an accredited athletic training program.

The Department of Human Nutrition offers two programs leading to a bachelor of science degree in human 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 human 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 and nutrition research are available for research and instruction. The department has an animal laboratory that is fully accredited by the American 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 human 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. The curriculum is designed to meet academic requirements for entering medical school, dental school, or allied health professions.

General requirements (61–62 hours)
ENGL 100 Expository Writing I ......................... 3
ENGL 200 Expository Writing II ...................... 3
ENGL 300 Expository Writing III ..................... 3
or
ENGL 516 Written Communication for the Sciences ............. 3
SPCH 105 Public Speaking IA .......................... 2
or
SPCH 106 Public Speaking I ............................ 3
ECN 110 Principles of Macroeconomics ............ 3
PSYCH 110 General Psychology ...................... 3
SOCI 211 Introduction to Sociology .................. 3

Humanities electives ........................................ 6

BIOL 198 Principles of Biology ....................... 4
BIOL 340 Structure and Function of the Human Body 8
BIOL 450 Modern Genetics ............................. 4
BIOL 455 General Microbiology ..................... 4
MATH 150 Trigonometry* ............................... 3
or
Specified substitute* ................................. 3
MATH 220 Analytic Geometry and Calculus I 4
PHYS 113 General Physics I ............................. 4
PHYS 114 General Physics II ............................ 4

Professional studies (30 hours)
(Grades of C or higher required.)
HN 132 Basic Nutrition .................................. 3
HN 400 Human Nutrition ................................. 3
HN 413 Science of Food ................................. 3
HN 450 Nutritional Assessment ....................... 2
HN 600 Public Health Nutrition ...................... 3
HN 610 Life Span Nutrition ............................. 3
HN 620 Nutrient Metabolism .......................... 4
HN 630 Clinical Nutrition .............................. 5
GHNE 310 Human Needs .............................. 3
or
FHS 350 Family Relationships and Gender Roles .......... 3

Supporting courses (21 hours)
(Grades of C or higher required.)
CHM 210 Chemistry I ..................................... 4
CHM 230 Chemistry II .................................... 4
CHM 351 Organic Chemistry I ......................... 3
CHM 352 Organic Chemistry Lab ..................... 2
CHM 350 Organic Chemistry II ....................... 3
BIOCH 521 General Biochemistry .................... 3
BIOCH 522 General Biochemistry Lab ............... 2

Unrestricted electives .................................... 7–8

Total hours for graduation .............................. 120

*If trigonometry was taken in high school, substitute computer science, statistics, or higher mathematics course (3–4 hours).

Nutrition and exercise sciences
Bachelor of science in human 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 requirements (80–86 hours)
ENGL 100 Expository Writing I ......................... 3
ENGL 200 Expository Writing II ...................... 3
ENGL 300 Expository Writing III ..................... 3
or
ENGL 516 Written Communication for the Sciences ............. 3
SPCH 105 Public Speaking IA .......................... 2
or
SPCH 106 Public Speaking I ............................ 3
PSYCH 110 General Psychology ...................... 3
ECN 110 Principles of Macroeconomics ............ 3
SOCI 211 Introduction to Sociology .................. 3
AMETH 160 Introduction to American Ethnic Studies ........................................ 3
or
ANTH 204 A General Education Introduction to Cultural Anthropology** .................. 3

Additional courses as specified in the General Requirements section for Arts and Sciences:

Humanities* ..................................................... 11–12
(One course each in fine arts, philosophy, Western heritage, and literary or rhetorical arts.)
International studies overlay (1 course)** 0–3

BIOL 198 Principles of Biology ....................... 4
BIOL 340 Structure and Function of the Human Body 8
BIOL 455 General Microbiology ..................... 4
CHM 210 Chemistry I ..................................... 4
CHM 230 Chemistry II .................................... 4
CHM 350 General Organic Chemistry .................. 3
BIOCH 521 General Biochemistry .................... 3
MATH 100 College Algebra ............................. 3
or
MATH 220 Analytic Geometry and Calculus I 4
STAT 320 Elements of Statistics ....................... 3
or
STAT 330 Elementary Statistics for the Social Sciences .................. 3
CIS 101 Introduction to Information Technology .......... 1

Select two hours of the following:
CIS 102 Introduction to Microcomputer .......................... 1
CIS 103 Introduction to Microcomputer .......................... 1
CIS 104 Introduction to Microcomputer .......................... 1

Professional studies (68 hours)
(Grades of C or higher required.)

Nutrition science (33 hours)
HN 132 Basic Nutrition .................................. 3
HN 352 Personal Wellness ................................ 3
HN 400 Human Nutrition ................................. 3
HN 413 Science of Food .................................. 4
HN 450 Nutritional Assessment ....................... 2
HN 600 Public Health Nutrition ...................... 3
HN 610 Life Span Nutrition ............................. 3
HN 620 Nutrient Metabolism .......................... 4
HN 630 Clinical Nutrition .............................. 5
GHNE 310 Human Needs .............................. 3
or
FHS 350 Family Relationships and Gender Roles .......... 3

Nutrition science or exercise science (3 hours)
HN 635 Nutrition and Exercise ........................... 3
or
KIN 635 Nutrition and Exercise ........................... 3

Exercise science (32 hours)
KIN 220 Biobehavioral Basis 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 Laboratory ............. 1
KIN 340 Physical Activity in Contemporary Society ............ 3
KIN 345 Psychological Dynamics of Physical Activity .......... 3
KIN 625 Exercise Testing and Prescription ............... 3
KIN 655 Fitness Promotion .................................. 3
KIN 601 Cardiorespiratory Exercise Physiology .......... 3
or
KIN 603 Cardiovascular Exercise Physiology .......... 3
or
KIN 605 Topics in the Biological Basis of Kinesiology .......... 3
KIN 604 Exercise Psychology ............................ 3
or
KIN 602 Gender Issues in Sport and Exercise .......... 3
or
KIN 606 Topics in the Behavioral Basis of Exercise .......... 3

Total hours for graduation .................................. 148–154

*See the College of Arts and Sciences basic requirements in this catalog.

**Students may satisfy the social science requirement at the same time they satisfy the requirement for the international studies overlay or humanities (Western heritage).

Public health nutrition
Bachelor of science in human nutrition

The public health nutrition curriculum includes emphasis on health promotion, as well as human nutrition. Students also gain firsthand experience with public health issues through completion of a practicum.

Public health nutritionists develop community programs to promote nutrition and good health; educate people about the relationship between diet and health; conduct research on the psychological, cultural, social, economic, and environmental issues related to nutrition and health; or work with special groups who are at risk for nutrition-related health problems, such as pregnant women, infants, and the elderly. Opportunities are available with local health departments community wellness programs and agencies involved in international development.

General requirements (65–67 hours)
ENGL 100 Expository Writing I ......................... 3
ENGL 200 Expository Writing II ...................... 3
ENGL 300 Expository Writing III ..................... 3
or
ENGL 516 Written Communication for the Sciences ............. 3
SPCH 105 Public Speaking IA .......................... 2
or
SPCH 106 Public Speaking I ............................ 3
PSYCH 110 General Psychology ...................... 3
ECN 110 Principles of Macroeconomics ............ 3
SOCI 211 Introduction to Sociology .................. 3
AMETH 160 Introduction to American Ethnic Studies ........................................ 3
or
ANTH 204 A General Education Introduction to Cultural Anthropology** .................. 3

Total hours for graduation .................................. 120

*See the College of Arts and Sciences basic requirements in this catalog.
Humanities elective .................................................. 6
BIOL 198 Principles of Biology ................................. 4
BIOL 340 Structure and Function of the Human Body ................................. 8
BIOL 455 General Microbiology .................................. 4
CHM 210 Chemistry I ............................................. 4
CHM 230 Chemistry II ............................................ 4
CHM 350 General Organic Chemistry ...................... 3
BIOCH 521 General Biochemistry .......................... 3
MATH 105 College Algebra ...................................... 3
MATH 220 Analytic Geometry and Calculus I ............ 4
STAT 330 Elementary Statistics for Social Science ........ 3

Professional studies (36 hours)
(Grades of C or higher required.)
HN 132 Basic Nutrition ........................................... 3
HN 352 Personal Wellness ...................................... 3
HN 400 Human Nutrition ...................................... 3
HN 413 Science of Food ........................................ 4
HN 450 Nutritional Assessment .............................. 2
HN 600 Public Health Nutrition ............................... 3
HN 610 Life Span Nutrition .................................... 3
HN 620 Nutrient Metabolism .................................... 4
HN 630 Clinical Nutrition ................................ ...... 5
HN 650 Practicum in Human Nutrition ....................... 3
GHNE 310 Human Needs ....................................... 3
FSHS 350 Family Relationships and Gender Roles .......... 3

Unrestricted electives ............................................. 17-19

Total hours for graduation .................................... 120

Athletic training program

Mission
The athletic training curriculum program is a cooperative educational program housed in the Department of Human Nutrition with support from the Division of Intercollegiate Athletics. The program prepares students as entry-level athletic trainers through an extensive curriculum of didactic and clinical experiences in accordance with the Commission on Accreditation of Allied Health Education Programs (CAAEHP) standards and guidelines for an accredited program for athletic trainers. Upon successful completion of the program and graduation from the university, students will have the knowledge base necessary to sit for, and pass, the NATA certification examination and begin a career in one of the many professional endeavors as a certified athletic trainer.

Level of students within the program
Observational
Before students are formally admitted to the athletic training program, they must undergo a period of guided observation in the athletic training rooms at K-State. This period allows students to make an informed decision about whether they wish to pursue athletic training as a career and it allows the staff athletic trainers to observe each student’s work habits, knowledge, and abilities.

Observation may last for one year and no academic credit is given for this time. Hours may not be accumulated toward the 800 hour minimum nor does the student begin to work toward the two year minimum period. During the first two weeks of the semester, the program director will hold a meeting to discuss the observational requirements, general policies, and procedures. The student will then be assigned to a rotation between the various sports and athletic training rooms at K-State. The student will be asked to work five to 10 hours per week with the various athletic trainers at K-State. During these rotations the student is expected to finish a self-paced course of learning that reflects the abilities expected of an introductory student in athletic training.

Admission policy
During the spring semester, students interested in seeking formal admission into the athletic training curriculum must apply to the program director. Applications will be considered based on the following criteria:

1. Completion of HN 320 with a grade of B or better.
2. A cumulative grade point average of 2.5 or better and at least a 3.0 grade point average in core classes.
3. Demonstration of competence on the entrance oral and written examinations.
4. Completion of an application provided by the program director.
5. Completion of a physical performed by one of our physicians.

The NATA mandates a maximum number of students that may be admitted to the curriculum. Therefore, this application process is competitive. Candidates will be evaluated by the entire athletic training staff and will be selected based on the criteria outlined above.

Transfer students
Transfer credit will only be received for HN 320 Care and Prevention of Athletic Injuries. All other athletic training classes must be taken at K-State. Transfer students are required to complete a minimum of 800 clinical hours and four semesters of HN 585 Internship in Athletic Training at K-State.

Transfer students who demonstrate exemplary prior experience will be accepted provisionally to the athletic training curriculum. If, after the first semester, they demonstrate the qualities expected of the student athletic trainers, transfer students will be accepted to full status.

Exemplary prior experience would be demonstrated by the following criteria:

1. Documentation of at least 500 clock hours of prior practical experience under the supervision of a certified athletic trainer.
2. An overall grade point average of at least 2.75 at the previous institution attended.
3. Completion of an equivalent of HN 320 with a grade of a B or better.

An application to the curriculum as well as documentation of the requirements must be provided to the curriculum director prior to admittance.

Athletic training educational program
Athletic training is the art and science of treating athletic injuries. The education of athletic trainers is multifaceted and is intended to help students become proficient in the prevention, evaluation, treatment, and rehabilitation of athletic injuries; first aid and emergency care; administration of athletic training programs; and counseling and education of athletes. Athletic training is compatible with several degree programs. Education of athletic trainers is based on four components: overview courses, which form the basis of a strong but diverse education based in social sciences; background courses in basic and applied sciences, which form the basis of athletic training; the core courses, which provide the knowledge needed to become a successful athletic trainer; and practical work experiences with staff athletic trainers serving K-State athletic teams.

Athletic training students must complete 53 hours in the athletic training program along with general university and individual departmental requirements.

Curriculum program

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 340</td>
<td>Structure and Function of the Human Body</td>
<td>8</td>
</tr>
<tr>
<td>HN 132</td>
<td>Basic Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 352</td>
<td>Personal Wellness</td>
<td>3</td>
</tr>
<tr>
<td>HN 400</td>
<td>Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 600</td>
<td>Public Health Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>HN 610</td>
<td>Life Span Nutrition</td>
<td>3</td>
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<tr>
<td>HN 620</td>
<td>Nutrient Metabolism</td>
<td>4</td>
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<tr>
<td>HN 630</td>
<td>Clinical Nutrition</td>
<td>5</td>
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<tr>
<td>HN 650</td>
<td>Practicum in Human Nutrition</td>
<td>3</td>
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<tr>
<td>GHNE 310</td>
<td>Human Needs</td>
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<tr>
<td>FSHS 350</td>
<td>Family Relationships and Gender Roles</td>
<td>3</td>
</tr>
<tr>
<td>KIN 500</td>
<td>Measurement and Research Techniques in Kinesiology</td>
<td>3</td>
</tr>
<tr>
<td>KIN 330</td>
<td>Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>KIN 355</td>
<td>Physiology of Exercise</td>
<td>4</td>
</tr>
<tr>
<td>KIN 336</td>
<td>Physiology of Exercise Lab</td>
<td>1</td>
</tr>
<tr>
<td>KIN 340</td>
<td>Physical Activity in Contemporary Society</td>
<td>3</td>
</tr>
<tr>
<td>KIN 345</td>
<td>Psychological Dynamics of Physical Activity</td>
<td>3</td>
</tr>
<tr>
<td>HN 320</td>
<td>Care and Prevention of Athletic Injuries</td>
<td>3</td>
</tr>
<tr>
<td>HN 551</td>
<td>Evaluation of Athletic Injuries of the Extremities</td>
<td>3</td>
</tr>
<tr>
<td>HN 552</td>
<td>Emergency Procedures and Evaluation of Core Athletic Injuries</td>
<td>3</td>
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<tr>
<td>HN 555</td>
<td>Therapeutic Modalities in Athletic Training</td>
<td>3</td>
</tr>
<tr>
<td>HN 556</td>
<td>Rehabilitation and Conditioning for Athletic Injuries</td>
<td>3</td>
</tr>
<tr>
<td>HN 557</td>
<td>Seminar in Issues in Administration in Athletic Training Programs</td>
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<tr>
<td>HN 585</td>
<td>Internship in Athletic Training</td>
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<td>Internship in Athletic Training</td>
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<td>Internship in Athletic Training</td>
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</table>

Total credits 53

Human nutrition courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HN 301</td>
<td>Food Trends, Legislation, and Regulation</td>
<td>3</td>
</tr>
<tr>
<td>HN 320</td>
<td>Care and Prevention of Athletic Injuries</td>
<td>3</td>
</tr>
</tbody>
</table>

Current trends in market forms, packaging, and utilization of various foods. Pr.: EDSEC 250 or BIOL 340 or conc. enrollment.
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. 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 318, 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.: CHM 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. Problems 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 530. 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 551. Evaluation of Athletic Injuries of the Extremities. (3) I. This course is designed to familiarize the student athletic trainer with the principles of orthopedic assessment and to apply these principles to specific regions of the body. Knowledge gained in this course may be applicable to other individuals interested in health related professions, which require systematic examination of the body in emergency settings. Pr.: HN 320 and BIOL 340.

HN 552. Emergency Procedures and Evaluation of Core Athletic Injuries. (3) II. This course is designed to familiarize the student athletic trainer with the procedures of emergency management of athletic injuries and to apply these procedures both on the field and off the field. The student athletic trainer will become familiarized with the principles of orthopedic and emergency medical assessment and to apply these principles to the core of the body. Knowledge gained in this course may be applicable to other individuals interested in health related professions, which require systematic examination of the body in emergency settings. Pr.: HN 320 and BIOL 340.

HN 555. Therapeutic Modalities in Athletic Training. (3) II. The theory and application of various energy systems used in the treatment of athletic injuries. Practical experiences will be emphasized. Pr.: HN 320, PHYS 115.

HN 556. Rehabilitation and Conditioning for Athletic Injuries. (3) I. II. A study of applied rehabilitation and conditioning techniques used by athletic trainers. Pr.: HN 320 and KIN 330.

HN 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, budget designs, legal aspects of sport, facility design, and drug testing/drug education.

HN 585. Internship in Athletic Training. (1–4) I. II. Supervised clinical application of practical skills in athletic training. Pr.: HN 320. May be repeated for a total of 4 credit hours with additional prerequisite of KIN 330 and 335 required for last four semesters.

HN 600. 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 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 interrelationship of nutrition and exercise. Topics covered include physical fitness, weight control, nutrient metabolism during exercise, and athletic performance. Pr.: HN 132 or 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 600 and consent of instructor. May be taken more than once for a maximum of 6 hours.

HN 660. Nutrition and Food Behavior. (3) I. in even years. Focus on the physiologic, 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 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 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.
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.

Minors

Students at K-State at Salina are eligible for minors offered by K-State. The college offers the entire course work for students to complete a minor in business.

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</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 UGE courses.

In course descriptions, UGE courses are marked with a ★. For more information about UGE requirements, see the Degrees section of this catalog. For a current list of approved UGE courses: www.ksu.edu/registrar/enroll/gened.html

Arts, Sciences, and Business

Don Von Bergen, Department Head

Professors Ahlvers, Bingham, Heubel, and Homolka; Associate Professors Stephens, Thompson, and Zajac; Assistant Professors Barnes, Brockway, Collins, Fick, and Oh; Instructors Knopp and McKe.

785-826-2692

www.sal.ksu.edu/ab

Kansas State University at Salina programs help students 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.

Associate of science in applied business (ABA)

63 hours required for graduation

This two-year associate degree will allow the graduate of the program to succeed in an entry-level business position or continue with a bachelor’s degree in one of many different business fields. This program will enhance the academic education of graduates and will create a foundation of business, accounting, and management fields.

I. Communications

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 105</td>
<td>Public Speaking IA</td>
<td>2</td>
</tr>
</tbody>
</table>

II. Quantitative

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 205</td>
<td>General Calculus and Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>CMST 225</td>
<td>Commercial Software Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

III. Social science electives

Choose six social science elective hours from the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>SOCIO</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>PSYCH</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>GEOG</td>
<td>All courses except those which count as humanities or natural science electives are acceptable</td>
<td></td>
</tr>
</tbody>
</table>

IV. Humanities

Choose six hours from the following list:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>ARCH 301</td>
<td>Appreciation of Architecture</td>
<td>3</td>
</tr>
<tr>
<td>PHIO</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>ENGL</td>
<td>All literature courses</td>
<td>3</td>
</tr>
<tr>
<td>HIST</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>COT 150</td>
<td>The Humanities Through the Arts</td>
<td>3</td>
</tr>
</tbody>
</table>

Natural sciences

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>CHM</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>GEOL</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>PHYS</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>GEOG 220</td>
<td>Environmental Geography I</td>
<td>3</td>
</tr>
</tbody>
</table>

Business core courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 110</td>
<td>Introduction to Business</td>
<td>3</td>
</tr>
<tr>
<td>BUS 315</td>
<td>Supervisory Management</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 366</td>
<td>Management Information Systems</td>
<td>3</td>
</tr>
</tbody>
</table>

Business core courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 251</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS 252</td>
<td>Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS 315</td>
<td>Supervisory Management</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 366</td>
<td>Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 420</td>
<td>Management Concepts</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose four courses from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 320</td>
<td>Total Quality Management for Technology</td>
<td>3</td>
</tr>
<tr>
<td>CET 410</td>
<td>Managerial and Engineering Economics</td>
<td>3</td>
</tr>
</tbody>
</table>

Bachelor of science in technology management (TCMG)

124 hours required for graduation

The block of technology courses must demonstrate a breadth and depth of course work in one area of concentration. Courses accepted for transfer as a bachelor’s degree in one of many different business fields.

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 as a bachelor’s degree in one of many different business fields.

II. Arts and sciences

54–58 hours

Communications

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 100</td>
<td>Expository Writing I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 200</td>
<td>Expository Writing II</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 202</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking I</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 311</td>
<td>Business and Professional Speaking</td>
<td>3</td>
</tr>
</tbody>
</table>

Quantitative

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 100</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 205</td>
<td>General Calculus and Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>CMST 225</td>
<td>Commercial Software Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

Economics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 101</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 120</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>

IV. Social science electives

Choose six social science elective hours from the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 220</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>SOCIO 205</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>PSYCH 205</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>GEOG 220</td>
<td>Environmental Geography I</td>
<td>3</td>
</tr>
</tbody>
</table>

Natural sciences electives

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 205</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>CHM 205</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>GEOL 205</td>
<td>All courses</td>
<td></td>
</tr>
<tr>
<td>PHYS 205</td>
<td>All courses</td>
<td></td>
</tr>
</tbody>
</table>

Social sciences

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</tr>
</thead>
<tbody>
<tr>
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<td>3</td>
</tr>
<tr>
<td>ECON 120</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
</tbody>
</table>

Humanities electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 202</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 105</td>
<td>Public Speaking IA</td>
<td>2</td>
</tr>
<tr>
<td>SPCH 106</td>
<td>Public Speaking I</td>
<td>3</td>
</tr>
<tr>
<td>SPCH 311</td>
<td>Business and Professional Speaking</td>
<td>3</td>
</tr>
</tbody>
</table>

Restricted electives (optional)

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 hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 251</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>BUS 252</td>
<td>Managerial Accounting</td>
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</tr>
<tr>
<td>BUS 315</td>
<td>Supervisory Management</td>
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</tr>
<tr>
<td>MANGT 366</td>
<td>Management Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>MANGT 420</td>
<td>Management Concepts</td>
<td>3</td>
</tr>
<tr>
<td>BUS 320</td>
<td>Total Quality Management for Technology</td>
<td>3</td>
</tr>
<tr>
<td>CET 410</td>
<td>Managerial and Engineering Economics</td>
<td>3</td>
</tr>
</tbody>
</table>
FINAN 450  Introduction to Finance ................. 3
MANGT 421  Introduction to Operations .......... 3
MANGT 390  Business Law ................................................. 3
MANGT 530  Industrial and Labor Relations ......... 3
MANGT 531  Personnel and Human Resources ....... 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. This course surveys the objectives, decisions, and activities within a business organization. Topics include a study of management, organization of a business, 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, S. Study of business topics such as financial statements, accrual basis, cashbasis, and financial ratio analysis. Survey of investment decision making.

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 255. Managerial Accounting. (3) I, II, S. 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 300. Total Quality Management for Technology. (3) I, II. This course addresses the commitment of management and the organization as a whole to the continuous process of change necessary to implement quality improvements throughout the organization. Topics include quality organization and philosophy, quality audit and ISO 9000 series, integration of functional areas, team building, management principles, quality costs, and other associated interactive facets of Total Quality Management. The main concern is to provide the student with a working knowledge of conventional TQM tools. Three hours rec. a week.

FINAN 450. Principles of Finance. (3) I, II, S. Study of the basic principles of finance, including discounted cash flow analysis, risk-return tradeoff, asset pricing models, and financial and real asset valuation. Applications of these concepts to the firm’s investment and financing decisions and performance analysis will be discussed. Pr: ECON 120, STAT 350, and ACCTG 231.

MANGT 366. Management Information Systems. (3) 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: Demonstrated competence in use of computer spreadsheets; BUS 251 and 252; may be taken concomitantly.

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) I. Surveys the uses, theories, research, practices, programs, skills, and foundation of instructional technology. Principles are applicable to school, college, library, business, industry, organizational, and alternative learning settings. Three hours rec. a week.

COT 205. Photography. (3) II, III. Basic camera and darkroom techniques of photography.

COT 299. Problems in Arts, Sciences, and Business. (V ar.) I, II, S. 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.

COT 495. Industrial Internship. (V ar.) I, II, S. Externship experiences in a range of technologies, which may include on- or off-campus. Pr: Approval of faculty internship advisor and sponsoring company.

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 critical thinking, academic and career planning and goal setting, and social issues that challenge 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 of self 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, determining 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 100. Expository Writing I. (3) I, II. Introduc- tion 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 100. Expository Writing I. (3) I, II, S. Introduction to writing persuasively and in response to literature. As with ENGL 100, uses discussion, workshops, and conferences, and emphasizes the writing process. Pr: ENGL 100 or 110.

ENGL 202. Technical Writing. (3) I, II. 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. 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.

ENGL 450. Literature and Society. (1-3) I, II. Literature in relation to social and cultural patterns and influences. Repeatable once. Pr: ENGL 125 or 200.

SPCH 105. Public Speaking I. (2) I, II. Alternate to SPCH 106. Principles 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. 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 311. Business and Professional Speaking. (3) I, 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 106 or 108.

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.

Geographic information systems courses
GIS 150. Introduction to GIS. (2) I, II. 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
Mathematics courses

MATH 010. Intermediate Algebra. (3) I, II. S. Review of elementary algebra preparatory 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 3 on the arithmetic placement test.

MATH 011. Intermediate Algebra Review. (2) II, I, S. Supplemental algebra lab that is required to be taken in conjunction with MATH 010. The student will receive 2 hours credit, which will not count toward 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 010; 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) 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. C or better in MATH 120 or two years of high school algebra and a score of 25 or more on Enhanced ACT mathematics; or a score of at least 20 on the mathematics placement exam.

MATH 151. Applied Plane Trigonometry. (2) 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) I. 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, first order linear 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. Pr.: MATH 215 or 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 transcendent 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, II. Continuation of MATH 220 to include transcendental functions, techniques of integration, and infinite series. Pr.: C or better in MATH 220.

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 lab., rec. Elements in two-hour sessions; pre-requisites: MATH 110. Pr.: CHM 110. General Chemistry Laboratory. (1) I, S. An optional laboratory course to supplement the lab portion 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 elementary compounds. Three hours rec. and three hours lab a week. Pr.: One year of high school chemistry and MATH 100 (or two courses of high school algebra).

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, and the association between global climate and plant distributions. Introduces map use, including isopleth and weather maps. Three hours rec. and one two-hour lab a week.

GEOG 242. Physical Geography. (3) In this course the student will explore the issues of world geography and its physical elements. Three hours rec. a week.

GEOG 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.

GEOG 103. Elementary Geology Laboratory. (1) I. Field and laboratory investigation of minerals, rocks, use of maps; environmental studies; transportation, sedimentation. Two hours lab a week. Pr.: GEOG 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 background. The Physical World I is principally physics and atomic theory. The observations and phenomena are simple and basic. Three hours rec. a week. Open only to freshmen, sophomores, and first-semester transfer students. Not eligible 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 problems involving one hour rec., one hour quiz, and two hours lab a week. Pr.: MATH 150 or one-half units of high school algebra and one unit high school trigonometry.

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 rec., 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 rec., 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 rec., 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 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 PPIL 342.

Social science and humanities 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 economics development; other economic systems. Pr.: Probability of a grade of C or higher (PROB 2 C) or 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 preferences; the determination of quantity supplied and demanded; the effect of price changes on the quantity supplied and demanded; the effect of price changes on the total revenue of producers; the effect of price changes on the distribution of income. Pr.: MATH 100 or placement test.
Aviation

Statistics courses

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.

Aeronautical technology (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.

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

AVM 111 Basic Aircraft Electricity .......................... 4
AVM 121 Aircraft Drawings .................................. 4
AVM 131 Aircraft Standards .................................. 4
AVM 141 Aircraft Science ..................................... 3
MATH 100 College Algebra .................................... 3
AVM 151 Aviation Maintenance Fundamentals ............ 3

Spring semester

AVM 112 Aircraft Welding .................................... 2
AVM 132 Aircraft Fluid Power .............................. 3
AVM 142 Airframe Systems .................................. 4
AVM 152 Airframe Structures and Repair ................. 5
AVM 162 Airframe Electrical Systems .................... 4

Sophomore

Fall semester

AVM 231 Aircraft Finish and Fabrication .................. 3
AVM 241 Navigational Aids and Communication Systems ................................................. 3
AVM 261 Airframe Inspection and Assembly ............. 5
AVM 321 Powerplant Fundamentals ....................... 4

Spring semester

AVM 312 Aircraft Propellers ................................ 2
AVM 322 Powerplant Operation and Troubleshooting ................................................. 3
AVM 332 Gas Turbine Powerplant .......................... 5
AVM 342 Powerplant Induction and Fuel Systems .......... 4
AVM 352 Powerplant Overhaul .............................. 3

Summer session

SPCH 106 Public Speaking ................................. 3
MATH 151 Applied Plane Trigonometry .................. 2

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

AVM 111 Basic Aircraft Electricity .......................... 4
AVM 121 Aircraft Drawings .................................. 4
AVM 131 Aircraft Standards .................................. 4
AVM 141 Aircraft Science ..................................... 3
MATH 100 College Algebra .................................... 3
AVM 151 Aviation Maintenance Fundamentals ............ 3

Spring semester

AVM 112 Aircraft Welding .................................... 2
AVM 132 Aircraft Fluid Power .............................. 3
AVM 142 Airframe Systems .................................. 4
AVM 152 Airframe Structures and Repair ................. 5
AVM 162 Airframe Electrical Systems .................... 4

Summer session

University general education humanities/social science elective ................................................. 3

Sophomore

Fall semester

AVM 231 Aircraft Finish and Fabrication .................. 3
AVM 241 Navigational Aids and Communication Systems ................................................. 3
AVM 261 Airframe Inspection and Assembly ............. 5
AVM 321 Powerplant Fundamentals ....................... 4

Spring semester

AVM 312 Aircraft Propellers ................................ 2
AVM 322 Powerplant Operation and Troubleshooting ................................................. 3
AVM 332 Gas Turbine Powerplant .......................... 5
AVM 342 Powerplant Induction and Fuel Systems .......... 4
AVM 352 Powerplant Overhaul .............................. 3

Summer session

SPCH 106 Public Speaking ................................. 3
MATH 151 Applied Plane Trigonometry .................. 2

Aeronautical technology (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 .................................. 4
AVM 131 Aircraft Standards .................................. 4
AVM 141 Aircraft Science ..................................... 3
MATH 100 College Algebra .................................... 3
AVM 151 Aviation Maintenance Fundamentals ............ 3

Spring semester

AVM 112 Aircraft Welding .................................... 2
AVM 132 Aircraft Fluid Power .............................. 3
AVM 142 Airframe Systems .................................. 4
AVM 152 Airframe Structures and Repair ................. 5
AVM 162 Airframe Electrical Systems .................... 4

Summer session

University general education humanities/social science elective ................................................. 3

Sophomore

Fall semester

AVM 231 Aircraft Finish and Fabrication .................. 3
AVM 241 Navigational Aids and Communication Systems ................................................. 3
AVM 261 Airframe Inspection and Assembly ............. 5
AVM 321 Powerplant Fundamentals ....................... 4

Spring semester

AVM 312 Aircraft Propellers ................................ 2
AVM 322 Powerplant Operation and Troubleshooting ................................................. 3
AVM 332 Gas Turbine Powerplant .......................... 5
AVM 342 Powerplant Induction and Fuel Systems .......... 4
AVM 352 Powerplant Overhaul .............................. 3

Summer session

SPCH 106 Public Speaking ................................. 3
MATH 151 Applied Plane Trigonometry .................. 2

of wages, rent, interest, and profit; theory of the firm; monopoly and government regulation; international econo-
ENGL 100 Expository Writing I ........................................ 3
MATH 100 College Algebra ............................................ 3

Spring semester

ENGL 200 Expository Writing II ................................... 3
ENGL 202 Technical Writing .......................................... 3
CMST 225 Commercial Software Analysis ..................... 3

Humanities/social science (university general education) elective ........................................................................ 3

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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

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Spring semester

ELET 102 Alternating Current Circuits ...................... 4
ELET 110 Semiconductor Electronics ......................... 4
AVIO 244 Navigation II .................................................. 4
PHYS 113 General Physics I .......................................... 4
SPCH 105 Public Speaking IA ....................................... 4

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Sophomore

Fall semester

AVIO 240 Aero Communications ................................ 4
AVIO 241 Navigation I .................................................... 4
AVM 121 Aircraft Drawings ........................................... 1
AVM 131 Aircraft Standards ......................................... 3
ENGL 100 Expository Writing I ................................... 3
CMST 100 Applied Basic Programming ....................... 2

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Spring semester

AVIO 243 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

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Professional pilot degree (PPIL)

Associate of technology

68 hours required for graduation

The Jeppesen–Sanderson 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, 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
PSYCH 110 General Psychology ................................... 3
Business management elective ..................................... 3

17

Spring semester

PPIL 112 Professional Instrument Pilot Flight Lab .......... 1
PPIL 342 Aviation Meteorology ...................................... 4
MATH 150 Plane Trigonometry ..................................... 3
CMST 225 Commercial Software Analysis .................. 3
ENGL 200 Expository Writing II .................................. 3

17

Sophomore

Fall semester

PPIL 211 Professional Commercial Pilot Flight Lab ........ 2
PPIL 363 Multi-Engine Flight Lab ................................... 1
ECON 120 Principles of Microeconomics .................... 3
SPCH 105 Public Speaking I ......................................... 3
BUS 315 Supervisory Management ............................. 3
Math/science/technology elective .................................... 3
Humanities/social science elective ................................... 3

17

Spring semester

PPIL 362 Multi-Engine Ground School ....................... 1
PPIL 363 Multi-Engine Flight Lab ................................... 1
ECON 120 Principles of Microeconomics .................... 3
SPCH 106 Public Speaking I ......................................... 3

17

Aeronautical technology (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 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.

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 2002–2003 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 certification 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.
### Aviation maintenance courses

**AVM 111. Aircraft Electricity.** (4) I. A basic concept of DC/AC circuits, with basic laws relating to the following: measuring voltage, current, resistance, continuity and leakage; relationship of voltage, current and resistance in electrical circuits; reading and interpretation of electrical circuit diagrams; electrical devices and inspection and servicing of batteries. Three hours lect. and three hours lab a week.

**AVM 112. Aircraft Welding.** (2) II. Theory and skill development in aircraft welding processes. Exercises in gas welding processes as applied to ferrous and nonferrous materials. Oxygen/acetylene, inert gas, and resistance welding processes are to be studied. One hour rec. and three hours lab a week.

**AVM 121. Aircraft Drawings.** (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 lect. and lab a week.

**AVM 131. Aircraft Standards.** (4) II. 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 air transport in the maintenance process. Two hours rec. and three hours lab a week.

**AVM 132. Aircraft Fluid Power.** (3) II. A study of basic fluid mechanics as it applies to practical applications in aircraft systems. Compressible and incompressible fluid systems will be studied. Two hours rec. and three hours lab a week. Pr.: AVM 141.

**AVM 141. Aircraft Science.** (3) II. This is a study of applied mathematics and basic physics. Section one: mathematics will provide the learner with the tools needed to perform the calculations normally confronted by the aviation maintenance technician. Section two: basic science will enable the student to better understand the operation of aircraft and the complex systems needed to sustain safe flight.

**AVM 142. Airframe Systems.** (4) II. A study of the airframe systems and components to include: pressurization, heating and cooling, and structural device. Two hours rec. and six hours lab a week. Pr.: AVM 141.

**AVM 151. Aviation Maintenance Fundamentals.** (3) II. This course is designed to permit the student to learn and practice those skills and techniques essential to the career development of the aviation maintenance technician. The subjects included are: shop safety, aircraft general familiarization, fluid lines and fittings, hand tools and measuring devices, aircraft hardware, cleaning and corrosion control, aircraft metals, inspection fundamentals, ground operation and servicing, and support equipment.

**AVM 152. Airframe Structures and Repair.** (5) II. 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) II. 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 Systems.** (3) I. A survey study of the aids to navigation and communications used in the aviation field. Coverage will include various types of automatic pilots and flight navigational aids. Two hours rec. and 100-hour inspections. Three hours rec. and six hours lab a week. Pr.: AVM 111.

**AVM 261. Aircraft Inspection and Assembly.** (5) I. A study of aircraft inspection and assembly 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 airplane, rotor transmission, and engine components of turbine and reciprocating engine helicopters. Also included is a detailed study of required maintenance, historical records, and inspection of components. Three hours rec.
Professional pilot courses

PPIL 111. Private Pilot. (4) I, II. The subject areas necessary for completion and passing of the FAA Private Pilot Written Knowledge Test are presented. Four hours rec. a week.

PPIL 112. Professional Instrument Pilot. (3) I, II. 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, 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. Cong.: 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. Cong.: 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 opportunity to review and demonstrate proficiency to satisfactorily meet the FAA regulations for the current ratings held. Pr.: FAA Private Pilot certificate.

PPIL 117. 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 Ratings.

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

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

PPIL 213. Professional Commercial Pilot Lab. (2) I, II. S. An introduction to complex airplane operations and a review of the operations required of a commercial pilot. 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) 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) 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 flight 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 knowledge 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. By appointment. 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. 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 385.

PPIL 400. Aviation Legislation. (3) 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. Altitude 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) 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 Aeronautic Board are reviewed. Pr.: PPIL 111.

PPIL 440. FAR 135 Operations. (3) 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; safety philosophies; aircraft accident reports; human factors; principles of accident investigation; accident prevention program and accident statistics; current events; NTSB special studies. The safety program is analyzed from the theoretical and philosophic points of view. A safety program is developed with an examination of safety concepts, the human elements of accidents, managing a safety office in an organization, and current events. Pr.: PPIL 415.

PPIL 482. Certified Instrument Flight Instructor Ground School. (3) I, II. S. 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 Lab. (1) I, II. S. 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. S. 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 492 or conc.

PPIL 493. Certified Multi-Engine Flight Instructor Lab. (1) I, II. S. 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 494. Certified Multi-Engine Flight Instructor Ground School. (1) I, II. S. 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. Three hours lab a week. Pr.: PPIL 314, and PPIL 492 or conc.

PPIL 495. Certified Multi-Engine Flight Instructor Lab. (1) I, II. S. 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 Kinsler; Associate Professors Francisco, Shepard, Spaulding, and Wilson; Assistant Professors Dandu, Harding, Kahn, Leite, Mertz, Mortensen, Reitcheck, and Simmonds; Instructor Misoc.

785-826-2672
www.ksu.edu/etd
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 Accreditation Board for Engineering and Technology, 111 Market Place, Suite 1050; Baltimore, Md., 21202. 410-347-7700.

Freshman
Fall semester
MATH 100 College Algebra ................................. 3
MATH 150 Plane Trigonometry ............................. 3
ENGL 100 Expository Writing I ............................ 3
MET 111 Technical Graphics ............................... 3
ECEN 110 Principles of Macroeconomics .................. 3
CET 120 Materials Sampling and Testing ................. 2

Spring semester
PHYS 113 General Physics I .................................. 4
MATH 220 Analytical Geometry and Calculus I ......... 4
CET 130 Plane Surveying .................................... 4
CET 211 Statics .................................................. 3

Sophomore
Fall semester
CET 241 Construction Methods and Estimating .......... 2
CET 410 Managerial and Engineering Economics .......... 3
CET 323 Route Location Surveying ......................... 3
MET 245 Material Strength and Testing .................... 3
MET 252 Fluid Mechanics I .................................. 3
CET 220 Soils and Foundations ............................. 2

Spring semester
CET 340 Mechanical and Electrical Systems .......... 3
ENGL 202 Technical Writing .................................. 3
SPCH 105 Public Speaking 1A ............................. 2
CET 312 Transportation Systems ............................ 3
CET 313 Structural Design .................................. 3

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

Freshman
Fall semester
CMST 100 Introduction to Operating Systems .......... 3
CMST 103 Introduction to Program Design ............... 3
MATH 100 College Algebra .................................. 3
ENGL 100 Expository Writing I ............................. 3
BUS 251 Financial Accounting ............................. 3

Spring semester
CMST 140 Visual Basic I ...................................... 3
CMST 220 COBOL I ............................................. 3
CMST 245 C++ Programming I .............................. 3
CMST 180 Database Development .......................... 3
CMST 130 Introduction to PC Hardware .................... 3
SPCH 105 Public Speaking 1A ............................. 2
BUS 252 Managerial Accounting ........................... 3
Computer science technology elective .................... 3

Sophomore
Fall semester
CMST 250 Networking I ........................................ 3
CMST 330 Systems Analysis and Design .................. 3
ENGL 202 Technical Writing .................................. 3
University general education humanities/ social science/business elective .................. 3
Advanced program language elective ...................... 3
Computer science technology elective ..................... 3

Spring semester
CMST 333 Software System Development .................. 3
University general education science elective .......... 4
Humanities/business/social science elective .............. 3
Computer science technology elective ..................... 6

Computer science technology electives
CMST 140 Visual Basic I ...................................... 3
CMST 220 COBOL I ............................................. 3
CMST 245 C++ Programming I .............................. 3
CMST 255 Visual Basic II ...................................... 3
CMST 300 Assembly Language Program .................... 3
CMST 315 Networking II ...................................... 3
CMST 320 COBOL II ............................................ 3
CMST 341 C++ Programming II ............................. 3
CMST 345 Networking III ..................................... 3
CMST 350 Unix Administration ............................. 3

Geographic information systems (GIS) option
66 hours required for graduation

Action is under way to eliminate the associate degree in computer science technology geographic information systems option. Students interested in learning about geographic information systems are encouraged to contact the Department of Arts, Sciences, and Business for more information.

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
MATH 100 College Algebra .................................. 3
MATH 151 Applied Plane Trigonometry .................... 2
SPCH 105 Public Speaking 1A ............................. 2
MET 111 Technical Graphics ............................... 3
CMST 103 Introduction to Program Design ............... 3
CMST 100 Operating Systems ............................... 3

Spring semester
CMST 140 Visual Basic I ...................................... 3
CMST 130 Introduction to PC Hardware .................... 3
ENGL 100 Expository Writing I ............................. 3
CET 130 Plane Surveying .................................... 4

Sophomore
Fall semester
CET 250 Photogrammetry ..................................... 3
GIS 451 Geographic Referencing ........................... 3
ENGL 202 Technical Writing .................................. 3
CMST 330 System Analysis and Design .................. 3
BUS 315 Supervisory Management ........................ 3
GIS 350 Advanced Issues in GIS ........................... 3

Spring semester
GEOL 100 Earth in Action .................................. 3
GEOL 105 Elementary Geology Lab ....................... 1
STAT 320 Elements of Statistics ........................... 3
GIS 355 Projects in GIS ...................................... 3
CMST 250 Networking I .................................... 3
GEOG 242 Physical Geography ............................ 3

Construction engineering technology (CNET)
Associate of technology
64 hours required for graduation
The construction engineering technology program prepares graduates to seek employment in the construction industry, in fields ranging from building construction to heavy construction. Course topics include contracts and specifications, construction estimating, surveying, site construction, mechanical and electrical systems, plus essential concepts in mathematics, science, and interpersonal communications.
Graduates are prepared to assist in the construction of designs prepared by engineers and architects. Graduates may also continue their education in the construction science and management bachelor’s degree program offered by the College of Engineering on the Baltimore campus.

### Freshman

**Fall semester**
- CET 120 Materials Sampling and Testing .. 2
- MATH 100 College Algebra .................. 3
- MATH 150 Plane Trigonometry ............. 3
- MET 111 Technical Graphics ............... 3
- ENGL 100 Expository Writing I .......... 3
- ECON 110 Principles of Macroeconomics .. 3

**Spring semester**
- PHYS 113 General Physics I ............... 4
- CET 130 Plane Surveying .................. 4
- CET 211 Statics ................................ 3
- CNS 210 Introduction to Construction ... 3
- Computer Programming .................. 3

**Sophomore**

**Fall semester**
- CET 241 Construction Method and Estimating 2
- CET 410 Managerial and Engineering Economics 3
- CNS 320 Construction Materials ........... 2
- CET 350 Site Construction ................. 3
- MET 245 Material Strength and Testing ... 3
- MATH 220 Analytic Geometry and Calculus I 4

**Spring semester**
- CET 340 Mechanical and Electrical Systems 3
- ENGL 202 Technical Writing ............. 3
- SPCH 105 Public Speaking 1A ............ 2
- SPAN 161 Spanish I ......................... 5
- CET 351 Construction Techniques and Detailing 3

### Bachelor of science in electronic and computer engineering technology (ECETB)

128 hours required for graduation (64 upper division + 64 associate degree)

Students may continue their studies in electronic and computer engineering technology beyond the associate degree level to obtain the bachelor of science degree in electronic and computer 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 and computer engineering technologists in many industrial settings. Career activities include product design and development, industrial automation, technical sales, and project management.

The bachelor’s degree program in electronic 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.
Bachelor of science in mechanical engineering technology (METB)

128 hours required for graduation (60 upper division + 68 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.

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.

Freshman

Fall semester

MET 111 Technical Graphics ................................. 3
MET 121 Manufacturing Methods .................................. 3
MATH 100 College Algebra ......................................... 3
MATH 151 Applied Plane Trigonometry ....................... 2
CMST 101 Applied BASIC Programming ...................... 2
ENGL 100 Expository Writing I ................................. 3

Spring semester

MET 117 Mechanical Detailing .................................. 3
MET 125 Computer-Numerical-Controlled Machine Processes .......................... 2
CET 211 Statics ......................................................... 3
MATH 220 Analytic Geometry and Calculus I .......... 4
PHYS 113 General Physics I ....................................... 4
SPCH 105 Public Speaking IA .................................. 2

Sophomore

Fall semester

MET 231 Physical Materials and Metallurgy .................. 3
MET 245 Fluid Mechanics I ......................................... 3
ECET 100 Basic Electronics ...................................... 4
CHM 210 Chemistry I ............................................... 4

Spring semester

MET 246 Dynamics of Machines ......................... 3
MET 264 Machine Design Technology I .................. 3
MET 265 Sophomore Design Project ..................... 2
ENGL 202 Technical Writing .................................. 3
Humanities/social science elective .............................. 3

Web development technology (CWDT)

Associate of technology 66 hours required for graduation

The web development technology program builds a foundation in computer science and applies these concepts to the world of e-commerce and website development. All students take introductory classes in operating systems and program design. The program also provides students with courses in programming and network administration.

Students interested in programming-oriented careers will find the curriculum challenging and rewarding. Students obtain experience with client-side programming, server-side programming, video and audio streaming, as well as database integration and other ways to make the web an effective tool for business.

Students also learn project management and the use of timetables and other organizational techniques. Software tools like Flash, Dreamweaver, and Javascript will also be utilized, but the program emphasis will focus on solutions from a programming-oriented environment.

Freshman

Fall semester

CMST 100 Operating Systems .................................... 3
CMST 103 Introduction to Program Design .................. 3
CMST 135 Web Page Development I .................... 3
MATH 100 College Algebra ...................................... 3
ECON 110 Principles of Macroeconomics .................. 3

Spring semester

CMST 140 Visual Basic I .......................................... 3
CMST 180 Database Development ............................ 3
CMST 130 Introduction to PC Hardware ................... 3
CMST 155 Web Page Development II ..................... 3
BUS 110 Introduction to Business ......................... 3
ENGL 100 Expository Writing I ................................. 3

Sophomore

Fall semester

CMST 255 Visual Basic II .......................................... 3
CMST 250 Networking I ............................................. 3
CMST 235 Web Development Programming I ............... 3
CMST 330 System Analysis and Design ....................... 3
SPCH 105 Public Speaking IA .................................. 2
Humanities/business/social science elective ................. 3

Civil engineering technology courses

CET 110 Civil Technology Drafting, (2) I. 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.

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 111.

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 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 method and the American Association of State Highway and Transportation Officials method. Routine field tests are covered and used in the laboratory. One hour rec. and two hours lab a week. Pr.: MATH 100.

CET 230. Land Surveying I, (3) 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 234. Advanced Surveying Techniques, (2) 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), tacheometry, 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) II. 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 240. Contracts and Specifications, (1) I. A study of the way a set of contracts and specifications are put together and how they act as a source of data on 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 visitsations 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 stereoscopic plotters to convert photographic data into engineering maps. Two hours rec. and two hours lab a week. Pr.: CET 130.

CET 300. Problems in CET, (Var.) I, II, S. A course in which advanced study is done in a specific area chosen by the student. Pr.: consent of instructor.
CMIS 100. Introduction to MS-DOS and Windows. (2) I, II. S. Provides fundamental concepts of the standard PC environment operating system: MS-DOS and Windows. Students will use the microcomputers in class to apply the operating system commands covered by the instructor. Lab assignments will be required in class. Eight-week course requiring four hours rec. a week in the lab.

CMIS 101. Computer Fundamentals. (2) I, II. This course is designed as an introduction for students seeking to develop a broad, basic familiarity with the use of the microcomputer. Two hours rec. a week.

CMIS 105. Introduction to PC Software. (2) I, II. S. Students will learn to use an integrated software package consisting of a word processor, spreadsheet with graphing capabilities, and a database manager. Fundamental operating system usage will be covered in Windows.

CMIS 110. Word Processing. (2) I, II. A hands-on course introducing fundamental concepts and applications of word processing. Covers editing and formatting commands as well as sophisticated commands of the word processor. The word processing commands covered in class will be applied on the classroom microcomputers. Eight-week course requiring four hours rec. a week in the lab.

CMIS 120. Spreadsheet. (2) I, II. Introduces fundamental concepts and applications of a spreadsheet for a business environment. The class will progress to more sophisticated applications of the spreadsheet during the course of the class. Students will apply commands covered to the microcomputers in the classroom. Eight-week course requiring four hours rec. a week in the lab.

CMIS 130. Database Management. (2) I, II. Introduces fundamental concepts of a database management system application. Students will begin with the elementary database commands and will progress to more sophisticated database applications. Students will be required to apply the concepts covered in class to project assignments on the microcomputer. Eight-week course requiring four hours rec. a week in the lab.

CMIS 145. Advanced Windows. (2) I, II. Students will learn to install and configure Microsoft Windows. Students will learn to install and use Windows’ applications and utilities. The class will be taught in a computer laboratory environment. One hour rec. and one hour lab a week. Pr.: CMIS 100.

CMIS 150. Advanced Spreadsheets. (2) I, II. This course will cover advanced topics in the use of spreadsheets. Major topics will include macro programming, @ functions, spreadsheet automation, linking spreadsheets, managing data, and importing/exporting data from the spreadsheet. Lecture will be in the computer lab to allow the student a hands-on experience. Students will be required to perform homework assignments outside of class time. One hour rec. and one hour lab a week. Pr.: CMIS 120.

CMIS 200. Introduction to Desktop Publishing. (2) I, II. Students will learn to use PageMaker 4.0, a page composition/layout software package, in the hands-on environment of a PC lab. Students will perform production tasks and will learn the use of a scanner and basic design and production tips. Eight-week course requiring four hours rec. a week in the lab. Pr.: CMIS 100 and 110.

CMIS 210. Advanced Desktop Publishing. (2) I, II. Students are expected to have experience in the use of PageMaker. The course will cover proper design and layout of commonly produced materials. These layout techniques will be used by the student throughout the class to produce individual assignments. The class will primarily be taught in a computer laboratory. Each student will have access to a computer for their assignments. Each student will produce a document and present an individual project at the end of the class. Some homework and computer work will be required outside the class period. One hour rec. and one hour lab a week. Pr.: CMIS 200.

CMIS 250. Introduction to UNIX. (2) I, II. This course is designed to provide the student with the basic commands and knowledge to use the UNIX operating system. The student will learn proper sign-on and off procedures as well as how to manipulate files within the UNIX directory structure. The class is conducted in the hands-on environment of the computer lab. Eight-week course requiring four hours rec. a week in the lab. Pr.: Consent of instructor.

Computer science technology courses
CMST 100. Introduction to Operating Systems. (3) I, II. This course introduces the fundamental concepts of standard operating systems components, and is designed to give the student a working knowledge of the fundamentals of specific operating systems rather than operating systems theory. Three hours lec. a week. Pr.: None

CMST 101. Applied Basic Programming. (2) I, II. Study of computer programming techniques and applications for nonmajors. The Visual Basic programming language is used to develop programs. Topics include formula translation, decision and repetitive structures, sequential files, sorting, and searching. Emphasis on problem solving and program structure. Two hours lec. a week. Pr.: MATH 100.

CMST 103. Introduction to Program Design. (3) I, II. This course is designed as a language-independent introduction to the logic of data processing. Topics include an overview of systems development and a detailed examination of problem definition, problem analysis, general design, and detailed design. The student is also introduced to the various tools, techniques, and devices utilized in program design including logical control structures, program narratives, file specification forms, printer spacing charts, hierarchy charts, data dictionaries, ANSI flowcharting, pseudocode, and Warner-Orr diagrams. Three hours lec. a week. Pr. or conc.: MATH 100.

CMST 130. Introduction to PC Hardware. (3) I, II, S. This course will cover material relating to personal computer hardware. Concepts of memory management and proper hardware configuration and computer upgrades will be covered. Two hours rec. and two hours lab a week. Pr.: Previous computer usage.

CMST 140. Visual Basic I. (3) I, II. This course introduces Visual Basic as an object-oriented, event-driven programming environment. Creating forms, adding controls, designing menu bars, and writing Basic code for events, procedures, and functions will be emphasized. Students will complete several programming assignments and projects that will use multiple forms, file manipulation, use of graphics, and multiple document interface. Students will schedule lab time outside of class for completion of program assignments. Pr.: CMST 101 or 103.

CMST 180. Database Development. (3) I, II. This course deals with the importance of the data dictionary, the database design process, data model comparisons, SQL, and the performance of a database. Laboratory work will include the design and implementation of individual databases. Three hours lec. a week. Pr.: Previous use of PC software.

CMST 220. COBOL L. (3) I, II. Study of the COBOL programming language will introduce students to algorithmic solutions using business applications. This initial programming class will stress not only the COBOL language but also concepts of more advanced structured programming and techniques. Three hours lec. a week. Pr. or conc.: CMST 101 and 103.

CMST 222. Applications in C Programming for Engineering Technology. (3) I. This course will introduce the student to structured program design and implementation. Students will learn to apply the C language in calculations, input, output, file handling. Students will use the C language as the control language with various interfaces. Students will write approximately 10 programs. Each student will select, design, and implement an individual project at the end of the semester. Three hours lec. a week. Pr.: CMST 101 or other college-level programming language.

CMST 225. Commercial Software Analysis. (3) I, II. Students will be given an in-depth introduction to currently popular software applications packages. Such items as word processors, spreadsheets, desktop publishing software, and integrated packages will be examined in terms of direct business/industrial applications. Concepts of each software package (including advantages, disadvantages, limitations, and hardware requirements) will be analyzed. Three hours lec. a week. Pr.: None

CMST 230. RPG. (3) I, II. This course is designed to introduce the Report Program Generator language. RPG II is used primarily for the generation of business reports including payroll, inventory, general ledger, and other business applications. The lab work consists of writing several RPG II programs to solve business report problems. Three hours lec. a week. Pr.: CMST 100 and 103.

CMST 245. C++ Programming L. (3) I, II. The syntax of the C++ language will be covered. Structured programming, modular design, and object oriented programming will be covered. Writing functions, classes, and abstract data types will be covered. The use of C++ in writing application programs will be reflected in the program assignments. Three hours lec. a week. Pr.: CMST 103 or previous college-level programming language.

CMST 250. Networking L. (3) I, II. This course is a study of computer networking concepts and terms. Topics include local area networks, wide area networks, protocols, topologies, and transmission media. Two hours lec. and two hours lab a week. Pr.: Previous computer experience.

CMST 255. Visual Basic II. (3) I, II. This course uses Visual Basic as an object-oriented, event-driven programming environment. Students will complete several programming projects involving the use and manipulation of databases, spreadsheets, and other applications. Students will create complete stand-alone executable applications including help procedures and installation methods. Students will also use Visual Basic to create applications using multimedia and graphics. Students will complete programming assignments which concentrate on fewer but larger programming projects. Students will design, implement, and present an individual project at the end of this class. Students will schedule lab time outside of class time for completion of programming assignments. Pr.: CMST 140.

CMST 300. Assembly Language Programming. (3) I, II. This course covers programming of a microcomputer at the assembly language level. Students will learn to develop links and integrate assembly language routines to higher-level languages. Specific topics covered include an overview of operating systems and assembly language programming. Three hours lec. a week. Pr.: CMST 100, 103, and 220 or 245.

CMST 315. Networking L. (3) I, II. This course will cover material that leads to an understanding and installation
of local area networking of personal computers using popular networking operating systems. This will include necessary knowledge of local area networking of personal computers using popular networking operating systems. This will include necessary network topics including Laplace transforms, signal flow graph models, transfer functions, network response, and differential equations and linear approximations of physical systems. The theory of control systems and their applications are discussed. Three hours lec. a week. Pr.: ECET 230 and MATH 221.

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

ECET 480. Electronic Design I. (1) I. Application of electronic principles and the design methodology to solving a significant design problem in a team context. Includes design, documentation, and testing; team organization; and programming. Milestone assignments are the project's conceptual, preliminary, and critical design reviews, which require written and oral presentations. One hour lec. a week. Pr.: ECET 320, 352. Pr. or conc.: ECET 430.

ECET 481. Electronic Design II. (1) II. A continuation of ECET 480. Includes the implementation, testing, and delivery of the project initiated in ECET 480 Electronic Design I. Significant milestones are the project prototype, design report, and final presentation. Four hours lab a week. Pr.: ECET 480.


Mechanical engineering technology courses

MET 111. Technical Graphs. (3) I.I.I. Free-hand sketching, lettering, scales and measurements. Introduction to CAD systems and computer-aided drafting software. Three hours lec. a week. Pr.: 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 tolerances. 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, fusion welding, and SMA welding processes. Study of welding metallurgy and welding processes. Six hours lab a week. Pr.: MET 111, MATH 100 and 151.

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 230. Automated Manufacturing Systems I. (3) II. A general survey of the various components and operations in an automated manufacturing system including material handling, robotics, tooling, inspection and quality control, CAD, CNC, and other production processes. Two hours rec. and two hours lab a week. Pr.: MET 125 and ECET 100.

MET 231. Physical Materials and Metallurgy. (3) I. A broad view of materials used in industry, including structures of materials, how they react to stress and temperature, how the polypahse 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.: CET 211.

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, deflections, thermal stresses, and other quantities. Two hours rec. and two hours lab a week. Pr.: CET 211.

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


MET 265. Sophomore Design Project. (2) I. Design and construction of mechanical and/or electromechanical devices to satisfy the requirements of an industrial project. Four hours lab a week. Pr.: MET 245. Pr or conc.: MET 264.

MET 314. Computer-Aided Solid Modeling. (2) I. Study and applications of computer aided modeling of real-world three-dimensional objects. This course moves beyond simple CAD drawings which consist of collections of lines, arcs, and curves. Activities include developing 3-D object models containing surfaces and edges and analysis of the modeled objects. Four hours lab a week. Pr.: MET 117, MET 125.

MET 333. Advanced Material Science. (2) I. A continuation of the study of metal and non-metal materials. Emphasis on properties, manufacturing techniques, and applications of materials including plastics, ceramics, composites, electrical and optical materials. Laboratory experiments illustrating the modern concepts in testing of materials with emphasis on design and processing considerations for quality products. One hour rec. and two hours lab a week. Pr.: MET 231 and CHM 210.

MET 346. Elements of Mechanics. (3) II. Fundamental motion concepts of displacement, velocity, and acceleration are studied, as well as analytical and graphical analysis and synthesis of linkages, gear trains, cams, pulleys, and combinations of these elements. Three hours rec. a week. Pr.: MET 111, MET 246, and PHYS 113.

MET 353. Fluid Mechanics II. (3) II. Fluid properties, compressible flow, analysis of power conveyance in hydraulic and pneumatic systems. Investigation of relationships between thermal and fluid power. Two hours rec. and two hours lab a week. Pr.: MET 252.

MET 365. Machine Design Technology II. (3) I. Covers design of machine elements for structural integrity, reliability, and economy. Lecture and laboratory work in applications of advanced strength of materials and machine design as it relates to extensive design projects. Two hours rec. and two hours lab a week. Pr.: MET 263.

MET 382. Industrial Instrumentation and Controls. (3) I. An introduction to process control systems for industrial applications. Course topics include concepts and terminology, first- and second-order systems, measurement of motion, gauges and transducers, signal processing, and measurement of properties. Two hours lec. and two hours lab a week. Pr.: ECET 264 and PHYS 113.

MET 383. Advanced CAD/CAM. (2) II. This course will provide experience in linking CAD to computer-aided manufacturing (CAM) permitting the design of parts using CAD, developing the CNC program using CAM, and then manufacturing the product using CNC machines under computer control. One hour rec. and two hour lab a week. Pr.: MET 125 and 314.

MET 400. Tool Design for Manufacturing. (3) II. Principles and practices involved in tool drawing and design concepts necessary for the manufacture of products. Emphasis on design of jigs and fixtures, gauging devices, dies, ease of operation, and methods of assembly. Production cost related to selection of parts and methods of production is stressed. Applied laboratory exercises illustrated through specific case studies. Two hours lec. and two hours lab a week. Pr.: MET 117, MET 125, and MET 346.

MET 462. Senior Design Project I. (1) I. Selection, definition, and analysis of a project supervised by faculty. Includes consideration of project parameters, trade-off studies, alternative solutions, and justification of selected solution. Compilation and presentation of a written project proposal included. Two hours lab a week. Pr.: MET 364 and senior standing.

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

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. Intro to Construction Computer Programming. (3) II. Computer and disk operating systems, programming techniques, and spreadsheets for construction applications. Two hours lec. and two hours lab a week. Pr.: MATH 150

CNS 220. Construction Materials. (2) I. Study and analysis of construction materials, their properties, selection, and use. Two hours lec. a week. Pr.: MET 111

Technology and Aviation  ■  247
Veterinary Medicine

Ralph C. Richardson, Dean
Ronnie G. Elmore, Associate Dean
Donald C. Robertson, Associate Dean
101 Trotter Hall
785-532-3660
Fax: 785-532-5884
E-mail: admit@vet.ksu.edu
www.vet.ksu.edu

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. 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 dean’s office of the appropriate college.

A limited number of at-large positions and positions for foreign applicants 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 following graduation from high school 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 at left.

Requirements

E N G L 1 0 0 Expository Writing I .................................. 3
E N G L 1 2 0 Expository Writing II ................................ 3
S P C H 1 1 0 Public Speaking I ................................... 3
S P C H 1 0 6 Public Speaking I ................................... 3
C H M 2 1 0 Chemistry I ........................................... 4
C H M 2 3 0 Chemistry II ......................................... 4
C H M 3 5 0 General Organic Chemistry ........................ 3
C H M 3 5 1 General Organic Chemistry Laboratory .......... 2
B I O C H 5 2 1 General Biochemistry ........................... 3
B I O C H 5 2 2 General Biochemistry Laboratory .............. 2
P H Y S 1 1 3 General Physics I .................................. 4
P H Y S 1 1 4 General Physics II ................................... 4
B I O L 1 9 8 Principles of Biology ............................... 4
B I O L 5 1 0 Embryology ........................................ 3
B I O L 5 1 1 Embryology Laboratory ............................ 1
B I O L 4 5 5 Microbiology (with lab) ........................... 4
A S I 5 0 0 Genetics .............................................. 3
S o c i a l s c i e n c e s a n d / o r h u m a n i t i e s ...................... 12
E l e c t i v e s ........................................................ 9

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 710 Microanatomy .......................................... 5
AP 737 Veterinary Physiology I ............................. 6
D M P 7 0 0 V eterinary Orientation ............................ 1
C S 7 0 1 Clinical Skills I ...................................... 1

Spring semester

AP 7 0 5 Gross Anatomy II .................................. 6
AP 7 2 0 Veterinary Neuroscience .......................... 2
AP 7 4 7 Veterinary Physiology II ......................... 7
C S 7 2 3 UNL GPVEC Production Medicine ........... 1
D M P 7 0 5 Veterinary Immunology ....................... 2
D M P 7 0 8 Principles of Epidemiology ................. 2
D M P 7 0 1 Ethics and Jurisprudence ....................... 1

Second professional year

Fall semester

A P 7 7 0 Pharmacology ...................................... 5
D M P 7 1 2 Veterinary Bacteriology and Mycology .... 5
D M P 7 1 5 General Pathology ................................ 5
D M P 7 1 8 Veterinary Parasitology ....................... 5

Spring semester

D M P 7 2 0 Systemic Pathology ............................. 5
D M P 7 2 2 Veterinary Virology ............................ 3
D M P 7 5 9 Laboratory Animal Science .................. 2
D M P 7 7 5 Clinical Pathology ................................ 3
C S 7 0 3 Clinical Skills II ..................................... 1
C S 7 0 9 Medicine I ........................................... 4
C S 7 1 5 Radiology ............................................ 3

Third professional year

Fall semester

D M P 7 7 7 Laboratory Diagnosis ......................... 1
D M P 7 8 0 Avian Diseases .................................. 3
C S 7 1 1 Medicine II ......................................... 4
C S 7 1 2 Food Animal Medicine .......................... 4
C S 7 2 9 Surgery I ........................................... 5
C S 8 0 1 Toxicology .......................................... 3

Spring semester

D M P 7 5 3 Zoonosis and Preventive Medicine .......... 3
C S 7 0 4 Clinical Skills III .................................. 1
C S 7 1 0 Companion Animal Medicine ................ 4
C S 7 1 3 Production Medicine .............................. 2
C S 7 1 4 Clinical Nutrition .................................. 3
C S 7 2 8 Theriogenology ..................................... 3
C S 7 3 0 Surgery II ........................................... 5
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/Anesthesia
dology, neuroscience, and pharmacology—major
  Necropsy/Diagnostic Investigation
  Plus minimum 9 hours of mini-electives and/or rotational
  Veterinary Medical Library
  The college’s library, which is a part of the
  Kansas State University libraries system, con-
  sists of approximately 40,000 volumes that
deal with all phases of veterinary medical lit-
  erature and many allied fields. It subscribes
to more than 800 journals and has medical/
  veterinary CD-ROM data bases.

Anatomy
and Physiology

Frank Blecha, Department Head
Professors Blecha, Cash, Erickson, Marcus, Musch, Poole, and Troyer; Associate
  Professors Freeman, Kenney, McAllister, Ross, Wangemann, and Weiss; Assistant
  Professors Hunter, Kumari, Mitchell, Provo-Klimek, and Schultz; Emeriti
  Professors Dunn, Fedde, Frey, Klemm, Upson, and Westfall; Adjunct Professors
  Hand and Toll.

The Department of Anatomy and Physiology presents courses in cell and systemic physiol-
  ogy, gross and microscopic anatomy, pharmacology, and neuroscience for students enrolled
  in either the veterinary medicine curriculum or graduate school.

Cardiovascular physiology, immunophysiol-
  ogy, neuroscience, and pharmacology—major
  research themes within the department—are
  supported with modern research facilities and state-of-the-art research equipment.

Clinical Sciences

G. Grauer, Interim Head
Professors Biller, Brightman, Carpenter,
  Chenoweth, Elmore, E. Gaughan, Fingland,
  Roush, Rush, Richardson, and Vestweber;
  Associate Professors Cox, Davidson,
  Hodgson, Hoskinson, Lillich, McMurphy,
  Roberson, Sanderson, and Samper; Assistant
  Professors Armbrust, Bagladi–Swanson,
  Bryant, Chun, Davis, Garrett, K. Gaughan,
  Gnaid, Hankins, Harkin, Holmes, Ketz-Riley,
  N. Isaza, R. Isaza, Mason, Moore, Olsen,
  Pollock, Radlinsky, Renberg, Schermerhorn,
  and Walz; Emeriti: Professors Anderson,
  Beeman, Blauch, Carnahan, Edwards,
  Gabbert, Guffy, Leith, Noordsy, Schoneweis,
  and Taussig; Adjunct Professors Allen,
  Davenport, Dewell, Griffin, Kirk, Logan,
  Richardson, Roudebush, Rupp, Welsh, and
  Zicker.

The KSU–Veterinary Medical Teaching
Hospital is equipped for diagnosis and treat-
  ment 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 pro-
 vide clinical veterinary service to clients in
  the local community, clients of referring vet-
  erinarians from a six-state region, and local
  and regional livestock farms. In addition to
  caring for sick animals, they provide preven-
  tative 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 dur-
  ing the year to various specialists on the clini-
  cal staff.

The department presents courses in medicine,
  surgery, obstetrics, theriogenology, anesthesi-
  ology, radiology, oncology, dermatology, and
  other clinical specialists to veterinary students
  and post-DVM trainees.

Diagnostic Medicine/
Pathobiology

M.M. Chengappa, Head
Professors Chengappa, Dryden, Fenwick,
  Gallard, Keeton, Kennedy, Minocha, Mosier,
  Nagaraja, Oehme, Ridley, Robertson,
  Schoning, Spire, and Stewart; Associate
  Professors Andrews, Chowdhury, Dritz,
  Kapil, Nielfield, Oberst, Pickrell, Rowland,
  Stockham, and Wyatt; Assistant Professors
  DeBey, Ganta, Sargeant, and Wilkerson;
  Emeriti: Professors Bailie, Cook, Dennis,
  Iandolo, Moore, Phillips, Strafuss, and
  Vorhies; Associate Professors Gray, Milleret,
  and Seidell; Adjunct Faculty Briggs, Henson,
  J. Jaax, N. Jaax, and Kiel.

Courses in pathology, parasitology, bacteriol-
  ogy, virology, immunology, public health, tox-
  icology, 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 inter-
  pretation of results of laboratory tests.

Courses in disease of laboratory animals,
  wildlife, and fish are offered for non-veteri-
  nary 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, environ-
  mental 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 diagnos-
  tic laboratory is nationally recognized as fully
  accredited with capabilities in all areas of
  diagnostic medicine by AAVLD.
Graduate School

R. W. Trewyn, Dean of the Graduate School and Vice Provost for Research
James A. Guikema, Associate Dean
Carol W. Shanklin, Assistant Dean
Cheryl J. Polson, Assistant Dean
K. Bobette McGaughey, Assistant to the Dean
103 Fairchild Hall
785-532-6191
1-800-651-1816
Fax: 785-532-2983
www.ksu.edu/grad

Graduate study
Kansas State University offers 64 master’s level programs and 43 doctoral level programs, offered as departmental or interdepartmental graduate programs. Graduate programs extend the undergraduate experience into advanced areas of concentration in chosen fields of specialization.

While graduate study has major components of study in specialized course work at the advanced level, graduate students must also develop a capacity for independent research and scholarly activity to enable them to carry out original research under the direction of faculty members who are experts in the discipline. Independent research normally results in the preparation and publication of the research study as a thesis or dissertation, and the student must satisfactorily defend that research before a faculty committee appointed by the dean of the Graduate School.

In several professional disciplines, the master’s degree curriculum is more typically structured in course work to place stronger emphasis on preparation for professional practice. While these professional programs also incorporate research methodologies in their graduate curriculum, the formal requirement of a thesis requiring independent research may be waived, generally replaced by a capstone document.

Students interested in pursuing graduate studies should consult the Graduate Catalog for descriptions of graduate programs and financial assistance opportunities.

Admission
All students desiring to pursue graduate studies must first be formally admitted by the Graduate School. Students normally submit applications for admission directly to departments. After reviewing a student’s qualifications to pursue advanced study, academic departments forward a recommendation on admission to the Graduate School for review and approval.

All students admitted to the Graduate School are required to adhere to the university policies established by the graduate faculty through the Graduate Council, including those published in the Graduate Handbook. They 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 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.

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 faculty
Consult the K-State Graduate Catalog, available at www.ksu.edu/grad/faculty/faculty.htm

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
Genetics
Geology
Grain science
Horticulture
Human nutrition
Industrial engineering
Kinesiology
Mass communications
Mathematics
Mechanical engineering
Microbiology
Nuclear engineering
Operations research
Physics
Plant pathology
Psychology
Statistics
V eterinary anatomy and physiology
V eterinary clinical sciences
V eterinary 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
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
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
Human nutrition
Mathematics
Microbiology (see biology)
Physics
Plant pathology
Psychology
Sociology
Statistics
Veterinary pathobiology
Veterinary physiology

Graduate program certificates
Air quality
Business administration
Classroom technology
Community planning
Complex fluid flows
Family financial planning
Feedlot production management
International service
Occupational health psychology
Real-time embedded systems design
Technical writing and professional communication
Women’s studies
Intercollegiate Athletics

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 University, and Texas Tech University.

Intercollegiate competition is open to all students and is coached by staff members who are specialists in their fields.

The men’s intercollegiate program competes in football, basketball, baseball, track (indoor and outdoor), cross country, and golf. The women’s program offers competition in cross country, volleyball, basketball, track (indoor and outdoor), tennis, golf, 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. Pr.: Consent of instructor.
ATHW 156. Intercollegiate Crew. (1) I. Pr.: Consent of instructor.
ATHW 157. Intercollegiate Golf. (1) I. Pr.: Consent of instructor.
K-State Research and Extension

Marc A. Johnson, Director
Forrest G. Chumley, Associate Director
Richard D 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 conducting educational programs in the core mission themes. The agents serve as a local source of information regarding programs of many states and federal agencies, and then help people apply this information to their specific situation.

Information is published in scientific journals; in station bulletins, extension bulletins, national and international conferences; and in popular journals and news releases to the press and radio and television stations. Requests for station publications should be sent to the Distribution Center, Umberger Hall.

Agricultural Experiment Station

Western Kansas Agricultural Research Centers: Colby–Garden City–Hays
Patrick I. Coyne, Head and Professor

Agricultural Research Center—Hays
Professors Brethour, Harvey, Martin, and Stahlam; Associate Professors Kofoed and Seifers; Assistant Professors Harmoney 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 Professor Lamm; 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, Klocke, and Witt; Assistant Professor Willson.

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; weed control; beef cattle grazing investigations; and forages.

Experiment fields and irrigation development farms
The Kansas Agricultural Experiment Station includes 11 experiment fields: North Central Kansas (Belleville), Irrigation (Scandia), Sandyland 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 Fair 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 Science Institute
Curtis Kastner, Director

The Food Science Institute facilitates training of undergraduate and graduate students; basic and applied research initiatives; and technical and scientific information transfer to consumers, food industry, and governmental agencies. More than 40 faculty are members of the Food Science Institute. Faculty are located in the Departments of Agronomy; Animal Sciences and Industry; Biochemistry; Biological and Agricultural Engineering; Chemical Engineering; Diagnostic Medicine/Pathobiology; Grain Science and Industry; Horticulture, Forestry, and Recreation Resources; Hotel, Restaurant, Institution Management and Dietetics; and Human Nutrition.

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 (KCARE) is an interdisciplinary research and education unit of K-State Research and Extension whose purpose is to provide focus on environmental issues related to agriculture. The center works with faculty from academic departments to provide coordination and support for research and educational activities in natural resources and environmental management. The center also works to garner financial support for programs and serves as a single point of contact for agencies and organizations outside K-State who have interest in natural resource and environmental issues.

Kansas Center for Sustainable Agriculture and Alternative Crops
William L. Hargrove, Director
Jana Beckman, Coordinator

KCASAAC is an interdisciplinary center that supports family farms in Kansas through research, education, and outreach programs focusing on production, storage, processing, and marketing technologies that boost small farm profitability, protect natural resources, and enhance rural communities. Examples of activities include evaluating production and marketing of new crops for Kansas, providing educational programs on value-added processing and niche marketing, and providing educational programs on whole farm planning and environmental assessment. KCASAAC was created by the 2000 Kansas Legislature out of concern for the survival of family farms.

Plant Biotechnology Center
Robert Zeigler, Director

The Plant Biotechnology Center links scientists in several colleges and departments who use molecular biology and cell and tissue culture to modify the plant genome. The center’s mission is to use biotechnology to add quality and value to Kansas products.

The major emphasis is to develop systems, approaches, linkages, and a knowledge base to apply biotechnology to plant improvement. The goals are to enhance yield and product quality for traditional uses and to explore value-added uses for novel markets.

Projects include activities that are immediately important to Kansas agriculture and that have a high probability of success in a relatively short period of time. They also include a component of basic research that will reach application at a later time. An important consideration is work on Kansas plants and plant products that could be designed to better meet the demands of national and international markets.

Extension Agriculture and Natural Resources

Daryl D. Buchholz, Assistant Director, Professor

Faculty in several departments of the Colleges of Agriculture and Engineering offer educational and technical assistance through the county extension network 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
Barry L. Flinchbaugh, State Leader

See faculty listing for the Department of Agricultural Economics.

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

The public affairs extension educational program provides educational information on policy issues of current interest. Problems are analyzed, alternatives and consequences examined, and the people are challenged to reach decisions.

The economic information program provides current data on factors affecting farming, business and industrial operations, labor supply and demand, and family living costs.

Extension marketing

The main projects of marketing include marketing information, 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

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

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

See faculty listing for the Department of Biological and Agricultural Engineering.

Extension agricultural engineering conducts an educational program which relates to engineering principles to agricultural concerns including water management, water quality, waste management, crop and grain management systems, food processing, ag safety, pesticide application equipment, and livestock production facilities.

Extension agronomy

David B. Mengel, Head
Paul D. Ohlenbusch, State Leader

See faculty listing for the Department of Agronomy.

Extension agronomy conducts a statewide educational program in agricultural crop production and natural resource conservation. The program is focused on conservation and protection of natural resources through education and technology transfer that results in improved, stable crop production efficiency. The breadth of the program is in understanding the dynamics of crops, weeds, soils, and water on crop and grazing lands, management, and production.

Extension animal sciences and industry

Jack G. Riley, Head
Gerry L. Kuhl, State Leader

See faculty listing for the Department of Animal Sciences and Industry.

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. Higgin, State Leader  
See faculty listing for the Department of Entomology.

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  
See faculty listing for the Department of Grain Science and Industry.

Educational efforts target all sectors of the grain industry and include people involved with wheat breeding, production, grain handling, merchandising, processing, baking, feed manufacturing, and regulatory compliance. Two thrusts of this program include grain utilization and processing quality; and flour mill, feed mill, and grain elevator management. Subjects include wheat quality as it relates to milling and baking properties, commercial and on-farm grain storage and quality maintenance techniques, on-farm feed manufacturing, commercial feed processing, grain industry safety and regulatory compliance, plant sanitation, food safety, and grain grading.

Extension horticulture, forestry, and recreation resources  
Thomas D. Warner, Head  
Charles W. Marr, State Leader  
See faculty listing for the Department of Horticulture, Forestry, and Recreation Resources.

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  
See faculty listing for the Department of Plant Pathology.

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.

Family and Consumer Sciences  
Paula K. Peters, Assistant Director

Community development
Associate Specialist Kahl; Emeriti: Professors Frazier and Norby; Associate Professors Halazon and Sisk; Associate Specialist McAdoo.

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  
Charlotte Shoup Olsen, State Leader  
See faculty listing for the School of Family Studies and Human Services.

Apparel, textiles, and interior design
Gwendolyn O’Neal, Head  
See faculty listing for the Department of Apparel, Textiles, and Interior Design.

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
Denis Mederios, Head  
Mary L. Meek Higgins, State Leader  
See faculty listing for the Department of Human Nutrition.

Food safety
See faculty listing for the Department of Food Science and Industry.

Office of Community Health
David A. Dzewaltowski, Extension Distinguished Professor

Services and Facilities  

Communications
R. R. Furbee, Head  
See faculty listing for the Department of Communications.

In addition to its teaching and research program, the Department of Communications provides comprehensive communications and computer-based technology support and consultation for all offices, departments, and centers in K-State Research and Extension and the College of Agriculture.
Our faculty have professional experience in editing and producing publications, creating graphic design, writing news releases, producing radio and television news and features, managing information systems, training to enhance communication and technology software skills, 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 Professors Hale and Young; Assistant Professors Alam and Dumler; Instructors Addison, Fidel, and Frisbie; Director Hartman; Emeriti: Professor Mann; Assistant Professor Blankenhagen.

Northwest Area Office
Reba White, Area Extension Director
Associate Professors Barker and O’Brien; Assistant Professors Johnson and Stockton; Instructors Curry and Olson; Director White; Emeriti: Assistant Professor Mikesell and Overley.

South Central Area Office
J. D. McNutt, Area Extension Director
Professor McNutt; Associate Professors Duncan and Phillips; Assistant Professor Paisley; Instructors Graber and Hinshaw; Emeriti: Professors Cox and Van Meter; Associate Professors Albright and McCrayneld.

Northeast Area Office
James L. Lindquist, Area Extension Director
Associate Professor Mark; Assistant Professor DeRouchey; Instructors Christian, Kainhill, Lubben, Mack, Musick, Nolting, and White-Huling; Director Lindquist; Emeriti: Professors Figurski, Francis, and Newsome; Associate Professor Utermoelen.

Southeast Area Office
Benny S. Robbins, Area Extension Director
Professors Brazy, Kilgore, Robbins, and Price; Associate Professor Price; Assistant Professor Fogleman; Emeriti: Professor 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
Elizabeth Stevens, Associate Vice Provost and Associate Dean of Continuing Education
A. David Stewart, Assistant Dean for Program Development and Marketing
Lynda Spire, Assistant Dean, Continuing Learning
Douglas W. King, Director, Administrative Systems
Rob Caffey, Director of Information Systems
John Allard, Director, Kansas Regents Network (TELENET 2)
Linda Teener, Director, UFM

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, CD-ROM, face-to-face instruction, and electronic synchronous instruction. Location, once a major obstacle for those seeking degrees, continuing 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 degrees
Animal science and industry
Interdisciplinary social science
General business
Food science and industry
Early childhood education (Kansas only)
Course work leading towards a bachelor’s degree in dietetics

Master’s degrees
Agribusiness
Electrical engineering
Civil engineering
Software engineering
Chemical engineering
Engineering management
Industrial and organizational psychology
Family financial planning

Degree programs offered in Kansas communities

Master’s degrees
Adult and continuing education—Kansas City and Wichita
Elementary/secondary education, multicultural/urban emphasis—Kansas City
Course work leading toward an M.S. in education—Salina and Topeka
Classroom technology master’s degree specialty in elementary/secondary education—Manhattan area
Environmental planning and management—Kansas only

Certificates, endorsements, specialty programs, and teacher certification

Personal financial planning certificate
ESL endorsement in elementary and secondary education—limited to Kansas teachers only
Food science certificate program
Early childhood education endorsement—limited to Kansas only
Information about certification/recertification and other CEU noncredit activities is available on the website.

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 noncredit 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: bhudgens@oznet.ksu.edu  
www.oznet.ksu.edu/dp_iap

The Office of International Agricultural Programs provides administrative services to globalize teaching, research, and technical outreach in the College of Agriculture. It offers opportunities for international travel through agricultural study tours, semester aboard programs, and summer internships in other countries. Through its promotion of K-State degree and short-course training opportunities, it attracts international students, scholars, and visitors to Manhattan.

Since 1956 the office has mobilized K-State technical expertise for agricultural development projects in India, Nigeria, the Philippines, Botswana, Morocco, and Kenya by facilitating faculty consultancies, sabbatical leaves, and international collaborative research and training. The office provides supervision for sponsored international students, travel information and funding to College of Agriculture faculty for international travel, and logistical support for international visitors.

### 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, cable channel 8, 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 produces and distributes university-level instructional material and credit/noncredit continuing education material.
### University Faculty

#### Graduate Faculty

Members of the graduate faculty are listed in the K-State Graduate Catalog. An updated list is available on the web: [www.ksu.edu/grad/faculty/faculty.htm](http://www.ksu.edu/grad/faculty/faculty.htm).

This section lists each faculty member's name, title, academic degrees, and year of first appointment at K-State (in parentheses).

#### About this section

This section lists each faculty member’s name, title, academic degrees, and year of first appointment at K-State (in parentheses).

<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Institution</th>
<th>Years and Degrees</th>
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<tr>
<td>Amos, John M.</td>
<td>Adjunct Prof., Industrial and Manufacturing Systems Engineering (1987). BS 1956, MS 1957, Kansas St. U.; PhD 1960, Ohio St. U.</td>
<td>1956-1960</td>
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CURNUTTE, BASIL J., Prof. Emeritus of Physics (1954). BS 1945, U.S. Naval Academy; PhD 1953, Ohio St. U.


DAVIS, LAWRENCE CLARK, Prof. of Biochemistry; Biochemist, Research and Extension (1975). BS 1966, Haverford Col.; PhD 1970, Yeshiva U.


DEHILL, LINCOLN W., Prof. Emeritus of Management (1979). BS 1949, Bowling Green St. U.; MS 1951, Indiana U.; PhD 1964, Ohio St. U.


DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE


DEGLER, WALTER S., Adjunct Research Prof. of Psychology (1974). BS 1971, MS 1972, Kansas St. U.; PhD 1978, California St. U.


GALLOWAY, RICHARD R., Assoc. Dean of Engineering and Prof. of Electrical and Computer Engineering (1968). BS 1964, MS 1966, PhD 1968, Iowa St. U.


GANTA, ROMAN REDDY, Prof. of Diagnostic Medicine/Pathobiology (1988). BS 1978, MS 1980, Andhra U.; PhD 1987, All India Inst. of Medical Sciences, New Delhi.


FREY, E. BETHI, Prof. Emerita of Human Nutrition; Agr. Exp. Sta. (1959). BS 1945, U. of New Mexico; MS 1949, Ohio St. U.; PhD 1959, Michigan St. U.

FREYER, HOLLY CLAIRE, Prof. Emerita of Statistics (1940). BS 1931, U. of Oregon; MS 1933, Oregon St. U.; PhD 1940, Iowa St. U.


GERKINS, WILLIAM E., Prof. Emeritus of Professional Pilot Program (1979). BA 1971, Park Col.; All flight ratings, airplane and helicopter.


GERMANN, RALPH N., Farm Management Association Fieldman Emeritus (1956). BS 1951, MS 1957, Kansas St. U.

GEYER, KATHERINE, Prof. Emerita of Physical Education, Dance, and Leisure Studies (1927). BS 1927, Ohio St. U.; MA 1934, Columbia U.


GORMLEY, SUSAN, Arts and Sciences Advisor (1988). BSN 1964, Catholic U. of America; MS 1989, Kansas St. U.


HAY, SUZY E., Program Coordinator, Continuing Education (1994). BS 1999, Kansas St. U.


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. Dakota St. U.; MS 1973, PhD 1975, Kansas St. U.


HELLESTUB, GARY, Chief Executive Officer, KSU Foundation (1986). BS 1969, Kansas St. U.


HENDERSO N, F. ROBERT, Prof. Emeritus of Animal Sciences and Industry; Ext. Specialist, Animal Damage Control (1968). BS, MS 1956, Fort Hays 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.


JOHNSON, CASEY K., Assoc. Prof. of Agriculture; Research Agronomist in Charge, East Central Kansas (P.O. 1997). BS 1970, MS 1974, Kansas St. U.

JOHNSON, JAMES L., Asst. Prof. of Agricultural Engineering; Ext. Specialist, Farm and Consumer Sciences, Seward Co., Liberal (2001). BS 2001, Kansas St. U.


KELLEY, PAUL LEO, Prof. Emeritus, Agricultural Economics; Research Economist, Agr. Exp. Sta. (1943). BS 1943, MS 1946, Kansas St. U.; PhD 1956, Iowa St. U.


KEMP, KENNETH E., Prof. of Statistics; Consultant, Research and Extension (1986). BS 1963, MS 1965, PhD 1987, Michigan St. U.


MARTIN, CHARLES R., Adjunct Asst. Prof. of Biological and Agricultural Engineering (1985). BS 1958, Purdue U.


McCARTHY, PAUL E., Prof. Emeritus of English (1967). BA 1948, MFA 1951, St. U. of Iowa; PhD 1962, U. of Texas.


MCCORMICK, FRANK JAMES, Prof. Emeritus of Civil Engineering (1939). BS 1927, MS 1931, Iowa St. U.; Professional Engineer, 1944.

McCOY, JOHN HENRY, Prof. Emeritus of Agricultural Economics (1940). BS 1940, MS 1942, Kansas St. U.; PhD 1955, U. of Wisconsin.


McELOW, ROBERT, Prof. Emeritus of Agronomy; Crop Science (1959). BS 1954, MS 1959, Oklahoma St. U.


McFARLAND, MARCIA R., Prof., Ext. Specialist, 4–H Youth Programs (1980). BS 1975, MS 1977, Wichita St. U.


McGATLIN, JODI R., Dir. of Constituent Programs, K-State Alumni Association (1996). BS 1990, Kansas St. U.

McGUIGHE, BOBETTE, Asst. to the Dean, Graduate School (1989). BS 1986, Kansas St. U.


McGOVERN, REGINALD, Asst. VP for Educational and Personal Dev. Programs; Dir. of Upward Bound (1986). BS 1979, Alcorn U.; MS 1986, Kansas St. U.


McGRAW, EUGENE THOMAS, Prof. Emeritus of Interior Arch. and Regional and Community Planning (1958). BArch 1957, Oklahoma St. U.; MRP 1963, Kansas St. U.


MECENOLDS, KENNETH L., Assoc. Prof. Emeritus; Ext. Agricultural Economist, South Central (1949). BS 1950, MS 1954, Kansas St. U.


MEDLIN, ROGER C., Prof. Emeritus; Communications (1967). BS 1948, MS 1969, Kansas St. U.


MELGAREJO, TONATIUIH, Asst. Prof. of Clinical Sciences (2003). DVM 1986, National A. U. of Mexico; MS 1993, PhD 1999, Purdue U.


MELHAN, HANI G., Assoc. Prof. of Civil Engineering (1969). BS 1950, MS 1954, Kansas St. U.

MEREDITH, WILLIAM H., Prof. and Dir. of School of Family Studies and Human Services (1999). BS 1971, MS 1971, Kansas St. U.; MSW 1979, PhD 1983, U. of Nebraska.
MORCOS, MEDHAT M., Diplomate 1986, American Col. of V et. Internal Medicine.
MORCOS, JAMES B., PhD 1974, Cornell U.
MORNINGS, WILLIAM S., BA 1979, Wichita St. U.
MORES, MICHAEL, Dir. of Marketing, Athletics (2000). BS 1999, Iowa St.
MORROW, SHARON M., Dir. of U. Publications (1986). BS 1975, Ball St. U.
MORSE, REED FRANKLIN, Prof. Emeritus of Civil Engineering (1923). BA 1921, Cornell Col.; BS 1923, Iowa St. U.; MS 1933, Kansas St. U.; PhD 1941, Cornell U.; Professional Engineer, 1939.
MORTENSEN, ALVIN NORMAN, Assoc. Prof. of Music (1923). BA 1921, Cornell Col.; BS 1923, Iowa St. U.; MS 1933, Kansas St. U.; PhD 1941, Cornell U.; Professional Engineer, 1939.
MORTENSEN, JACOB E., Prof. Emeritus of Clinical Sciences (1943). DVM 1945, MS 1948, Kansas St. U.; Diplomate 1972, American Col. of Vet. Internal Medicine.


NEWTON, FRED B., Dir. of Counseling Services; Prof. of Education (1980). BA 1965, Muskingum Coll.; Ohio; MA 1967, Ohio St. U.; PhD 1972, U. of Missouri–Columbia.


NORDIN, PHILIP, Prof. Emeritus of Biochemistry (1954). BS 1949, MS 1950, U. of Saskatchewan, Canada; PhD 1953, Iowa U.


OARD, DARRELL L., Research Asst. of Biological and Agricultural Engineering (1972). BS 1968, Emporia St. U.


O'AKLIEF, CHARLES R., 1972, Kansas St. U.


PARKER, LEONARD C., Prof. Emeritus; Administrator, Farm Management Association Program (1956). BS 1952, MS 1967, Kansas St. U.


PECK, ERNEST G., Assoc. Prof. Emeritus; Communications Instructional Media Specialist (1955). BS 1950, MS 1965, Kansas St. U.


PELLETIER, LAWRENCE JR., Adjunct Asst. Prof. of Dietetics (1985). BA 1964, Bowdoin Coll.; MD 1968, Columbia U.


PERCHLILLET, JEAN-PIERRE H., Prof. of Biology (1982). BS 1968, MS 1970, PhD 1974, Faculty and Sciences; U. of Paris VI.


PERIC, DUNJA, Asst. Prof. of Arch. (1989). Eng. of Management; Diplomate 1983, American Board of Toxicology.


PETRZELLER, LAURENCE JR., Adjunct Asst. Prof. of Dietetics (1985). BA 1964, Bowdoin Coll.; MD 1968, Columbia U.


PISHNEY, HOLLY C., Special Events Coord., Housing and Dining Services (2001). BS 2001, Kansas St. U.


POULTON, ROBERT, Asst. Prof. of Animal Sciences Unit Dir., Housing and Dining Services (2001). BS 2001, Kansas St. U.

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POULTON, ROBERT, Asst. Prof. of Animal Sciences Unit Dir., Housing and Dining Services (2001). BS 2001, Kansas St. U.


REDDI, LAKSHMI, Prof. and Head of Civil Engineering (1992). BTech 1982, I.N.T.U.; India; MS 1984, PhD 1988, Ohio State U.


REDMAN, ALICE LOIS, Prof. Emerita; Ext. Specialist, 4-H Youth Programs (1978). BS 1953, U. of Missouri; MS 1959, U. of Maryland.


RICHARD, PATRICK, U. Dist. Prof. of Physics; Dir. of J.R. Macdonald Lab (1972). BS 1961, U. of Northwestern Louisiana; PhD 1964, Florida State U.


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■ University Faculty

SHELTON, LEWIS E., Assoc. Prof. of Speech
Communication, Theatre, and Dance (1973). BA 1963,
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