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Graduate Bulletin 1989-91

This catalog is a guide for information only and is not a contract.

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Wichita, Kansas 67208-1595
The Graduate School telephone number is:
(316) 689-3095

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General Information

1988 University and Academic Officers

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Glen W. Zumwalt, Engineering
Kenneth G. Miller, Mathematics
Robert H. Ross, Graduate Council Representative

Mission Statement

In December 1986, the Kansas Board of Regents approved the following mission statement for the Wichita State University:

The Wichita State University is an urban university with a focused mission intended to meet the industrial, business, educational, social, and cultural needs of the greater Wichita area. The University’s primary goal is to serve citizens in the thirteen-county area surrounding Wichita and Sedgwick County, with special sensitivity to the large number of minority citizens residing in the urban area. Its urban student body is predominantly part-time and beyond the traditional college age, thus requiring special support services.

Programs of study in the liberal arts and sciences, fine arts, business, engineering, education and health and human services lead to the associate degrees and terminal degrees currently approved at the University. The Wichita State University offers more than 70 undergraduate degree programs in more than 150 areas of study in six undergraduate colleges: W. Frank Barton School of Business, College of Education, College of Engineering, College of Fine Arts, College of...
Health Professions and Fairmount College of Liberal Arts and Sciences. The Graduate School offers an extensive program including 41 master's degrees which offer study in more than 100 areas: specialist in education degrees; and doctoral degrees in applied mathematics, in chemistry, in communicative disorders and sciences, and in engineering. A complete listing of the programs and degrees offered at The Wichita State University is located on the inside back cover of this catalog.

Committed to fulfilling the needs of each student, WSU offers the traditional fall and spring semesters; it has the largest number of evening and summer course offerings in the Kansas Board of Regents' system. The summer session features a flexible time format with a three-week presession and two four-week sessions held concurrently with the regular eight-week session.

Although WSU's first commitment is to excellence in instruction, it has an equally strong commitment to excellence in research and public service as integral parts of its educational mission.

An important resource to the Wichita area business community, Wichita State supports research and development through programs such as the Center for Productivity Enhancement. The corporate community utilizes programs offered by the University's Center for Management Development for continuing professional development. The Center for Entrepreneurship and Small Business Management encourages development of small businesses, while the Hugo Wall Center for Urban Studies supports local and state government activities.

The 330-acre campus is modern and accessible and at the same time retains the flavor of the University's 94-year heritage. Fifty pieces of sculpture by internationally known artists adorn the campus. Personnages Oiseaux, a colorful mural created by the great Spanish artist Joan Miro, is displayed on the wall of the Edwin A. Ulrich Museum of Art.

During the past 15 years, Wichita State has more than doubled its instructional space, adding major buildings for art, engineering, health sciences, biological sciences, physical education, dance and liberal arts and sciences.

One of the newest additions, completed in 1986, makes Media Resources Center the most comprehensive telecommunications facility in the state. Another part of this three-stage construction project is the expansion and renovation of Ablah Library scheduled for completion in 1989.

Campus construction projects include Devlin Hall, which will house the Center for Entrepreneurship; and the Institute for Aviation Research, which will enhance the University's research association with the local aircraft industry.

More than 190 social and special interest clubs provide opportunities for students to meet and work with others who share their interests. Eight national sororities and 13 national fraternities are active on campus.

There are sports opportunities in tennis, cross-country, basketball, track, golf, crew, soccer and bowling for all students. Teams also are fielded in baseball for men and volleyball and softball for women.

**History**

Wichita State began as Fairmount College and was operated by the Congregational Church from 1895 until 1926 when by a vote of the citizens of Wichita, it became the first municipal university west of the Mississippi.

After 38 years as a municipal university, WSU again changed its status July 1, 1964, when it officially entered the state system of higher education. Now, The Wichita State University is one of six state universities governed by the Kansas Board of Regents.

The Graduate School

Offices: 107 Jardine Hall
Michael Tilford, Dean
Jeanette Jeffers, Assistant Dean
Margaret Wood, Office Manager

The Graduate School at The Wichita State University supervises graduate study at the University, establishes standards for admission to graduate work and recommends students who have completed requirements for graduation to the Kansas Board of Regents.

Academic graduate programs at Wichita State include master's, specialist and doctoral programs. The PhD is granted in applied mathematics, chemistry, communicative disorders and sciences (logopedics), and in engineering. A doctoral transfer arrangement with the University of Kansas is available in educational administration.

The graduate faculty consists of the University president, the executive vice president for academic affairs, the deans of the Graduate School and all other colleges at Wichita State and regular faculty members. Regular faculty are recommended for appointment to the graduate faculty by the chairpersons of their departments and approved by the Graduate Council. Recommendations for graduate faculty status are based on rank (above instructor), degree in the field, or training or experience; scholarly or professional work; and the need for the faculty member to hold graduate faculty status.

The Graduate Council consists of the deans of the Graduate School, ten members of the graduate faculty elected by that faculty, one member appointed by the graduate dean and one graduate student. The council determines and recommends general policies for the Graduate School. The council also advises with the dean on matters submitted by him and serves as a committee on exceptions.

In addition, a Doctoral Program Subcouncil exists for the general advocacy of doctoral programs throughout the University community and to review, determine and recommend policies for doctoral programs. Membership consists of the graduate dean, one representative from each doctoral program and one member elected from the Graduate Council.

The primary goals of the Graduate School are to encourage independent scholarship and to develop competence in research or other creative activity. Students are expected to master special fields as well as to develop appropriate methods of inquiry for future professional growth.

General University Policies

Human Relations

It is the policy of The Wichita State University not to discriminate on the basis of race, color, religion, national origin, sex, age, disability or political affiliation in its education programs, activities or employment policies as required by the Civil Rights Act of 1964 and subsequent amendments (including Title IX of the Education Amendments of 1972), federal executive orders, federal regulations and guidelines and the State's Executive Order No. 75-9. The University is further committed to take affirmative action to assure that equality of opportunity shall exist. Questions concerning discrimination should be directed to James J. Rhattigan, vice president for student affairs and dean of students, Grace Wilkie Hall.

Student Responsibility

Students at The Wichita State University have the following responsibilities:

1. To consult their advisers on all matters pertaining to their academic careers, including changes in their programs.
2. To observe all regulations of their college and select courses according to the requirements of that college.
3. To attend all meetings of each class in which they are enrolled (instructors will announce at the beginning of the semester if they consider attendance in computing final grades).
4. To fulfill all requirements for graduation.
5. To be personally responsible for fulfilling all requirements and observing all regulations at Wichita State.
6. To answer promptly to all written notices from advisers, faculty, deans and other University officers.
7. To file an Application for Degree card in the dean's office of the appropriate college at least two semesters before the expected date of graduation.
8. To enroll in only those courses for which the stated prerequisite(s) (if there are any) have been satisfactorily completed. Failure to comply with this procedure may result in administrative withdrawal.

Students should also comply with the principles in the following statement, which was adopted by the Student Senate, the Faculty Senate and the Administrative Council of the University:

The Wichita State University reaffirms the principle of intellectual freedom in scholarly activity for University students, and it recognizes the full citizenship rights of students in inquiry, discussion and such actions as they may choose to take on public issues.

The rights and freedoms of students involve concomitant responsibilities. Incumbent on all students, as on all citizens, is the responsibility to observe the University's rules of orderly procedures and the laws of the larger community of which the University is a part. In the matter of actions on public issues, to speak one's opinion, to petition, to distribute literature, to assemble peacefully and hold meetings, to use the persuasion of ideas and other actions within the bounds of orderly and lawful procedures are sanctioned by the University. But infringement on the rights of others, acts or threats of violence to persons, destruction of property, disruption or other interference with the normal functioning of the University and its personnel and other disorderly and unlawful acts will not be countenanced.

Within its sphere of responsibilities the University will afford students proper procedural safeguards to resolve matters in dispute. Those who willfully violate these University standards must expect to face disciplinary action on the part of the institution, which may include reprimand, probation or suspension, consistent with campus provisions for due process.

Academic Honesty

Opportunities for learning at The Wichita State University involve the students' rights to express their views and to take reasoned exception to the views of faculty, to examine all questions felt to be appropriate to a course of study, to be protected from improper disclosure of their views and beliefs; to be examined in a fair and impartial manner, and to be treated with dignity and respect. Students are responsible, however, for learning the content of any course of study outlined by their instructors, regardless of any views or judgments privately held and for demonstrating their attainment in an honest manner.

Students who compromise the integrity of the classroom are subject to disciplinary action on the part of the University. Violations of classroom standards include:

1. Cheating in any form, whether in formal examinations or elsewhere
2. Plagiarism, using the work of others as one's own without assigning proper credit to the source
3. Misrepresentation of any work
4. Falsification, forgery or alteration of any documents pertaining to academic records.

5. Disruptive behavior in a course of study or abusiveness toward faculty or fellow students. A standard of honesty, fairly applied to all students, is essential to a learning environment. Students violating such standards must accept the consequences; penalties are assessed by appropriate classroom instructors or other designated persons. Serious cases may result in discipline at the college or university level and may result in suspension or dismissal. Students accused of abridging a standard of honesty may protect themselves through established academic appeal procedures and are assured of due process and the right of appeal from accusations or penalties felt to be unjust.

Open Records

Students may inspect and review their educational records maintained by Wichita State. According to law, the University is allowed 45 days to respond to the requests, but typically less time is required.

Students wishing to challenge the accuracy of their records are entitled to a hearing, upon written request to the dean of the college in which they are enrolled. The hearing is arranged by the dean.

Students may also receive the names of persons from outside the University who request access to their records and the reason for such requests. Similarly, students may also be informed of requests for records from individuals within the University who normally do not review students' education records.

Information in a student's records will not be released without his or her written permission.

Exemptions to those statements are noted in Public Law 93-380. A copy of the law is available to all students in the Division of Student Affairs, Grace Wilkie Hall.

Accident or Injury

The State of Kansas and The Wichita State University do not insure against accidents or injury to students which may occur during University-sponsored activities on or off campus. The University will make every reasonable attempt to advise students concerning potential danger of accident or injury. Students are expected to act responsibly by taking necessary precautions to prevent accidents. Students are also advised to protect themselves from the financial burden of accident or injury through a personal insurance policy.

Courses

Courses carrying graduate credit are listed in the Graduate Bulletin. Other courses may be taken as supporting courses but are not counted toward an advanced degree and are not computed in a student's grade point average. Only courses numbered 500 and above can carry graduate credit. In some cases courses numbered 500 through 699 are not allowed for graduate credit in a student's major field and students should become aware of such restrictions before enrolling.

Courses numbered 500 through 799 may be taken by both undergraduate and graduate students. In such mixed classes a discernibly higher level of performance by graduate students is expected with the nature of this differential performance set by the professor. Graduate students enrolling in such classes automatically earn graduate credit unless the professor and adviser request the Graduate School to have the given enrollment designated on the transcript as "Undergraduate Credit Only."

Courses numbered 700-899 are designed primarily for Graduate I students (students who ordinarily have not accumulated more than 30 hours in a graduate program). Courses numbered 900-999 are designed primarily for Graduate II students (those who ordinarily have completed more than 30 hours in a graduate program). In special cases, courses in areas where advanced degree programs are not currently available may carry graduate credit and apply toward an advanced degree in a related field or simply count as graduate credit for some nondegree purpose. Any of these courses applied toward an advanced degree program must have the approval of the student's adviser and the chairperson of the department involved in advance of enrollment.

Graduate School Policies

Admission to Graduate Study

In order to receive graduate credit at The Wichita State University, students must be admitted to some category of study in the Graduate School.

The primary admissions criterion is a baccalaureate degree from a regionally accredited institution. The basis on which credits are awarded for the baccalaureate degree must be consistent with the policies and procedures for the award of such credit at Wichita State.

Applicants with bachelor's degrees in programs in which credit was awarded for experiences which were outside the control of a regionally accredited educational institution, e.g. credit for life experience, may be viewed as inadequately prepared to undertake graduate study. In such instances, admission to the Graduate School may be denied or prerequisite course work assigned to fill the deficiencies.

A number of admission categories are available in the Graduate School to accommodate qualified students simply desiring to earn graduate credit for personal and professional reasons as well as those desiring to pursue graduate degrees. Courses numbered 500 and above carry graduate credit for students admitted to the Graduate School and enrolling with a Graduate School major code. Courses numbered 800 and above are restricted to graduate students only. Certain Graduate School admission categories restrict students in these categories to below 800-level classes as described in later sections.

The Graduate School does not deal with teacher certification matters as these are handled by the College of Education Teacher Certification Service Office, 151 Corbin Education Center.

Records required for admission evaluation should reach the Graduate School at least three weeks before registration for the term when admission is desired. Materials received after this date will be processed as the time of staff and faculty permits, but the Graduate School cannot guarantee that final action can be completed (Admissions to allow enrollments for graduate credit)

Because of faculty and facility limitations, there are restrictions on the number of students admitted to some graduate programs (e.g., art, computer science, psychology, administration of justice, engineering, nursing, and communicative disorders and sciences), and these limits may prevent some students from being admitted although they may otherwise qualify. Since departments having enrollment limitations generally take action on new applicants in March, early application is recommended. Preference usually is given to degree program applicants.

To be considered for degree or non-degree graduate status, students must submit a completed Application for Admission and an official transcript as described below to the Graduate School, 107 Jardine Hall, The Wichita State University, Wichita, Kansas 67208-1595.

An admission to the Graduate School remains valid only if students enroll and complete at least one class as graduate students within one calendar year of their admission date.
Graduation Requirements
Several steps are required before a student receives a graduate degree from WSU. Although they are explained in more detail in other sections of the Bulletin, the following list summarizes the requirements:
1. Formal admission to the appropriate degree program.
2. An approved Plan of Study on file in the Graduate School office.
3. Satisfactory completion of prerequisites indicated when admitted.
4. Satisfactory completion of tool or language requirements.
5. An Application for Degree submitted before the deadline.
6. Completion of term break to this category, including any postgraduate work taken at Wichita State University.
7. Submission of the bound thesis or a bindery receipt by the deadline specified.
8. A cumulative graduate grade point average of at least 3.000 for all courses on the Plan of Study and for all graduate work taken at Wichita State University.
9. A grade point average based upon the last 60 hours of course work (or nearest semester or term break to this), including any post-baccalaureate graduate work.

Graduate Degree Program Admission
General Information
Admission to a graduate degree program is based primarily upon an applicant's previous academic record; therefore, two official transcripts of all previous academic work must be submitted along with the Application for Admission. Some departments/programs require higher grade point averages than the minimum Graduate School requirements listed below, and other admission credentials (reference letters, Graduate Record Examination(s), etc.) are sometimes required for the PhD programs. Individual departments should be consulted about such requirements.

Full Standing
Minimum Graduate School admission requirements for full standing are:
1. A baccalaureate degree from a regionally accredited institution.
2. A grade point average of at least 2.750 based upon the last 60 hours of course work (or nearest semester or term break to this), including any post-baccalaureate graduate work.
3. No more than nine hours of background deficiencies in the major field of graduate study desired.

Conditional Status
Students who may have background deficiencies in excess of nine hours or who have not submitted required references, examinations, etc., but who otherwise have met the full-standing degree program requirements may be granted admission on a conditional basis. Students are allowed one semester to submit the remaining credentials and one year to remove background deficiencies. Transfer to an appropriate nondegree category or to the Division of Continuing Education will result if the necessary conditions are not satisfactorily met.

Probationary Status
Students who do not meet the minimum academic requirements for full-standing degree program admission may be admitted on probation when reasonable evidence exists to indicate their ability to do satisfactory degree program work.

Graduate Nondegree Admission
Students originally admitted to a nondegree category may later reapply for admission to degree program status. A maximum of 12 hours of graduate credit taken while in a nondegree category may be counted in a degree program, provided students have obtained the approval of their major departments and the graduate dean.

Category A
Students who already possess a graduate degree or who do not want to seek a graduate degree at Wichita State University should apply for admission in this category, if they meet the following requirements:
1. A baccalaureate degree from a regionally accredited institution.
2. A grade point average of at least 2.750 based upon the last 60 hours of course work (or nearest semester or term break to this), including any post-baccalaureate graduate work.

Category B
Students who do not meet the 2.750 grade point average requirements may be admitted to this category on probation if reasonable evidence exists to indicate their ability to perform satisfactorily in 800-level or above course work.

Category B
Students not seeking a graduate degree at Wichita State but who want to continue personal and professional development beyond the baccalaureate level through enrollment in certain graduate-level courses may be admitted in this category. Admission requires submission to the Graduate School of a completed Application for Admission form and two official transcripts showing the award of a baccalaureate degree from a regionally accredited institution.

Workshops Only
Persons with a baccalaureate degree who are interested in taking only workshops (courses numbered 750) and want a simplified admission process should apply for workshops-only status. An Application for Special Workshop Status form and one of four possible admission credentials listed on the application form must be submitted. Enrollment is limited to courses numbered 750.

Guest Students
Graduate students in good standing at another accredited graduate school may be admitted to Wichita State as guest students, if they have their school's permission to take up to one semester's work at WSU for transfer back to their home institutions. Admission requires the submission of a completed Application for Admission and a signed letter from the graduate dean or the dean's representative at the home institution certifying the student's status there. Such admission is valid for only one semester.
Graduate Credit for Seniors
(Senior Rule)

Seniors at Wichita State or neighboring baccalaureate-degree-granting institutions may qualify to take work for graduate credit under the Senior Rule. This opportunity applies to students who have an overall grade point average of 3.00 or above in their major field and in upper-division courses and who are within ten hours of completing the bachelor's degree. Work must go beyond the requirements for the bachelor's degree, and the degree must be completed within the semester in which a student takes the graduate courses.

Students who wish to earn graduate credit under the Senior Rule must apply to the Graduate School for regular graduate admission and also complete a Senior Rule application form. Approval of the Senior Rule course work is needed from the student's major adviser, the department chairperson or graduate coordinator for the department in which the work is to be taken, the undergraduate dean of the student's college and the dean of the Graduate School before any courses can be taken for graduate credit. In addition, students from neighboring institutions must be admitted as undergraduates (possibly as guest students) through the University admissions office.

International Students

A $25 nonrefundable application fee is required of international students, except those entering the Graduate School directly after attending Wichita State as undergraduates.

In addition to Graduate School and departmental admission requirements, international students must present a completed official Wichita State Graduate School Statement of Financial Support before necessary visa forms can be issued. International students must also attain a minimum score of 550 on the Test of English as a Foreign Language (TOEFL), unless they have attended another United States university for a minimum of one year.

International students who qualify for admission to the Graduate School may apply to their department chairperson or the dean of their college for information on graduate fellowships and assistantships. Enrollment in nine hours at the graduate level each semester is mandatory.

International students presently in the United States on a student visa obtained by admission to another U.S. university will not be considered for admission to Wichita State until they have attended the institution issuing their original I-20 for at least one year. Exceptions to this policy require the concurrence, in writing, of the institution issuing the original I-20.

International students requiring student visas are not eligible for nondegree admission categories.

Former WSU Graduate Students

Students who have completed graduate course work at The Wichita State University but who do not enroll for more than 12 months are placed in an inactive status on the registrar's computer data base. To enroll again, such students need to write or call the Graduate School office and ask to have their records reactivated. Such notification needs to be done at least one month in advance of any planned enrollment. Extended periods of nonenrollment may result in the need to complete a file reactivation form to reestablish current records. Degree-seeking graduate students are expected to make progress toward their degree in a timely manner (six year time limit). Some departments take action to dismiss students who absent themselves for periods of a year or more.

Students who complete graduate degrees at The Wichita State University are transferred to nondegree, category A, status in the academic field of their graduate degree which allows continued enrollment for graduate credit at WSU. Should such students desire to undertake a new graduate program or switch major areas, a new application for admission to the correct area of work in the Graduate School must be filed with the Graduate School office. New transcripts are not needed in this case.

Independent/Directed Study Courses

A primary goal of the Graduate School is to encourage independent scholarship. Thus, graduate students have many opportunities to engage in self-initiated independent study under the supervision of an individual member of the graduate faculty. In addition to traditional titles, such as thesis, research project, internship and practicum, various departments use independent study, special problems, directed readings, individual projects, directed study, etc., to identify opportunities for individual study. The following requirements govern enrollment in independent study offerings:

1. Consent of the instructor must be obtained before enrollment.
2. The content of the study should not be the same as that covered in a regular course (exceptions to this requirement must have the approval of the graduate dean before enrollment).
3. Although scheduled on an arranged basis, there must be a sufficient number of contact hours between the student and supervising instructor during the duration of the independent study to ensure consistency with the amount of graduate credit earned in regular course offerings.

4. No more than six hours of independent study course work (excluding theses and other independent study activities that are terminal requirements for a degree) can be used in a degree program.

5. Each student enrolled in an independent study offering is required to submit an abstract of the project to the supervising instructor at the time the product of the independent study is submitted for evaluation (excluding theses, research projects and other terminal projects required for a degree).

Some departments have specific requirements that must be met before enrolling in independent study courses. Students should consult the appropriate departmental personnel before enrolling.

Cooperative Education Program

Cooperative Education is an academic program for undergraduate and graduate students who wish to combine classroom studies with academically related employment by being placed in paid internships closely related to their academic majors. Cooperative Education places students both locally and nationally.

By utilizing off-campus resources and expertise, cooperative education places students in business, government, industry, health and social agencies. Programs are individually designed enabling students to work directly with professionals in their field while expanding upon knowledge learned in the classroom. Opportunities may occur for students to refine research methods, apply theories in actual field settings, work with advanced technology and design original projects and research.

Students placed in cooperative programs must enroll in specially designated co-op courses and work with a faculty adviser from within their appropriate departments. Each placement is assessed by the faculty adviser for its potential to provide learning experience relevant to the student's professional and educational goals.

Academic credit may be earned through co-op placements as determined by the student's faculty adviser. During the internship, students are expected to meet project requirements assigned by the adviser. Academic credit generally counts toward University degree requirements.

Cooperative Education offers both full-time and part-time placements. Students who select the full-time internship option must alternate a semester of full-time enrollment in course work before
entering a second full-time position. Alternative placements also carry the status of full-time students and enjoy the accompanying privileges.

Students selecting the part-time option are required to carry a minimum of six hours of course work in addition to their co-op course. Students may enroll in part-time co-op positions during consecutive semesters so long as faculty sponsors determine that meaningful learning experiences exist.

Requirements for co-op participation vary within the different colleges and departments. Requirements for admission to the co-op program generally include completion of 24 credit hours and satisfactory academic standing. Interested students should contact the Cooperative Education Office in 125 McKinley Hall or phone (316) 689-3688. Students are required to complete an application for admission and schedule an interview with the appropriate co-op coordinator.

Advisers

Graduate students admitted in a degree program category are assigned faculty advisers when admitted to the Graduate School. Course work taken without the adviser's expressed approval is not automatically applicable toward a degree. Students in nondegree status in designated departments are also assigned faculty advisers for consultation purposes. Students should consult their advisers for information on course prerequisites, content and similar matters.

Students admitted to nondegree undesignated status are not assigned faculty advisers and should be aware of this limitation when enrolling.

Enrollment, Drops and Adds

Procedures and times for enrollment are established by the registrar. Graduate students must enroll according to the times (determined alphabetically) published in the Schedule of Courses for any given term. Adherence to the enrollment schedules will minimize problems of unavailable records and other delays.

Students who have not enrolled for two or more semesters prior to a planned new enrollment should call the Graduate School to request preparation of enrollment materials and to clear any problems relating to their planned enrollment.

Once a student has enrolled, classes can be changed only by filing a Drop and/or Add Form with the necessary signatures. Changes of sections also require such action. If these forms are not submitted, an F grade could be recorded for failure to attend the class shown on the original enrollment records.

Fees are charged for late enrollments and drops. Only partial refunds are made after certain cutoff dates. Enrollment or adds normally will not be approved after the twentieth class day. Drops of classes with a W grade are also subject to a time limit established by the registrar.

The Graduate School, (316) 689-3095, has more information about deadlines of these items.

Administrative Withdrawal

Administrative withdrawal may be initiated by the graduate dean for the following reasons:

1. The student's class attendance is so irregular that in the instructor's opinion full benefit cannot be derived from the course.
2. The student fails to withdraw from one or more classes by the official procedure given in The Wichita State University Schedule of Courses.
3. The student does not meet the conditions for enrollment in courses numbered 800 and above.
4. The student's behavior is prejudicial to Wichita State.

Grades, Probation and Dismissal

Course work for graduate credit is normally graded A, B, C, D or F (see exceptions above). Faculty have the option of assigning an I (incomplete) if they feel that sufficient justification exists for the student's failure to complete the course.

Incompletes for regular courses (excluding research, thesis, etc.) must be removed within one semester of actual enrollment, excluding Summer Session, or the grade of I will remain. If the preceding time limit is not met and students desire credit, they must reenroll in the course. If students reenroll in a course for which they received the grade of I, the grade is changed to a W for the original enrollment when the grade earned during the repeat enrollment is assigned. The grade earned during the repeat enrollment becomes the grade of record. Faculty members may define other conditions for the removal of incomplete grades within the general framework indicated here.

Graduate credit courses in which grades of C or above are earned cannot be repeated. Grades below C may not be used to satisfy degree requirements, but such courses may be repeated. The grades of all repeated courses that are started six years or less before the end of the semester within which the degree work is completed are averaged with the original grades to determine a student's grade point average.

The graduate grade point average includes only those courses taken at WSU for which graduate credit is earned and for which a regular letter grade (A, B, C, etc.) is assigned. Courses transferred from another institution and graduate credit courses graded S (satisfactory) do not affect the grade point average.

Students admitted to full standing in a degree program, or nondegree category A, will be placed on academic probation if their grade point average falls below 3.00. Students admitted on probation are automatically placed in full standing if they attain a cumulative grade point average of at least 3.00 after the completion of nine hours of graduate credit course work. Students placed on probation after admission are automatically returned to full standing if they attain a cumulative grade point average of at least 3.00 within nine additional hours of graduate credit course work.

Students may be dismissed from their degree program or nondegree category A and placed in nondegree category B if they fail to attain a cumulative grade point average of at least 3.00 upon the completion of nine graduate credits after admission on probation or placement on probation after admission. Students in any category may be dismissed from the Graduate School if they fail to maintain a grade point average of at least 2.00 in all work taken (including undergraduate courses) after admission.

Students also may be dismissed from a graduate degree program if, in the opinion of the graduate faculty offering the program, they are unable to carry on advanced work or make satisfactory progress toward the degree. Students dismissed for this reason may be transferred to a nondegree category.

Exceptions

Departures from the rules and regulations stated in the Graduate Bulletin require the filing and approval of a Request for Exception. Such requests must have the approvals indicated on the form and must state in a logical and coherent manner a rational basis for the requested exception. Forms for such requests are available from the Graduate School.

Unusual and/or substantial deviations from stated rules and regulations require action by the Graduate Council and may involve delays of several weeks.

Load Definitions

At least nine hours of graduate credit course work is defined as full-time graduate enrollment during the fall or spring semester. During the Summer Session, a minimum of six hours is considered full-time graduate enrollment. For graduate assistants working 20 hours per week, six hours constitute a minimum full-time enrollment.

Students enrolling in all or a majority of courses that carry undergraduate credit
only must meet the undergraduate requirement for certification as a full-time student (12 hours).

The normal load for graduate students is 12 hours of graduate credit during the fall or spring semester. More hours may be taken with the advisor's approval, but graduate students may not enroll for more than 16 hours per semester (doctoral dissertation credit excluded) or nine hours during an eight-week Summer Session. Students may petition the Graduate School before enrollment for exceptions to this policy.

The course loads of students with teaching or research assistantships are normally reduced in recognition of the work they perform. While the Graduate School sets no official maximum number of hours, other than the 16-hour limit, students holding assistantships should work with their advisors to arrive at a load appropriate to their situations.

Special consideration for thesis and research enrollments may be obtained by petitioning the Graduate School.

Faculty Restrictions

Faculty members of The Wichita State University who hold the rank of assistant professor or higher cannot earn graduate degrees from Wichita State except for ROTC faculty, unassigned faculty (not attached to a particular college) or faculty members granted specific approval by the Graduate Council. Full-time faculty members may not pursue more than six hours of graduate credit per semester.

Degree Program Regulations

To pursue a graduate degree at Wichita State, students must be admitted to the specific program for which they are seeking a degree. Students may not be admitted to more than one graduate degree program at a time.

Upon the advice and consent of the major department, a maximum of six semester hours of work in one earned master's degree program may be applied to a second master's degree.

Credits Required

All master's degrees require a minimum of 30 credit hours of graduate credit work, including 18 hours in courses numbered 700 and above, excluding workshops (numbered 750). Some programs require more than 30 credit hours, in which cases at least 60 percent of the courses must be numbered at the 700 level or above, excluding workshops. Specific program requirements are listed in the individual department's section of the Graduate Bulletin. Requirements for specialist and doctoral programs are listed also in the individual department's section of the Graduate Bulletin.

Plan of Study

In order to define officially a program of study for a graduate degree, students must submit in triplicate the Plan of Study form leading to admission to candidacy for the degree no later than one month following the completion of 12 semester hours of graduate credit or the semester prior to the semester of graduation, whichever comes first. Students must meet the program requirements in effect at the time the Plan of Study is filed. The process of filing an acceptable Plan of Study is not completed until the student and advisor have received approved copies of the plan from the Graduate School. If these copies have not been received approximately three weeks following submission, students should check with the Graduate School office.

Students are candidates for a degree once the Plan of Study has been approved. A Plan of Study is developed in conjunction with the advisor and signed by the candidate, the advisor, the chairperson of the major department and the dean of the Graduate School. All academic work completed and planned for the degree must be included in the Plan of Study at the time of submission. Students may make changes of up to three courses in the Plan of Study that are necessary because of enrollment problems or other circumstances by submitting a written request, providing the request has been endorsed by the advisor and program graduate coordinator. More extensive changes may be accomplished by filing a new Plan of Study marked "revised plan."

Failure to meet the deadline for filing an acceptable Plan of Study may result in a delay in graduation or loss of credit planned for use in the program.

Language or Tool Requirements

The Graduate School has no overall language or tool requirements, although such requirements have been established by some departments. Students should consult an individual department's section of the Graduate Bulletin for information regarding such requirements.

Any tool subjects (e.g., foreign language, computer programming, statistics, etc.) required by the major department must be identified in the student's Plan of Study. The completion of this tool is not required prior to submission of the Plan of Study but is required prior to graduation.

Transfer of Credit from Another University

Graduate credit work at another university is not transferred and entered on a Wichita State transcript except in degree programs and only then after completion of all work for the degree, as defined on an approved Plan of Study. Students may transfer, with departmental approval, graduate credit from an accredited graduate school under the following conditions:

1. The credit offering institution is accredited by the cognizant regional accrediting association to offer graduate degree programs appropriate to the level of credit to be transferred. (b) The credit is fully acceptable to that institution in satisfaction of the advanced degree requirement and (c) the credit is applicable in terms of content to the student's program of study.

2. Master's programs requiring fewer than 40 hours may include no more than one-third of the total hours of 12 hours, whichever is greater, of graduate work completed at another accredited graduate school. Departments may require lower limits on transfer credit and therefore students should consult individual program descriptions. Doctoral, Master of Fine Arts (MFA), Master of Business Administration (MBA) and other more lengthy programs have special transfer credit allowances, as indicated in their program descriptions.

3. Students assume responsibility for initiating the request for transfer of graduate credit on a Plan of Study. An official transcript containing the requested transfer work must be on file in the Graduate School. If such work is shown on the transcripts provided in support of the original admission to the Graduate School, no new record need be provided. Approval by the major department is necessary to ensure that the course work has been accepted as an integral part of the candidate's program.

4. Courses considered for transfer must have been completed at an accredited graduate school and must carry a minimum grade of B.

5. Graduate credit earned through correspondence courses cannot be used to meet degree requirements.

6. Transfer credit that is accepted must have been in courses started six years or less before the semester in which the degree work is completed.

Extension, Workshop and Correspondence Credit and Credit by Examination

Workshops and extension graduate credit courses may be accepted for graduate credit as a part of a graduate degree program under the following conditions:

1. The work is approved by the major department.

2. The work is approved by the dean of the Graduate School.
3. The work is an integral part of a program planned by the candidate and the adviser and listed on an approved Plan of Study. Graduate credit cannot be earned under a credit by examination program. Correspondence courses are not accepted for graduate credit.

**Degree Card Filing**

An Application for Degree card must be filed with the Graduate School within three weeks (15 class days) after the beginning of any fall or spring semester in which students plan to finish all requirements for the degree. Students planning to graduate at the end of the Summer Session must file an Application for Degree within one week (five class days) after the beginning of the regular eight-week session even if they plan to enroll for the second four weeks only. In the latter case the degree card must be filed within the first week with an indication of intent to enroll for the second four weeks. If, after a student files a degree card, the degree is not completed, a new card must be filed within the time frame just described for the semester in which requirements for the degree are again expected to be completed. Failure to meet these deadlines will result in a delay in graduation and in the awarding of the diploma. In these cases, if all work is completed, students need not enroll for the following semester.

**Time Limits**

Courses started more than six years before the semester in which the degree work is completed may not be used as part of a degree program. However, in some cases courses taken before this time may be validated. To have courses validated, students must petition the Graduate School and pass a special written examination with a grade of B or better. Transfer courses and work that originally received a grade of C may not be validated. Courses completed ten or more years before the degree is granted, even if previously validated, may not be used to meet degree requirements.

**Thesis or Research Credit**

Students' graduate transcripts must show thesis or research project credit when a thesis is part of the degree program. The transcript will normally carry the grade of I until the thesis is completed and students have met the research and project requirements of the thesis committee and the Graduate School. A grade of B or better is required for an acceptable thesis. Thesis hours in excess of the minimum required for the degree will be graded S.

Students writing a thesis or engaged in research must be enrolled in courses entitled “Thesis” or “Research” each semester in which they receive advice, counseling or research direction from their advisers. Enrollment is for the number of hours that accurately reflects demands of the students on University faculty and facilities.

Two bound copies of the thesis in approved form must be filed with the Graduate School. (See the Graduate School calendar in the Graduate Bulletin for the due date.)

**Thesis Preparation**

All copies of the thesis must be presented on white 8 1/2 x 11-inch paper. The original must be on 20-24 weight bond with a minimum rag content of 25 percent if it is to be bound. Other copies must be on 16-20 weight paper. The thesis must include an abstract not more than one page in length which is to be placed directly after the title page. For additional information about the preparation of the thesis the student is referred to the Thesis Preparation and Graduation Procedures Manual, produced by the Graduate School, which can be purchased in the Wichita State Bookstore.

**Examinations**

Qualifying examinations are administered by several departments to determine students' qualifications for further graduate study. Most departments also require written or oral comprehensive examinations. Committees for these examinations are recommended by the major department and approved by the dean of the Graduate School. Each committee must include at least three members chosen from the graduate faculty.

Final oral examinations are required of all students presenting theses or research projects. Thesis committees include a minimum of three and a maximum of five voting members. Voting members are full or associate graduate faculty or persons from outside the faculty judged to have exceptional competence in the field of research covered in the thesis and who have been approved by the dean of the Graduate School. The chairperson of the examination committee must be a full graduate faculty member or an associate member with temporary authorization to chair the committee. A majority of the voting members must be from the major department. One voting member must be from an academic department outside the major department who is recommended by the student's adviser and approved by the dean of the Graduate School. The candidate passes if no more than one negative vote is cast.

**Commencement**

One commencement is held each year in May at Wichita State. Students completing degree requirements during the Summer Session or the fall semester preceding Commencement may obtain their diplomas from the registrar's office or request that their diplomas be mailed. These students may attend Commencement exercises the following May, but attendance is not required. Each graduate's name appears in the Commencement program, with the completion date of the award of the degree.

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**Financial Information**

**Basic Fees**

The current fees, listed below for 1988-89, are subject to change by the action of the Kansas Board of Regents or the state legislature.

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<th>Each semester and</th>
<th>Summer Session</th>
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<tr>
<td>Resident</td>
<td>Nonresident</td>
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<td>Tuition</td>
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| 1 through 14 hour-
| credit hour      | $44.65            | $126.25        |
| 15 hours and above-
| flat fee         | $697.75           | $1884.75       |
| Student Fees    |                   |                |
| 1 through 14 hour-
| credit hour      | $10.75            | $10.75         |
| 15 hours and above-
| flat fee         | $161.25           | $161.25        |
| Student Service  | $8.00             | $8.00          |
| Fee per semester- |                  |                |

The student fee is required of every student enrolled for work on the Wichita State campus during the regular semesters and Summer Session. The fee is distributed to pay revenue bonds for parking, the Campus Activities Center, the Cessna Stadium addition, academic and service buildings, Heskett Center, Ablah Library and for certain services and organizations, including student health services, athletic admissions, forensics, Student Government Association, University Forum Board, student publications, concerts and drama and opera productions.

**Special Fees and Refunds**

Prior to each semester, the registrar establishes enrollment dates. Late registration is a special service resulting in extra costs for special staff and facilities. Students who register late are assessed late registration fees as published in the Schedule of Courses.

Students who drop courses are assessed one transaction fee for all courses dropped at the same time. This fee recognizes that in many instances students have occupied space in class which was not available to other students and for the extra cost of staff and facilities to handle the transaction. The amount of the fee is published in the Schedule of Courses.
Fee Waiver Policy

The dean of the student's college, the dean's designee or the dean of admissions and records may authorize a waiver of special fees and/or non-refundable tuition fees in cases where a schedule change or withdrawal is required because of University regulations, clerical errors, misadvising, class schedule change by the University or other exceptional circumstances beyond the control of the student and determined valid by the college dean or designee. To petition for a waiver, students should request a petition form from the dean's office of their college and return the completed petition form to the dean's office for consideration. Graduate students should petition the Graduate School dean's office. The student is notified of the action taken on the petition. If approved, the student should submit the petition to the controller's office with enrollment, schedule change or withdrawal forms. If the petition is denied, the student may get information from the appropriate college dean on how to file an appeal.

Graduate Assistantships, Fellowships and Scholarships and Loans

Assistantships

Each year Wichita State awards a number of assistantships for advanced study. Grants are made in most departments offering advanced degrees. Graduate assistantships provide for cash stipends up to approximately $6,500. A graduate teaching assistantship may qualify the recipient for up to a 75 percent waiver of tuition. Potential applicants for graduate teaching assistantships who are non-native speakers of English must first attain a score of 220 or above on the Test of Spoken English (TSE). The department chairperson or graduate coordinator should be contacted for further information.

Assistantships are awarded primarily on the basis of a student's academic record and demonstrated teaching, research and leadership abilities, together with any other available supporting evidence. Students on academic probation and Senior Rule students are not normally considered for assistantships. Recipients of graduate assistantships may not hold other remunerative employment without the written approval of the department chairperson and Dean of the Graduate School.

Carl Fahrbach Memorial Graduate Assistantship. A memorial to Dr. Carl G. Fahrbach, former dean of admissions and records, this assistantship is awarded to a full-time graduate student in the area of counseling and school psychology in the Department of Personnel Services in the College of Education. It is awarded for one academic year and is renewable upon the recommendation of an advisory committee.

Public Administration Affairs Assistantships. Each year Wichita State awards, through the Public Administration Program Committee, a number of graduate assistantships for advanced study in public administration providing for cash stipends of approximately $5,400.

Fellowships and Scholarships

Wichita State funds fellowships and scholarships to graduate students, as described below.

Doctoral Fellowship Awards. Fellowships are awarded to a limited number of graduate students who are admitted to a program of graduate study leading to a doctoral degree and who are in good academic standing. Awards are made annually on the basis of the student's academic achievement and potential of the student as a candidate for a doctoral degree. Applications are made jointly by former teachers, advisers or employers, are used in determining awards. Selections are made on a competitive basis without regard to race, creed, sex or national origin and are generally announced by April 15 for the following fall. Recipients of doctoral fellowships may not hold employment without the written consent of the department chairperson and the Dean of the Graduate School.

James Chubb Memorial Fellowship. Established in 1971, the fellowship is awarded to a graduate student in the Department of Economics. Preference is given to members of the Chubb family.

James H. Hibbard Memorial Scholarship. Graduate students in chemistry who are interested in the study of medicine are eligible for this scholarship.

Kiwanis Scholarship in Public Administration. Established in 1964, a $1,500 scholarship is provided by the Downtown Kiwanis Club in Wichita for graduate study leading to a master's degree in public administration. Final date for applications is February 15. All awards are contingent upon acceptance for graduate study.

The Hugo Wall Fellowships. Established in 1973, these are awarded to outstanding students with an urban affairs or public administration background seeking the Master of Public Administration degree. The fellowships honor the contribution made to public administration by the late Professor Hugo Wall. Applications must be filed with the Public Administration Program Committee, The Wichita State University, Wichita, Kansas 67208-1595, by March 1 for the following academic year.

The Wichita State University Chapter of Phi Delta Kappa Scholarship. This $200 scholarship is awarded annually to a graduate student enrolled in a program in the College of Education. It is made upon basis of merit and need.

The WSU Endowment Association and City of Wichita Fund Fellowships and Assistantships. In addition to the regular teaching and research awards, a number of graduate fellowships and assistantships are provided by The Wichita State University Endowment Association and from the City of Wichita Fund. These awards require full-time study or a combination of research assistance and study equivalent to full-time study. The fellowships are made in graduate program areas judged to have a special need for graduate student support and are based primarily upon a student's academic record, experience and other available supporting evidence. All such awards are made by the graduate dean upon recommendation of the selected departmental chairpersons, inquiries about these awards, which include both masters- and doctoral-level students, should be made to the Dean of Graduate Studies, The Wichita State University, 107 Jardie Hall, Wichita, Kansas 67208-1595.

Loans

Wichita State grants loans to graduate students as described below.

Delano Maggard, Jr., Graduate Student Loan Fund. Funds have been provided through The Wichita State Endowment Association for loans to encourage graduate student research. The loans are "forgivable" if certain criteria governing the research effort are met. Application deadlines are October 1 (fall semester) and March 1 (spring). Interested students should contact the Graduate School office for details.

Graduate Student Services

Structure

The Vice President for Student Affairs and Dean of Students is responsible for the coordination and supervision of the Division of Student Affairs. Issues involving student life, development, programs, problems and activities on The
Wichita State University campus are addressed by the staff of the division.

The dean of Student Life and Services is responsible for the residence halls, off-campus housing concerns, handicapped services, fraternities and sororities, student organizations, preschool, veterans, women's activities, placement and career services, student health, student activities, counseling students with problems or concerns and encouraging scholastic achievement.

The dean of University College is responsible for the programs and policies of University College.

An assistant dean of students is responsible for Operation Success, Project Discovery and Upward Bound, federal TRIO programs for educationally disadvantaged students.

Counseling
The Counseling Center provides psychological services and counseling for personal and career/life planning issues. Professional counseling is available on a cost-shared basis to all members of the University community—students, their families, faculty and staff. Individual, couple, family and group counseling are aspects of the professional counseling services. Testing services are part of the Counseling Center's function. The credit by exam program and the National Testing program are administered directly by the Counseling Center. The National Testing program includes certification tests for community professionals, CLEP tests and entrance exams for colleges and graduate schools.

Office of International Programs
International Programs, 303 Grace Wilkie Hall, serves the special needs of approximately 1,000 international students from more than 70 countries enrolled at Wichita State. (For international student admission requirements, see the Admission to Wichita State section of the Catalog.) An orientation program specially designed for newly arriving foreign students prepares them for entrance into the American academic system and way of life.

International Programs also sponsors the International Conversation Partners Program, the Global Classroom Program and various other activities that promote interaction between American and foreign students.

In addition, the International Program houses a Study Abroad Center which provides information to American students on study, work and travel opportunities abroad. Information concerning Fulbright-Hays grants may be obtained from this center.

Placement and Career Services
The Placement and Career Services office provides services to students and alumni seeking career advice or employment-related assistance.

Individual career counseling is available to assist students and alumni with planning and decision making. Assessment instruments, including SIGI (a computer guidance system) are offered for self-assessment. Workshops, presentations and classroom instruction are offered to enable persons to learn about the responsibilities of various career fields, to prepare job resumes and letters of application, to conduct effective employment interviews and to make informed decisions.

Occupational and career information, employer directories, information on employment trends, employer recruiting literature, annual salary survey reports and information on graduate and professional school opportunities are available in the Career Resource Center.

Degree candidate and alumni placement services include direct referral to career employment vacancies, on-campus interviews with employer representatives; and an employment listing bulletin.

Placement services also include part-time and summer employment opportunities.

Housing
Requests for housing information should be sent to:
Director of Housing
The Wichita State University
Wichita, Kansas 67208-1595

The Wichita State University reserves the right to make policy adjustments where the situation demands and to change the residence of any student or deny or cancel residence accommodations of any student in cases where such action is deemed desirable.

University Preschool
The University Cooperative Preschool is a licensed school for children of WSU students. Four certified preschool teachers and 20 part-time aides supervise activities which include art, language, music, science, numbers and literature. The school is available from 7:30 a.m. to 5:30 p.m. Monday through Friday for children 2 1/2 to six years old and 5 to 10 p.m. Monday through Thursday for children 2 1/2 to 12 years old. Each child must stay for a minimum of two hours per day. The program permits children to attend preschool while their parents are in class. It is available to the greater community as well.

Handicapped Services
The handicapped services office provides supportive services for students with impaired sensory, motor and/or speaking skills.

Student aid assistance during the 1988-89 school year has included note-takers, readers, library assistants, wheelchair pushers, test proctors, escorts, transfer assistants, transcribers and clerical services. Those interested in these services should contact the handicapped services office for updated information on such assistance. Auxiliary aids and materials available for student use include the Perkins Braillewriter, IBM Braille typewriters, slate and stylus, raised line drawing kits, the Speech Plus Calculator, Braille learning instruments, mobility canes, print magnifiers, four track cassette tape recorder players with earphones, standard tape recorder players, phonographs, digital Braille clocks, lap boards, transcribing papers and braille tapes. Textbooks are ordered through this office for students requesting books on tape, in Braille or in large print. Tactile campus guides, Braille campus maps and manual wheelchairs for emergency use can be provided.

Student Health Services and Hospitalization Insurance
The Student Health Services and Hospitalization Insurance Program at the University of Kansas Medical Center, 100 23rd St. N., Kansas City, KS 66103, offers campuswide benefits to students enrolled at Wichita State University. The University Health Center, 1010 S. Charles, Wichita, Kansas 67208, provides ambulatory health care for students with health concerns, medical problems, illnesses and injuries. Clinic services and health education are provided by a staff of professional nurses and community physicians. The services of registered nurses and nurse practitioners are available during office hours and physicians may be seen by appointment during their scheduled clinic hours. Physicians specializing in ear, nose and throat, dermatology, gynecology, internal medicine, orthopedics, surgery and family practice are available.

Special services of immunizations, tuberculosis skin testing, family planning information, physical examinations required by academic programs, nutrition and diet counseling and health screening are offered.

The student body has chosen to participate in a group plan for accident and sickness insurance coverage. Opportunities to enroll in the program are offered at the beginning of each regular semester. Information is available at the Student Health Services and the Office of Student Life and Services.

Research Support
Research Administration
The Office of Research Administration assists the faculty in developing sponsored research, training and other service proposals. The office collects, maintains and provides information regarding the programs, interests and needs of governments, private founda-
Center for Economic Development and Business Research
The Center for Economic Development and Business Research, a service of the Barton School of Business, engages in business-economic research for a wide variety of clients in both private and public sectors. The center gathers, analyzes and publishes data describing economic conditions in Wichita and Kansas and is the sole source of comprehensive monthly economic data for the state. The center's staff of faculty and graduate and undergraduate students works together on policy-oriented research and publications, publishing the quarterly *Business & Economic Reports* alternately with the monthly *Kansas Economic Indicators*.

Center for Human Appraisal
The Center for Human Appraisal operates as a service of the Barton School of Business to extend research attitudes and interests in the behavioral sciences and apply that knowledge to governmental agencies and the business community. Projects undertaken by the center include management surveys, assessment programs, supervisory selection, selection for promotions, morale research, supervisory training and general research on people systems.

Center for Women's Studies
The Center for Women's Studies serves to promote research and other activities related to women and their concerns, to foster closer ties between academic and community efforts with respect to women's needs, to act as an informational referral agent and to enhance the overall awareness of campus and community to the current needs of women in the areas of education, jobs and life choices. The center is responsible for administering the BA in women's studies and supervises the work of students pursuing a concentration in women's studies in various graduate areas. The center maintains a small resource library of books and periodicals open to students, faculty and others; sponsors seminars, workshops and lectures; and provides community and campus speakers.

Hugo Wall Center for Urban Studies
The Wichita State University's role as a comprehensive urban institution was outlined by the Kansas Board of Regents in 1972: "As the Regents' urban institution, The Wichita State University's mission includes development of programs utilizing the unique resources of the urban area."

The Center for Urban Studies was formed in 1955 and has become a leading contributor to the urban mission articulated by the Board of Regents. The center conducts instruction, research and service programs, integrating these three essential University functions in responding to the needs of students and the urban environment. The Master of Public Administration degree is administered through the center and its faculty in public administration and urban affairs. Service programs of the center include public affairs seminars, workshops for governmental personnel, professional development seminars for governmental managers and a variety of other programs designed to link the resources of the University to urban governments. The faculty and staff of the center are engaged in a wide range of research on state and local government in Kansas, including research and analysis of boards and commissions in Sedgwick County, a history of the property tax in Kansas, a labor market analysis to guide economic development policy in the City of Wichita, an assessment of productivity in the City of Wichita, a political history of Wichita and a study of service delivery of the Wichita-Sedgwick County Department of Community Health.

The Hugo Wall Center for Urban Studies coordinates the University's State Census Data Center as part of a five-member statewide consortium. The Data Center is the repository of 1970 and 1980 census data and responds to requests for census data.

Institute for Aviation Research
The Institute for Aviation Research was approved by the Kansas Board of Regents in fall 1985. It represents a focus for research with the University and a vital link with local and national aviation communities. The institute works through five centers:

1. Center for Basic and Applied Research which conducts research in the basic areas of aviation, with a focus on low speed aerodynamics, flight simulation, structures and advanced materials for airframe construction.
2. Center for Aviation Safety Research which conducts research on topics related to aviation safety, with a focus on crashworthiness of aircraft structures, deicing, stall-spin prevention and aviation software reliability.
3. Center for Productivity Enhancement which supports research and technology transfer in computer-aided design, computer-aided manufacturing, robotics, artificial intelligence, use of composite materials and related manufacturing technologies.
4. Center for Management and Human Resource Development which conducts research on issues of quality control, analysis and forecasting and international marketing as applicable to the aviation industry.
5. Center for Aviation Education and Training which provides educational, training and publication programs to aid in the transfer and dissemination of knowledge developed with the other centers of the institute.

Rehabilitation Engineering Center
The Kansas Board of Regents formally established the Rehabilitation Engineering Center in the WSU College of Engineering during 1978. The objective of the center is to use technology to improve the vocational prospects of the severely disabled.

A qualified engineering staff, along with a rehabilitation laboratory, technicians and a well-equipped shop facility, provides the means to accomplish the center's goals. A federally sponsored rehabilitation grant allows faculty and staff to participate actively in this research.

Small Business Development Center
The Small Business Development Center, through the Barton School of Business, was established in October 1983. The SBDC provides free counseling and low-cost training to small businesses using consultants from the University as well as the community. Funding for the center is provided by the U.S. Small Business Administration, the State of Kansas, the Defense Logistics Agency and participating universities and colleges.

The center at WSU works with businesses located in the 17 counties of southcentral Kansas. The center here is also the headquarters of the state office, the Kansas Small Business Development Centers, which oversees activities of the eight regional SBDCs and 11 associate centers in Kansas. These 19 centers are located primarily at academic institutions throughout the state.

Small Business Institute
The Small Business Institute is housed within the Barton School of Business. Its purpose is to bring together the student's knowledge and the small business experience on a consultation basis. Such interaction rounds out the senior student's education with practical experience while offering assistance to small businesses in the community.
Social Science Research Laboratory

The Social Science Research Laboratory supports both instruction in research methods and student and faculty research in the social sciences. In addition, with the use of an optical scanner, examinations for classes across campus are graded and item analyzed. The Student Perception of Teaching Effectiveness (SPTE) questionnaire is administered, scored and managed by the laboratory. The laboratory is located in the Liberal Arts and Sciences building. Equipment includes several CRTs, Decawriters and a high-speed printer, all connected to the WSU mainframe. The laboratory is open to students, faculty and social science classes.

University Gerontology Center

The University Gerontology Center develops and coordinates gerontology-related activities and programming at Wichita State, including instruction, research, service and continuing education. The center develops and manages community research in the area of aging and serves as a resource center and information clearinghouse to assist community agencies and organizations in planning and developing services for older persons.

University Press of Kansas

The University Press is operated jointly by six state Kansas universities: The University of Kansas, Kansas State University, The Wichita State University, Emporia State University, Fort Hays State University and Pittsburg State University. Founded July 1, 1967, it was the first university press in the United States to function on a statewide level under specific sponsorship of all of the state's universities. Offices are located on the campus of The University of Kansas in Room 303, Carruth-O'Leary Hall.

Walter H. Beech and Supersonic Wind Tunnels

Various wind tunnels are available at Wichita State for faculty and student use in aerodynamic studies. The Walter H. Beech Wind Tunnel is a 200 mph closed-return tunnel with a 7' x 10' test section. A digital data logging system and an on-line microprocessor with plotting capability are employed as part of the readout system. Two supersonic wind tunnels, capable of producing wind velocities from two to four times the speed of sound, are available.

A new 1 x 1.3 meter subsonic wind tunnel has recently been completed. This facility features a laser velocimetry system for flow measurement. Two smoke tunnels, a boundary layer tunnel, a water table and a new water tunnel are also available for flow-visualization studies.

WSU Center for Energy Studies

The WSU Center for Energy Studies conducts energy research with particular emphasis to Kansas applications. Current areas of specialization are wind energy, electric utility and conservation research. Research in the engineering and technical use of microcomputers is also conducted. The center is directed by the College of Engineering.

Special Academic Programs

Center for Continuing Engineering Education

The Center for Continuing Engineering Education has as its objectives:

1. Providing noncredit engineering education for professional development or occupationally/professionally related purposes.
2. Cooperating with the engineering professions and related professional associations to provide mini-courses and certificate programs.
3. Sponsoring, developing and cooperating in programs and activities that extend the resources and knowledge of the University to industry, special audiences and the general public.

Center for Continuing Entrepreneurship and Small Business Management

The Center for Entrepreneurship and Small Business Management is housed within the Barton School of Business. The center is committed to promoting an environment that encourages private enterprise and that seeks to preserve and enhance entrepreneurial activities. The center provides a comprehensive curriculum in entrepreneurial studies offering a minor in entrepreneurship to business majors.

Seminars and workshops are offered for those interested in entrepreneurship. The most popular workshop, "Entrepreneurship: Your Future in Business," has received international recognition.

Additional features include a visiting lecture series, a complete library of resources related to the Association of Collegiate Entrepreneurs and the Young Entrepreneur's Organization, a resource and information base for innovative students and a network for young entrepreneurs.

The center is conducting a major research project to learn the effects of entrepreneurial education on new business start-ups and success rates, as well as a profile of individuals who start a business.

Center for Management Development

The Center for Management Development, through the Barton School of Business, offers noncredit management development seminars to the business community.

The WSU management seminars and workshops have been acclaimed for their usefulness to practicing business people and other professionals in a wide variety of organizations. The center offers a broad range of management education and development opportunities to the growth-oriented supervisor, manager or professional specialist in business, industry, government and other public or private organizations.

Cooperative Education Program

The Cooperative Education program is a University-wide, centrally administered academic program providing students the opportunity to integrate formal course work with periods of relevant off-campus employment. More information is available in the Special Academic Programs section of this catalog.

French Student Exchange Program

WSU is among the 100 colleges and universities in the United States that participate in the annual student exchange organized by the French Ministry of Education. One individual from WSU spends the academic year in France as a salaried assistant in English, and a student from France is attached to the WSU Department of Modern and Classical Languages and Literatures as a salaried assistant in French. Majors and minors in French who have graduated within one year prior to departure date are eligible to apply.

Institute of Logopedics

The Institute of Logopedics is a private, nonprofit, residential and outpatient rehabilitation center located on 40 acres near the Wichita State campus. The institute is a residential facility specializing in habilitation and rehabilitation of children with speech, language and hearing disorders. The institute is University-related through its affiliation with the College of Education's Department of Communicative Disorders and Sciences, which offers academic preparation for Wichita State students desiring to work with communicatively handicapped children and adults. Observation and practicum opportunities are provided at the institute as part of the professional preparation of students in speech and language pathology and audiology.
Reading/Study Skills Center

Wichita State offers a variety of services to students through the programs of the Reading/Study Skills Center. Credit and noncredit courses are offered to help students improve their reading and listening skills. Complete descriptions of the credit and noncredit courses offered at the center are included in the University College section of this catalog. In addition to formal course work, other study skills workshops are made available to students enrolled at Wichita State.

Special Facilities

Instructional facilities on the 330-acre Wichita State campus are used for educational purposes more hours per day than at any other Kansas college or university. Many of the University's special facilities are described on the following pages.

Ablah Library

Through a wide range of materials, services and facilities, Ablah Library supports WSU courses and research. Its growing collection of more than two million items includes not only books and periodicals, but microforms, corporate annual reports, college catalogs, phonograph records and audio tapes. The library also serves as a depository for selected official publications of the United States.

The library has open stacks, and reference librarians help students and faculty locate information and use the online catalog and reference collection. They also perform literature searches in the numerous computerized data bases to which the library has access. Materials not owned by the library may be borrowed from other institutions through interlibrary loan. The library also makes available study carrels, electronic carrels containing listening and viewing equipment, group-study rooms, microform reading equipment, copy machines and typewriters.

The Department of Special Collections houses a rapidly growing manuscript collection of more than 700,000 pieces including papers of the abolitionist William Lloyd Garrison and many U.S. congressmen. Other collections include original editorial cartoons by Pitzer prize-winning cartoonists, publications of U.S. radical organizations and maps and books.

A three-year expansion/renovation project of Ablah Library is scheduled to be finished in 1989. When completed, the library will have additional space for its collections and for new and expanded services.

Cable Television

The Wichita State University operates Channel 13 on Wichita's cable television system. WSU 13 broadcasts 126 hours per week of adult-oriented educational, cultural and informational programming. This programming includes 10 to 15 television courses per semester offered for academic credit by the various colleges at WSU. Channel 13 also produces programs featuring distinguished guest speakers, fine arts performances and other campus events. WSU 13 is affiliated with the Discovery Channel, BizNet and Campus Network, nationally delivered program services. In addition to full-time staff, 15 students are involved in the operation of the channel and the production of programs. Facilities are located in the Media Resources Center.

Campus Activities Center

The Campus Activities Center (CAC) is the community center for the Wichita State University. Through its facilities and services, the center serves students, faculty, staff, alumni and guests of the University.

The CAC has several dining areas to provide a variety of atmospheres and menus as well as a catering department to meet special needs; the University Bookstore which stocks textbooks, supplies and gifts; a recreation center for leisure use that includes video games, bowling, billiards and a barber/beauty shop; a theater; and a variety of rooms that can be scheduled for meetings, special events and conferences.

The reservations office schedules the use of all facilities in the center as well as most University facilities for out-of-campus use. Through the Student Activities Council, students are provided an opportunity to learn and develop leadership skills while planning a variety of programs for the campus. The CAC is also home for the Student Government Association, Student Ombudsman, Ecumenical Christian Ministries and Informed Sources, a student-run campus information center.

The CAC is supported through student fees and revenues. Programs are coordinated by the programs of the College of Liberal Arts and Sciences, the College of Business Administration, the College of Engineering, the College of Education, and the College of Fine Arts.

Computer Laboratory Facilities

The Department of Electrical Engineering in the College of Engineering has a microcomputer laboratory consisting of fourteen Zenith 151 or 158-XT compatible microcomputers and eight printers. Each microcomputer has a 20MB hard disk, flexible disk drive, color display and 640KB RAM. Software packages include word processing and spread sheet with graphics, as well as systems analysis programs written by department members, which are installed and copy-protected on the hard disks and accessible for student use. Two computers are equipped with sampling hardware and a software package for investigating the processing and associated digital signal processing. Another computer has an interface which allows it to access the University mainframe.

The facility is used by electrical engineering students for report writing, tabular and graphical display of laboratory data, and analysis and design of electronic and control systems.

Computing Center

The University Computing and Telecommunications Center serves students, faculty and staff of the University by providing contemporary computing services for instruction, research and sponsored programs, administrative data processing and public service. These services include consultation, systems analysis and design, programming, interactive time-sharing, batch computer operations, an on-line administrative data base and assistance to computer users in their preparation of requests for competitive bids for the acquisition and selection of computer-related equipment.

The central processing unit is an IBM 3081-D with 16 million characters of main storage and more than 26 billion characters of on-line disk storage. Magnetic tape drives, line printers and an off-line digital plotter are available for general use. A network of more than 500 terminals supports interactive computing for campus classrooms, laboratories and offices. These terminals may be used with the academic time-sharing system (CMS), interactive computer graphics, computer-assisted instruction and the administrative terminal system (CICS). Interactive terminal facilities for students and faculty are located in Ablah Library, the Barton School of Business, the College of Engineering, the departments of chemistry, mathematics, physics, geology and anthropology and in the Social Science Laboratory, where a line printer is located. More than 700 microcomputers are integrated into the instructional and research areas on campus. Facilities are available to permit transmission of information, electronic mail and other communications.

The computing center terminal facility is located in Nafe Hall. Color graphics terminals, a color graphics printer and several other CRT terminals are available in Room 114. CRT terminal facilities and hard copy terminals are located in Room 113. Both rooms are open and available 24 hours a day, seven days a week.
week. Scientific programming and consulting services for faculty and staff instructional and research projects are located in Room 119. Student programming assistance and academic user services are located in Room 115. Batch and remote batch jobs may be submitted 24 hours a day. Printer and plotters output may be picked up from the dispatch window at Room 108 during scheduled hours.

Edwin A. Ulrich Museum of Art
The Edwin A. Ulrich Museum of Art is recognized nationally for the outstanding quality of its programs. In 1984, approximately 156,000 people visited its galleries. During its first 13 years of existence, the Ulrich Museum has presented more than 400 exhibitions, ranging in scope from the poetic paintings of Joan Miro to the hyper-realist sculptures of Duane Hanson.

The museum has had one-person exhibitions of work by Joan Miro, David Hockney, Milton Avery, Kenneth Noland, Morris Louis, Isabel Bishop, Fredrick Church, Childie Hassam, Alice Neel, Robert Motherwell, Alberto Giacometti, Gaston Lachaise, plus the work of many other famous artists.

Although the emphasis has been on contemporary art, there have been exhibitions as diverse as prehistoric American Indian pottery, treasures from Spanish galleons sunk in 1724, art from 16th and 17th century Antwerp, artifacts from the Civil War ironclad U.S.S. Monitor, holo photography, electronic art, African art and the art of New Guinea. In addition, there have been numerous photographic, print and ceramic exhibitions.

The on-campus museum is named after Edwin A. Ulrich, a retired New York businessman, who gave the University more than 300 paintings and $560,000 to support the collection. The Ulrich gift, valued at $1.75 million, is one of the largest single donations ever made to the University.

The Wichita State University Endowment Association art collection numbers over 6,000 items. Twentieth century American art forms the core of the collection augmented by hundreds of other paintings, drawings, prints, sculptures, photographs and ceramics. Of special note, the Ulrich Museum contains the most complete collection of paintings by the world famous American marine artist, Frederick Judd Waugh (1861-1940). The museum also houses extensive groups of work by such artists as Kathe Kollwitz, Charles Gratz, Harry Sternberg and Robert Goodnough.

Reaching beyond the traditional museum's walls, the University has an outdoor sculpture collection which is one of the best in the nation. The collection is a cross-section of 20th century sculpture, featuring works by Auguste Rodin, Henry Moore, Louise Nevelson, Joan Miro, George Rickey, Fernando Botero, Barbara Hepworth, Chaim Gross, Theodore Roszak, William Zorach, Ernest Trova, Robert Indiana, Luis Jimenez, Lynn Chadwick and many others.

The largest and most significant outdoor work is the marble and glass mosaic, Personnages Oiseaux created especially for the facade of the Ulrich Museum by the late Spanish artist, Joan Miro. The mosaic, the largest in the work by Miro, is constructed of one million pieces of colored Venetian glass.

Another aspect of the museum is its visiting artist program. More than 50 artists have visited WSU, including Henry Moore, Louise Nevelson, Luis Jimenez, Isabel Bishop, Duane Hanson, Gordon Parks, W. Eugene Smith, Arnold Newman, Milton Glaser, Paul Rand, Alice Neel, Theodore Stamos and Will Barnett. The museum also has organized traveling exhibitions of work by such artists as Duane Hanson, Gordon Parks and Ernest Trova.

Harvey D. Grace Memorial Chapel
Harvey D. Grace Memorial Chapel, located in the heart of the campus near Morrison Hall and the Campus Activities Center, was built in 1963 and dedicated to serve all creeds and races. The chapel is available to students for group or individual worship and meditation.

Helpern International Center
The Milton Helperness International Center for the Forensic Sciences serves as a vital resource of the Department of Administration of Justice and as an important depository of information relating to major forensic cases in the United States and abroad. Under the direction of Dr. William Eckert, the center serves as an important information resource for forensic scientists and law enforcement agencies working to solve major criminal cases. The center also serves the needs of students majoring in the department. Its resources include extensive library materials, tapes and other documents pertaining to major forensic cases. The center is located in the Liberal Arts and Sciences building.

Heskett Center
The $10 million multipurpose dance, physical education and recreation complex opened in the spring of 1983. It is named after H. Dene Heskett, a 1935 alumnus and benefactor of WSU. The 166,000 square foot complex contains instructional, research and recreational areas as well as the equipment necessary to support activities.

Activity areas consist of a weight room, combat room, 25-meter indoor swimming pool with separate diving well, a 200-meter indoor jogging track which surrounds five basketball courts and eight handball-racquetball courts. The outdoor area contains a six-court lighted tennis complex and four large lighted play fields.

These activity areas are designed to facilitate an extensive campus recreation program.

KMUW Radio Station
KMUW Radio broadcasts at 89.1 FM. The 100,000-watt station is one of more than 300 public radio stations that make up the National Public Radio network. In addition to a full-time staff, about 50 students are involved in the total operation of the radio station. KMUW programming includes classical and jazz music, news and public affairs, plus coverage of special events at Wichita State.

Marcus Center for Continuing Education
Many educational services are offered through the Marcus Center for Continuing Education, an adult education facility at 4201 East 21st Street. Specialized courses for business and industry, governmental agencies and the professions; special conferences for the general public, and a wide variety of personal enrichment programs are offered in the center. In addition to renting meeting areas, the Marcus Center for Continuing Education staff provides program development, brochure preparation, mailings, fee collection, material preparation and reproduction, registration and program evaluation.

Media Resources Center
The Media Resources Center (MRC) is a comprehensive media and video communications organization serving the instructional, research and service aspects of Wichita State. The center is housed in a 20,000 square foot, state-of-the-art facility with specialized audio recording studios located in Duerksen Fine Arts Center and Wiedemann Hall. The MRC also operates WSU Channel 13, the University's cable television station.

Facilities and resources include two professional television studios, three satellite downlinks, the campus cable TV network, a fully equipped mobile television production facility, complete photographic darkroom laboratories and a graphic design studio. The MRC provides the University with video teleconference reception and transmission capabilities.

A wide array of media equipment systems is available for loan to students and faculty. These include VCRs, video recording systems, microcomputers, 35 mm cameras and projection equip
ment. A collection of 1,000 films and videotapes is available as well.

**Satellite Television Reception**

Four satellite television antennas are used to receive video and audio signals from communications satellites serving North America. Satellite television resources provide students studying foreign languages with television programs produced for French and Spanish speaking audiences, furnish programming for WSU's cable television station and enable the University to participate in national video teleconferences. Receiving antennas are located to the southeast of Media Resources Center.

**Speech-Language-Hearing Clinic**

The Wichita State University Speech-Language-Hearing Clinic, 104 Hubbard Hall, provides diagnosis and treatment of speech, language and hearing problems, including hearing aid fittings. Services are available on a cost-shared basis to University students, staff and faculty, as well as residents of surrounding communities. The clinic is open 8 a.m. to 5 p.m. Monday through Friday for scheduled appointments and also on arranged evenings for hearing testing and stuttering and other support group meetings. Senior and graduate students in the communicative disorders and sciences department provide services. All work is supervised by departmental faculty who hold appropriate national certification.

**Sports and Recreation**

Sports and recreation facilities for students at Wichita State include a regulation 18-hole golf course; the 10,666-seat Henry Levitt Arena which is used for intercollegiate basketball games and major entertainment events; Cessna Stadium, a 30,000-seat stadium; and Eck Stadium which has an artificial surface infield and grass outfield for Shocker baseball.

Wichita State is a member of the Missouri Valley and Gateway Athletic Conferences and consistently ranks nationally in basketball, baseball, tennis and bowling.

The campus recreation program, featuring the multipurpose complex, the Heskett Center, is designed to provide activities for all students, faculty and staff. In addition to intramurals and open recreation time, offerings include sport clubs; special events; excursions for children of WSU students, faculty and staff; a family program; mini-classes and workshops; outdoor recreation and aquatics.

**Wichita Radio Reading Service**

A sub-carrier of KMLW, the Wichita Radio Reading Service programs readings of printed material to more than 2,000 print-handicapped individuals. WRPS, a 24-hour daily service, also offers programming from the In-Touch Network and National Public Radio and locally produces such creative programming as poetry and radio drama.

**Wiedemann Hall**

Wiedemann Hall houses the first organ built in North America by the world-renowned firm of Marcussen and Son, Denmark. Of neoclassic design, the hall which was built in 1986 is the ideal acoustical setting for the organ. In addition to the hall's main auditorium, the building has four faculty offices, an organ studio and rooms to accommodate announcing, recording and televising.

The building is named for community philanthropist and music lover Gladys H. G. Wiedemann who in 1983, as president of the K. T. Wiedemann Foundation, Inc., pledged $500,000 for the purchase, installation and maintenance of the great Marcussen organ.
W. Frank Barton School of Business

Offices: 100 Clinton Hall

Douglas Sharp, Dean

Dennis C. Duell, Associate Dean

W. Dean Vickery, Assistant Dean

Robert H. Ross, Director of MBA program

School of Accountancy—Linda C. Mitchusson, director

Departments

Economics—Dong W. Cho, chairperson

Finance, Real Estate and Decision Sciences—John D. McBride, chairperson

Management—Kae H. Chung, chairperson

Marketing and Small Business—Frederic B. Kraft, chairperson

Graduate Faculty

School of Accountancy

Professors: James W. Deskins, Ralph W. Eeats, Michael F. Foran, Phillip T. May

Associate Professors: Bill D. Jarnagin, Linda C. Mitchusson (director), Douglas Sharp (dean, Barton School of Business)

Assistant Professors: LuAnn Bean, Sidney E. Drinkman, Linda F. Christensen, Toai-Yen Chung, Nancy J. Foran

Economics

Professors: Dong W. Cho (chairperson), Randall B. Haydon, Martin M. Perlino, Jimmy M. Skaggs, Samuel C. Webb

Associate Professors: Dennis C. Duell (associate dean, Barton School of Business), David M. Kemme, Gerald S. McDougal (associate vice president for academic affairs), Maurice Pfannstiel, William T. Terrell, I. N. Youn

Assistant Professors: James E. Clark, Philip L. Herach, Edwin A. Sexton

Finance, Real Estate and Decision Sciences

Endowed Professor: Donald R. Levi (Professor of Real Estate, occupies the Kansas Chair in Real Estate and Land Use Economics)

Professors: Curtis D. Terflinger

Associate Professors: Morita M. Bateman, John D. McBride (chairperson), Dwight D. Murphy, Carl C. Nielen, M. Hossein Safizadeh

Assistant Professors: Donald Christensen, Aravind P. Sethi, Pochara Theeratham

Management

Endowed Professor: Gerald H. Graham (R.P. Clinton Distinguished Professor of Management, occupies the R.P. Clinton Endowed Chair of Management)

Professors: Kae H. Chung (chairperson), Arthur B. Sweeney

Associate Professors: John A. Belt, Dharma deSilva, Kamal Fatehi-Sedeh

Assistant Professors: Nancy A. Bereman, Ivan Brown, Lee D. Hanson, Charles A. Pranter, W. Dean Vickery (assistant dean, Barton School of Business)

Marketing and Small Business

Endowed Professor: Billy M. Jones (VSU Encowed Professor of Entrepreneurship and Small Business Management, occupies the Endowed Chair of Entrepreneurship and Small Business)

Associate Professors: Donald W. Hackett, Frederic B. Kraft (chairperson), Robert H. Ross (director, MBA program)

Assistant Professors: Phillips W. Goodell, Dean E. Headley, Charles L. Martin

The mission of The Wichita State University W. Frank Barton School of Business is to offer learning opportunities which contribute to the development of professionally competent and socially responsible men and women for careers in business, government and other organizations requiring the organizational, managerial and analytical skills necessary in today's rapidly changing environment.

This mission is influenced by the location of the college in the largest economic and cultural center in the state of Kansas. As an integral part of the state's designated urban university, the faculty of the Barton School of Business is committed to programs and activities that will help sustain the contribution that this urban center makes to the economic, professional and cultural health of the state and nation.

Graduate degree programs in the school lead to the Master of Business Administration (MBA), Master of Professional Accountancy (MPA), Master of Science (MS) in administration and the Master of Arts (MA) in economics.

Master of Professional Accountancy

The Master of Professional Accountancy program at The Wichita State University is designed to prepare qualified candidates for careers as professional accountants in public practice, industry, government and nonprofit organizations. The program is based on strong preparation in general education courses with special emphases on communication skills, mathematics and economics, and includes a broad exposure to the different aspects of business and management.

The program requires a minimum of five years of full-time collegiate study, when beginning as a freshman. Students who decide to enter the program later in their academic careers should consult with the assistant director of the School of Accountancy to learn the approximate length of time it would take to earn the degree.

Admission Requirements

Admission to the MPA professional curriculum is available to (1) qualified students who have not yet completed a baccalaureate degree, and (2) qualified students who have completed a baccalaureate degree (not necessarily in business or accounting) from an accredited college or university.

Full admission to the MPA professional curriculum, for students who have not yet completed a baccalaureate degree, requires:

1. Completion of the preprofessional curriculum described below.

2. A minimum grade point average of 2.750 on all courses identified as Barton School of Business core courses.

3. A minimum grade point average of 3.000 on the following courses: Acct. 310, 320, 410 and 430.

4. A total of 1,100 points based on the formula of 200 times the overall grade point average on the last 60 hours plus the GMAT score.

Students who meet all the requirements above, except for the GMAT score, may be admitted on a conditional basis. These nine hours must be completed in the first semester following conditional admission or as soon thereafter as course scheduling permits.

Students holding a bachelor's degree in any field (not necessarily business or accounting) from an accredited institution may be admitted to the School of Accountancy if they meet the minimum scholastic requirements (a total of 1,100 points based on the formula of 200 times the overall grade point average on the last 60 hours plus the GMAT score). They will be expected to take courses covering any portion of the preprofessional curriculum for which they have not had an equivalency as soon as practicable.

Probationary Admission—All Students

Students who do not meet the minimum GMAT and/or grade point requirements may be admitted to probationary status by the director on the basis of sufficient evidence that they can satisfactorily complete the MPA program requirements and have the potential for a successful career in professional accounting.
Degree Requirements—Students Not Possessing a Baccalaureate Degree at Time of Admission

Preprofessional Curriculum

Students pursuing the Master of Professional Accountancy (MPA) are required to meet specified requirements for admission to the School of Accountancy. During the candidate's undergraduate work, the following requirements must be met:

1. The candidate must complete the general education requirements for The Wichita State University, plus additional nonbusiness courses for 56 semester hours. The following courses are specifically required by the School of Accountancy and may be counted within this 56 hours:

   **Courses**  **Hrs.**
   - Comm. 111, Basic Public Speaking
   - Econ. 2010 and 2020, Principles of Economics I and II
   - Eng. 210, Composition: Business, Professional and Technical Writing
   - Math. 144, Business Calculus
   - Phil. 1440, Moral Issues

2. The candidate must complete a minimum of 28 hours of the following Barton School of Business core requirements:

   **Acct. 210, Financial Accounting I**  3
   **Acct. 220, Managerial Accounting I**  3
   **Acct. 260, Introduction to Information Processing Systems**  3
   **DS 350, Introduction to Production Management**  3
   **DS 495, Management Information Systems**  3
   **Econ. 231, Introductory Business Statistics**  4
   - Upper-division economics course*  3
   - Fin. 340, Finance  3
   - Mgmt. 360, Concepts of Administration  3
   - Mgmt. 430, Business and Society  3
   - Mkt. 300, Marketing  3

   *Admission requirements for the CPA exam in Kansas specify a course in intermediate economic theory or a course emphasizing the monetary system.

3. The candidate must complete the following courses required by the School of Accountancy:

   **Preprofessional Accounting Core—12 hours**
   - Acct. 310 and 410, Financial Accounting I and II  6
   - Acct. 320, Managerial Accounting II  3
   - Acct. 430, Taxation I  3

   During the semester in which the preprofessional curriculum will be completed, the candidate for the MPA must apply for admission to the Graduate School.

Professional Curriculum

Candidates in the professional curriculum who have completed the minimum preprofessional curriculum outlined above, must complete 59 credit hours in the following courses while maintaining an overall grade point average of 3.000 or better.

**Courses**  **Hrs.**

- **Professional Accounting Core**
  - Acct. 510, Financial Accounting IV  3
  - Acct. 560, Accounting Information Systems I  3
  - Acct. 640, Auditing I  4
  - Acct. 850, Professional Seminar  1
  - Accounting Electives (800 level)  15

- B. Law 435 and 436, Law of Associations I and II  6

- **DS 871**, Multivariate Statistical Methods or approved equivalent  3

- Mgmt. 862, Organizational Behavior or approved equivalent  3

- Mgmt. 885, Administrative Policy  3

- Remaining Barton School of Business core requirements  6

As a minimum, the candidate's total program must include 30 graduate-level hours, including 15 hours of accounting courses numbered 800 or above and a total of 20 semester hours of courses numbered 800 or above.

**Degree Requirements—Students Possessing a Baccalaureate Degree at Time of Admission**

Total degree requirements, for students granted admission after completion of a baccalaureate degree, will vary and depend upon the specific course content of the undergraduate degree program. As a minimum, the candidate's program must total 30 graduate-level credit hours beyond the baccalaureate degree, including 15 semester hours of accounting courses numbered 800 or above and a total of 20 semester hours in courses numbered 800 or above.

The following courses must be included in the candidate's degree program if undergraduate equivalents are not a part of the baccalaureate degree:

- **Courses**  **Hrs.**
  - Acct. 210, 310, 410, 510, Financial Accounting I, II, III and IV*  12

- Acct. 220 and 320, Managerial Accounting I and II  6
- Acct. 260, Introduction to Information Processing Systems  3
- Acct. 430, Taxation I  3
- Acct. 560, Accounting Information Systems I  3
- Acct. 640, Auditing I  4
- B. Law 435 and 436, Law of Associations I and II  6
- Eng. 210, Composition: Business, Professional and Technical Writing  3
- Math. 885, Advanced Composition  3
- Math. 111, College Algebra  3
- Math. 144, Business Calculus  3
- Phil. 1440, Moral Issues  3

*Baccalaureate degree holders may substitute Acct. 800 for Acct. 210 and 310 if they earn a grade of 8 or better in Acct. 800.

The following Barton School of Business graduate-level core courses must be completed if the candidate's undergraduate program does not include equivalent work with a grade of C or better.

**Courses**  **Hrs.**

- DS 850, Introduction to Production Management  3
- DS 874, Management Information Systems  3
- Econ. 800, Analysis of Economic Theory  3
- Econ. 830, Statistical Methods for Business  3
- Fin. 840, Finance  3
- Mgmt. 830, Business and Society  3
- Mgmt. 862, Concepts of Administration  3
- Mgmt. 885, Administrative Policy  3
- Mkt. 800, Marketing  3

The following graduate-level course work must be completed:

- Acct. 850, Professional Seminar  1
- Accounting Electives (800 level)  15
- DS 871, Multivariate Statistical Methods or approved equivalent*  3
- Mgmt. 885, Administrative Policy  3
- Other graduate electives selected with consent of MPA adviser  9

*These two areas may be waived and the graduate electives increased accordingly if the student has had an approved equivalent course at the upper-level division.

**Master of Business Administration**

The Barton School of Business offers the Master of Business Administration (MBA) through faculty in the accounting, economics, finance, real estate and decision sciences; management; and marketing and small business departments, as well as in other colleges of the University. The MBA program is designed to...
prepare men and women for responsible positions of professional leadership in business, government, health-related organizations and other institutions. The program concentrates on general management, with particular attention given to developing within the student an understanding of the organization as an integrated system. Areas of emphasis may be developed in a variety of subjects as explained later.

The total hours required of students and the level at which they begin participation in the MBA program depend on their academic preparation. The total number of hours required for completion of an MBA ranges from 30 to 63 including six hours of prerequisite algebra and calculus, excluding any courses required to correct deficiencies in background fundamentals that students have at the time of admission.

Most of the courses that can be taken for graduate credit and almost all of those on the 800 level are offered in the evening.

Admission Requirements

Admission to the MBA program is granted to students who show high promise of success in postgraduate business study and who hold baccalaureate degrees from regionally accredited institutions.

Previous academic training in business is not required for admission to the MBA program. Students may have backgrounds in such diverse fields as engineering, liberal arts, education and health related areas. The specific content of a student’s previous education is less important than the evidence that the student has sound scholarship, strong personal motivation and the ability to develop skills necessary to assume positions of leadership.

Although various criteria are considered in granting admission, special attention is given to the applicants’ grade point averages on academic work completed and to their scores on the Graduate Management Admission Test (GMAT). To be admitted, applicants must have 1,050 points based on the formula: 200 times a student’s overall grade point average, plus the GMAT score; or 1,100 points based on 200 times the grade point average on the last 60 hours of graduate and undergraduate work completed, plus the GMAT score.

Foreign students are also required to have a minimum score of 550 on the Test of English as a Foreign Language.

Degree Requirements

Advanced Standing: Students with strong backgrounds in mathematics and business administration may be granted advanced standing in the MBA program through equivalent credit for background fundamental courses for which a minimum grade of C was received in an undergraduate program. Most students entitled to such credit hold baccalaureate degrees in business administration from accredited institutions. Students may be granted equivalent credit for any or all of the background fundamental courses, depending on the depth of their undergraduate or previous graduate preparation. Course work that is over six years old will not be utilized in granting of equivalency credit on the background fundamental courses. Students who present course work over six years old, and who feel that they still have an adequate grasp of the subject matter, will be allowed to take and achieve a passing score on an equivalency exam. This exam will either be the CLEP exam, if appropriate, or another exam developed by the department and approved by the MBA director. The MBA program may consist of as few as 30 hours for students who have no deficiencies in prerequisites and who receive equivalent credit for all of the background fundamentals.

Students Not Receiving Advanced Standing: Students with baccalaureate degrees in nonbusiness fields will usually not have backgrounds warranting the granting of advanced standing through equivalency credit. There are some exceptions. Some students, for example, may have had enough work in economics or statistics to be granted credit for these courses. Determination regarding equivalency credit will be made by the Program Director following admission to the program.

MBA Course Requirements

* Prerequisites

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<th>Course</th>
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<td>Math. 109, 111 or 112 College Algebra</td>
<td>3</td>
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<tr>
<td>Math. 144</td>
<td>3</td>
</tr>
<tr>
<td>Acct. 260 or equivalent, for computer literacy</td>
<td>3</td>
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**Background Fundamental Courses

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<tbody>
<tr>
<td>Acct. 800, Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Mkt. 800, Marketing Systems</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 830, Business and Society</td>
<td>3</td>
</tr>
<tr>
<td>Fin. 840, Financial Systems</td>
<td>3</td>
</tr>
<tr>
<td>DS 850, Production and Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 860, Management of Organizations</td>
<td>3</td>
</tr>
<tr>
<td>DS 874, Management Information Systems for Business</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 830, Statistical Methods for Business</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 800, Analysis of Economic Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct. 801, Managerial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 862, Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>Mgmt. 885, Business Policy</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 803, Analysis of Business Conditions</td>
<td>3</td>
</tr>
<tr>
<td>Econ. 804, Managerial Economics</td>
<td>3</td>
</tr>
</tbody>
</table>

Directed Electives 6
Free Electives 9

*These courses are to be taken only if a specific void exists.

**With approval of the program director, equivalent credit may be granted for courses of equal content taken in an undergraduate program. See Advanced Standing section above.

***Of the 15 elective hours, six hours must be taken in two of the following three functional areas: marketing, finance and production/quantitative. The remaining nine hours are free electives, of which three may be taken at the 600 level.

Policies

1. A candidate’s individual plan of study must be approved by the director or associate director. This plan must be filed within a month of the completion of 12 hours of graduate work.
2. All candidates must complete 27 hours of 800 level courses including: Acct. 801; Econ. 803; Econ. 804; Mgmt. 862; Mgmt. 885; six hours of directed electives; and six hours of free electives. The additional three hours of free electives may be at either the 800 level or the 600 level.
3. General topic interest areas offered in the Barton School of Business are accounting, business environment (including international management, business law, labor relations, environmental protection, urban economics, business economics and economic development), finance, managerial economics, marketing, operations analysis and production management, organizational behavior and personnel administration.

Master of Science in Administration

The Master of Science in Administration is oriented toward developing students’ specializations in business administration, as well as refining their research capabilities. Students must plan their programs, with the approval of their advisers, to include specialization in one of six areas: finance, management, marketing, personnel administration, decision sciences or real estate. Two options are available under the MS program in administration; option A requires the presentation of a thesis, option B requires a special project.

Admission Requirements

Admission is determined by a number of factors, including the applicant’s grade point average at the undergraduate level
and score on the Graduate Management Admission Test. General minimum requirements for admission are:

1. A baccalaureate degree in business administration, or the equivalent, from an accredited institution.
2. A total of 1,050 points based on the formula: 200 times the student's overall grade point average plus the GMAT score; or 1,100 points based on 200 times the grade point average on the last 60 hours of graduate and undergraduate work completed, plus the GMAT score.

Foreign students are also required to have a minimum score of 550 on the Test of English as a Foreign Language.

Degree Requirements

Students admitted to the MS in Administration program must complete the same set of prerequisites and background fundamentals as were previously listed for the MBA program. As in the MBA program, students may be granted equivalent credit for any or all of the background fundamental courses, depending on the depth of their undergraduate or previous graduate preparation. Course work that is over six years old will not be utilized in the granting of equivalency credit on the background fundamental courses. Students who present course work over six years old and who feel that they still have an adequate grasp of the subject matter, will be allowed to take and achieve a passing score on an equivalent exam, if appropriate, or another exam developed by the department and approved by the MS director.

Beyond the background fundamentals, the degree program includes 33 to 36 hours of work. All course work taken for the degree must be approved by the student's adviser. (Courses identified as background fundamentals may not be included in the 33-36 hours required for the degree.)

Students obtaining the MS in administration (under either option) are required to complete the following courses:

- DS 871, Multivariate Statistical Analysis ........................................... 3
- Mgmt 685, Research Methods in Business ........................................ 3
- Mgmt 685, Business Policies .............................................................. 3

Additional requirements under each option area are as follows:

Option A: Option A requires the completion of a minimum of 33 credit hours of work, including at least 17 hours in 800-level courses. In addition to the three required courses specified earlier, candidates must present a thesis, in their area of specialization, for a total of four semester credit hours. They must also take at least nine hours in this area of specialization.

A preliminary oral examination over the thesis proposal is required. Candidates must also present an oral defense of their thesis conducted according to the requirements of The Wichita State University Graduate School.

Option B: Option B requires the completion of a minimum of 36 credit hours of work, including at least 17 hours in 800-level courses. In addition, at least 15 hours must be in the area of specialization. Admission to Option B must be approved by the MS committee.

Of the 15 hours of specialization, up to four credit hours may be taken as a special project in the student's area of specialization. The special project may involve original case research or field research. This project must be approved by the MS committee and ordinarily is directed by a group of graduate faculty members.

For Option B, a final oral examination, conducted according to requirements of the MS committee, is held over a student's entire degree program.

Master of Arts in Economics

The Department of Economics offers courses of study leading to the Master of Arts (MA). A subspecialty in business economics is available. Students admitted to the MA program in economics are required to select a thesis or nonthesis option. The thesis option is recommended for students planning graduate work beyond the master's level, and the nonthesis option permits students to specialize in a chosen area of study. The department seeks to offer as much flexibility as is compatible with an individual student's background and interest.

Admission Requirements

Admission to the MA program in economics requires an undergraduate major in economics, or the equivalent, from an accredited university or the completion of this requirement during the graduate course of study. If students have not taken calculus in an undergraduate program, they must take a course in calculus, or equivalent mathematics, during the first semester of graduate work.

Admission to the program is based in large part—but not exclusively—on the student's grade point average and score on the Graduate Record Examination. For admission to full standing students must have a grade point average of at least 2.750 for the last half of their undergraduate work and for courses in economics.

The Graduate Record Examination (aptitude test only) is required, but under exceptional circumstances and on written petition to the graduate coordinator, students may take the examination prior to the second semester of their residence to retain their standing in the program.

Degree Requirements

Three courses are required of all students:

- Econ. 631, Intermediate Business Statistics ........................................ 3
- Econ. 801, Macroeconomic Analysis .............................................. 3
- Econ. 802, Microeconomic Analysis ................................................ 3

The candidate's program of courses must be approved by the graduate coordinator and the chairperson of the Department of Economics. Courses identified as background fundamentals of the MBA program and other courses designated by the Department of Economics may not be included in the hours required for this degree.

Thesis: If students elect to write a thesis, they must complete 30 semester hours (including thesis hours) of economics and related courses, 18 of which must be in courses numbered 800 or above. They must also present and successfully defend their thesis before their thesis committee. Candidates for the MA who write a thesis are required to pass an oral examination based primarily on the defense of the thesis.

Nonthesis: If students elect not to write a thesis, they must complete 34 semester hours, 18 of which must be in courses numbered 800 or above. Candidates who do not write a thesis must pass a written comprehensive examination of their course of study.

Accounting

School of Accountancy

Courses for Graduate/Undergraduate Credit


560. Accounting Information Systems I. (3). A study of the content, design and controls of accounting systems, with emphasis on the use of computers for processing financial data. Prerequisites: Acct. 220 and 260; Math. 109 or 111; senior standing. B 11 560 0 0502

640. Auditing I. (4). A study of the auditor's attest function, with emphasis on auditing standards and procedures, independence, legal responsibilities, codes of ethical conduct and evaluation of accounting systems and internal control. Prerequisites: Acct. 260, 410 and 560; Math. 109 or 111; senior standing. B 11 640 0 0502

690. Seminar in Selected Topics. (1-3). Repeatable for credit with School of Accountancy consent. B 11 690 0 0502
Economics

Department of Economics

Courses for Graduate/Undergraduate Credit

Course Code | Course Title | Credits | Prerequisites
---|---|---|---
602 | Mathematical Methods in Economics | 3 | Econ. 2020 and Math 144 or equivalent and junior standing
605 | History of Economic Thought | 3 | A critical analysis of economic thought, the factors that influence this thought and its impact upon the social and economic development of the modern world
615 | Economics of Transportation | 3 | A study of economic characteristics of transportation modes, problems and policies
618 | Economics of Air Transportation | 3 | A study of economic characteristics of air transportation
617 | Economics of Regulation | 3 | A study of the theory and practice of regulation
629 | Comparative Economic Systems | 3 | A comparative analysis of the evolution and operation of colonial and communist
627 | Economic History of the United States | 3 | Cross-listed as Hist. 515. An analysis of the basic factors in economic growth. Agriculture, trade and commerce, industrial development and the changing role of the government in economic activity are explored
631 | Intermediate Business Statistics | 3 | A study of the regression model with extensions, analysis of variance models and other related statistical methods, with emphasis on application to business and economic data
640 | Monetary Problems and Policy | 3 | An analysis of monetary problems and policy. Debt management policies and the structure of interest rates are included
653 | Public Finance | 3 | An analysis of fiscal institutions and decision making in the public sector of the American economy, budget planning and execution, taxation, debt and fiscal policy
660 | Labor Economics | 3 | An introduction to labor economics, surveying both theoretical and empirical research in this field. Topics include labor markets, wage determination, human capital theory and others.
661 | Collective Bargaining and Wage Determination | 3 | An exploring of collective bargaining, emphasizing the techniques and procedures used, and the major issues and problems inherent in the process
662 | Work and Pay | 3 | The orientation of this course will investigate the economic aspects of work and the workplace. The scope will be limited to the labor force, methods of rewarding those who participate in the labor force and such topics as the quality of work life, worker alienation and the nature of work
665 | Health Economics | 3 | A study of the factors which influence the demand for, and supply of health care services, the quantity, quality and pricing of health services; the need for insurance; and the role of government in the health sector
671 | Economic Growth and Development | 3 | Survey of leading growth theories, with an emphasis on the processes of development and capital formation in developed and underdeveloped economies. Determinants of real income, resource allocation, investment criteria, balance of payments, national policies and related topics are analyzed within this framework
672 | Introduction to International Economics and Business | 3 | Cross-listed as Mgmt. 561. A survey of the economic foundations of international trade and investment. After a study of international trade theory and policy (the international economy), it explores the operations of the multinational firm within that environment
674 | International Finance | 3 | Cross-listed as Fin. 646. The study of foreign exchange, balance of payments, the international monetary system and the world's monetary and capital markets and their relationships with the financial operations of multinational firms. Also, relevant aspects of international financial management are explored through a series of case studies

The following abbreviations are used in the course descriptions: L stands for lecture; and T for laboratory. For example, 4R, 3L means four hours of lecture and two hours of lab.
Courses for Graduate Students Only

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>Analysis of Economic Theory. (3)</td>
<td>An intensive analysis of micro- and macroeconomic principles.</td>
<td>3</td>
</tr>
<tr>
<td>801</td>
<td>Macroeconomic Analysis. (3)</td>
<td>An intensive analysis of contemporary literature and problems of national income analysis.</td>
<td>3</td>
</tr>
<tr>
<td>802</td>
<td>Microeconomic Analysis. (3)</td>
<td>An intensive analysis of contemporary literature and problems of national income analysis.</td>
<td>3</td>
</tr>
<tr>
<td>803</td>
<td>Analysis of Business Conditions. (3)</td>
<td>A study of economic forecasting and its relationship to macroeconomic analysis.</td>
<td>3</td>
</tr>
<tr>
<td>804</td>
<td>Managerial Economics. (3)</td>
<td>A survey of theoretical and analytical tools of economics that are useful in managing financial institutions.</td>
<td>3</td>
</tr>
<tr>
<td>805</td>
<td>Seminar in Industrial Organization and Public Policy. (3)</td>
<td>A seminar in the theoretical and analytical tools of economics that are useful in managing financial institutions.</td>
<td>3</td>
</tr>
<tr>
<td>806</td>
<td>Seminar in International Trade and Finance. (3)</td>
<td>A seminar in the theoretical and analytical tools of economics that are useful in managing financial institutions.</td>
<td>3</td>
</tr>
<tr>
<td>810</td>
<td>Seminar in Contemporary Labor Issues. (3)</td>
<td>An intensive analysis of contemporary labor issues in the field of labor.</td>
<td>3</td>
</tr>
<tr>
<td>811</td>
<td>Seminar in Public Finance. (3)</td>
<td>An analysis of theoretical and applied aspects of public finance in the American and foreign economies.</td>
<td>3</td>
</tr>
<tr>
<td>812</td>
<td>Seminar in Monetary Theory. (3)</td>
<td>An examination of neoclassical and contemporary monetary theories.</td>
<td>3</td>
</tr>
<tr>
<td>813</td>
<td>Money and Capital Markets. (3)</td>
<td>Theoretical and empirical studies of rates of return on financial securities.</td>
<td>3</td>
</tr>
<tr>
<td>814</td>
<td>Speculative Markets. (3)</td>
<td>A cross-listed seminar in speculative markets.</td>
<td>3</td>
</tr>
<tr>
<td>815</td>
<td>Seminar in International Trade and Finance. (3)</td>
<td>A seminar in theoretical and analytical tools of economics that are useful in managing financial institutions.</td>
<td>3</td>
</tr>
<tr>
<td>816</td>
<td>Seminar in Environmental Quality Control. (3)</td>
<td>Examination of actual problems, projects and current approaches to environmental quality control.</td>
<td>3</td>
</tr>
</tbody>
</table>

817. Directed Study. (1-3) | Individual study of various aspects of economics. | 1-3 |
818. Group Studies In Economics. (1-3) | Repeatable for credit with departmental consent. | 1-3 |
820. Research. (1-2) | A comprehensive study of methods of analyzing major types of securities. | 1-2 |

Finance

Department of Finance, Real Estate and Decision Sciences

Courses for Graduate/Undergraduate Credit

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>640</td>
<td>Financial Management. (3)</td>
<td>An exploration of the problems and operations for financial management.</td>
<td>3</td>
</tr>
<tr>
<td>641</td>
<td>Investments. (3)</td>
<td>An analysis of investment risks, financial information and industry characteristics.</td>
<td>3</td>
</tr>
<tr>
<td>642</td>
<td>Commercial Bank Management. (3)</td>
<td>A study of bank asset and liability management.</td>
<td>3</td>
</tr>
<tr>
<td>643</td>
<td>Capital Markets and Financial Institutions. (3)</td>
<td>An introduction to the capital market system.</td>
<td>3</td>
</tr>
<tr>
<td>644</td>
<td>Commercial Bank Management. (3)</td>
<td>A study of bank asset and liability management.</td>
<td>3</td>
</tr>
<tr>
<td>645</td>
<td>Security Analysis and Valuation. (3)</td>
<td>A comprehensive study of methods of analyzing major types of securities.</td>
<td>3</td>
</tr>
<tr>
<td>646</td>
<td>International Finance. (3)</td>
<td>A cross-listed seminar in speculative markets.</td>
<td>3</td>
</tr>
</tbody>
</table>

BARTON SCHOOL OF BUSINESS/ECONOMICS 27
840. Financial Systems. (3). An intensive analytical introduction to finance from the management viewpoint, including the theory of financial management, the financial institutional structure and an analysis of a variety of practical problems of business finance. Prerequisite: Acct. 800 or equivalent. B 15 840 0 0504

841. Financial Administration. (3). An integrated treatment of basic business finance, financial management, financial statement analysis, and financial institutions. Prerequisite: Fin. 840 or equivalent. B 15 841 0 0504

842. Structure and Policies of Financial Institutions. (3). The development, management and impact of policies of financial institutions, including planning, measuring and achieving financial goals. Prerequisite: Fin. 840 or equivalent. B 15 842 0 0504

843. Investment Analysis and Portfolio Management. (3). Study of the basic theory and practice of security valuation and investment management. Includes security and portfolio analysis, selection of investment media, and measurement of performance. Not available to students with credit in Fin. 641 or equivalent. Prerequisites: Fin. 340 or 840 and Econ. 830. B 15 843 0 0505


845. Security Analysis. (3). An analysis and valuation of investment securities issued by corporations and governmental agencies. Prerequisites: Fin. 641 and 843 or departmental consent. B 15 845 0 0505

846. Capital Budgeting. (3). A study of the organization and operation of the capital budgeting system. Problems in partial decentralization and in comparability of estimates of funds flow are explored. Contemporary methods of treating uncertainty and constraints and the application of programmming techniques are explored. The determination of appropriate discount rates is also explained. Prerequisite: Fin. 840 or equivalent. B 15 846 0 0504

847. Speculative Markets. (3). Cross-listed as Econ. 847. Analysis of the markets for speculative securities such as futures, options and commodities. Underlying theories explaining speculative markets in which such securities are traded are evaluated. Trading strategies such as hedging and arbitrage are discussed. Prerequisite: Fin. 840 or equivalent. B 15 847 0 0504

850. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. Prerequisite: junior standing. B 15 750 2 0504

Courses for Graduate Students Only

820. Seminar in International Trade and Finance. (3). Cross-listed as Econ. 870. A seminar in international trade and contemporary selected issues of international economics and finance. Selected issues would include such areas as foreign exchange markets, the production function, and oil dollars in the international monetary system, transference of inflation between countries, developments in the common markets, etc. Prerequisite: Fin. 648 or Econ. 674 or instructor's consent. B 15 820 9 0513

834. Organizational Behavior. (3). A study of contemporary management concepts and practices applicable to private and public sector organizations in an international setting and their impact on operational and management functions of multinational business. The student is introduced to the dynamic growth of business and government interaction on a global basis. The course includes an examination of national and industrial development, labor and industrial relations, host country activities to promote or restrict international business; development of technological and marketing expertise. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing. B 15 683 0 0506

848. Health Administration Policy. (3). Cross-listed as HAE 694. An integration of all aspects of health administration in the analysis of and making decisions for policy development. Prerequisites: a basic course in economics, accounting, finance and management or administration and junior standing. B 16 694 0 0506

890. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. Prerequisite: junior standing. B 15 699 0 0506

Courses for Graduate Students Only

860. Management of Organizations. (3). An introduction to management and organizational theory. Includes such topics as classical and contemporary management theory, human relations, group dynamics, motivation, communication, organizational structure and design and behavioral control. B 16 860 0 0506

861. Introduction to International Economics and Business. (3). Cross-listed as Econ. 672. A survey of the economic foundations of international trade and investment. After a study of international trade, theory and policy (the international economy), it explores the operations of the multinational firm within that environment. Prerequisites: Econ. 2620 and junior standing. B 16 561 0 0513

663. Organizational Interactions. (3). A study of intraorganizational and interorganizational interactions. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing. B 16 665 0 0506

665. Organizational Development. (3). Planned organizational change. Emphasis is upon team building in organizations. Individual, group and structural developments are included. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing. B 16 665 0 0506

667. Organizational Structure and Design. (3). An introduction and exploration of the theoretical importances for the design of a functional organizational subsystem structure and design. The interrelationships of organizational goals, decision making, environment, technology, climate, innovation and organizational structure/design are analyzed utilizing a systems approach. Additional topics include formal versus informal structure, differentiation, integration and matrix organizations. Prerequisites: junior standing and Mgmt. 360. B 16 667 0 0506

680. Decision Making. (3). Cross-listed as P. Adm. 730. A study of the theories of decision making with attention directed to the factors of creativity, the quest for subjective certainty, rationality, cognitive inhibitors, problem identification, evaluation of alternatives, applications of quantitative methods to decision processes and decision implementation. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing. B 16 680 0 0506

681. Administrative Policy. (3). An integration of all aspects of business administration in the analysis of and making decisions for policy development. Prerequisites: DS 350. Fin. 340, Mkt. 301, Mgmt. 360 or departmental consent and senior standing. B 16 681 0 0506

683. Comparative and International Management. (3). The study of contemporary management concepts and practices applicable to private and public sector organizations in an international setting and their impact on operational and management functions of multinational business. The student is introduced to the dynamic growth of business and government interaction on a global basis. The course includes an examination of national and industrial development, labor and industrial relations, host country activities to promote or restrict international business; development of technological and marketing expertise. Prerequisites: Mgmt. 360 or concurrent enrollment and junior standing. B 16 683 0 0506

684. Health Administration Policy. (3). Cross-listed as HAE 694. An integration of all aspects of health administration in the analysis of and making decisions for policy development. Prerequisites: a basic course in economics, accounting, finance and management or administration and junior standing. B 16 694 0 0506

Workshop in Management. (1-4). Prerequisite: junior standing. B 16 750 2 0506

Courses for Graduate Students Only

860. Socio-Legal Environment of Business. (3). An examination of the economic, political, social and legal environment in which business operates. Consideration is given to the philosophic foundation of capitalism and how businesses have interacted with government, citizens, and labor over time. Emphasis is placed on the role of business in dealing with various societal problems. Current issues, such as the social responsibility of business, affirmative action, occupational safety and health, environmental protection and the challenge to the legitimacy of the firm, are dealt with from the perspective of the decision-making manager. B 16 830 0 0506

863. International Business Administration. (3). An introduction to international business administration with particular attention given to the development of multinational business strategies in light of the diverse economic, political, social and cultural dimensions of the environments that exist in both developed and developing areas of the world. B 16 836 0 0513

860. Management of Organizations. (3). An introduction to management and organizational theory. Includes such topics as classical and contemporary management theory, human relations, group dynamics, motivation, communication, organizational structure and design and behavioral control. B 16 860 0 0506

862. Organizational Behavior. (3). A study in individual behavior in an organizational setting. Human variables in business are analyzed from the standpoint of job placement, performance and individual development. Topics covered include behavioral development, innovativeness, leadership and organizational interactions. Prerequisite: Mgmt. 860 or departmental consent. B 16 862 0 0506

865. Communication. (3). Cross-listed as Comm. 465. An analysis of communication models with emphasis on their applications to communication problems in organizations. Social-psychological processes underlying persuasion in interpersonal relations and through the mass media are explored. Com-
607. Promotion Management. (3). An analysis of all issues involved with the promotion of an organization and its products or services. These promotion issues deal with the development of advertising campaigns, management of the personal sales force, development of special promotional activities and management of public relations. Prerequisites: Mkt. 300 and junior standing. B 17 607 0 0509

608. Selling and Sales Force Management. (3). An analysis of current behavioral concepts of personal selling and the problems and policies involved in managing a sales force. Prerequisites: Mkt. 300 and junior standing. B 17 608 0 0509

609. Marketing Programs. (3). A study of all the aspects of the marketing mix that are integrated to make an effective and coordinated marketing program. Prerequisites: Mkt. 300, six (6) additional hours of marketing. B 17 609 0 0509

690. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. B 17 690 3 0501

590. Seminar in Selected Topics. (1-5). Repeatable with departmental consent. B 17 590 3 0501

500. Marketing Systems. (3). An analytical introduction to the combination of the aspects of the marketing mix that are integrated to make an effective and coordinated marketing program. The marketing function as a major subsystem within the individual business firm is also presented. B 17 500 0 0509

501. Contemporary Issues in Marketing Management. (3). A broadening of the concept of marketing by examining the impact of contemporary macroenvironmental conditions upon micromarketing decisions. Analysis includes identification and study of environmental issues, issue participants, new managerial decisions required and limitations to marketing decision making. Prerequisite: Mkt. 300 or equivalent. B 17 501 0 0509

502. Marketing Strategy. (3). Integration of long-range marketing program and corporate policies. Budgetary control and the evaluation of the effectiveness of marketing systems are included. The organization of the marketing department and its relation to the total organization are also covered. Prerequisite: Mkt. 800 or departmental consent. B 17 502 0 0509

503. Marketing Analysis. (3). The application of the scientific method to the solution of marketing problems. Prerequisite: Mkt. 800 or equivalent. B 17 503 0 0509

805. Consumer Decision Processes. (3). An examination of different aspects of the behavior of consumers and of the factors that help explain their behavior. An analysis of current concepts and models is included. Prerequisite: Mkt. 800 or departmental consent. B 17 805 0 0509

809. Marketing Theory. (3). A utilization of marketing research findings to analyze current marketing theory. Conceptual and theoretical frameworks for marketing analysis are developed. Prerequisite: six hours of marketing, including Mkt. 801. B 17 809 0 0509

891. Directed Studies. (1-5). Prerequisite: departmental consent. B 17 891 3 0501

893. Special Project in Marketing. (1-4). A special project including original case research, supervised internships or field research. Prerequisite: approval of the MS Committee. Open only to MS in administration degree candidates. B 17 893 3 0509

895-896. Thesis. (2-2). B 17 895 4 0501; B 17 896 4 0501

Personnel

Department of Management

Courses for Graduate/Undergraduate Credit

864. Labor Relations. (3). A course designed to present the philosophy of labor legislation and the function of collective bargaining in labor-management relationships. Prerequisite: junior standing. B 16 664 3 0515

866. Selection, Training and Placement. (3). An analysis of advanced programs of employee selection, training and placement. Testing, interviewing, counseling, appraisal, job analysis and job design are explored. Prerequisites: Pers. 466 or departmental consent and junior standing. B 16 666 0 0515

750. Workshop in Personnel. (1-4). Prerequisite: junior standing. B 16 750 9 0515

Courses for Graduate Students Only

867. Seminar in Personnel Administration. (3). An in-depth study and analysis of several critical and/or major current problems in personnel and a review of significant literature. The direction of the course could be determined by the interest of the class. Prerequisite: Pers. 466. B 16 867 9 0515

868. Wage and Salary Administration. (3). A study of job evaluation and other procedures that lead to the development of a sound wage and salary structure. Prerequisite: Pers. 466 or instructor's consent. B 16 868 0 0515

890. Seminar in Special Topics. (1-3). Repeatable with departmental consent. B 16 890 9 0501

891. Directed Studies. (1-5). Prerequisite: departmental consent. B 16 891 3 0501

893. Special Project in Personnel. (1-4). A special project including original case research, supervised internships or field research. Prerequisite: approval of the MS Committee. Open only to MS in administration degree candidates. B 16 893 3 0501

895-896. Thesis. (2-2). B 16 895 4 0501; B 16 896 4 0501

Real Estate

Department of Finance, Real Estate and Decision Sciences

Courses for Graduate/Undergraduate Credit

611. Real Estate Finance. (3). Real estate financing instruments, institutions, traditional and creative financing techniques. Risk anal-
y, mortgage financing and underwriting.
primary and secondary mortgage markets.
Prerequisite: Fin 340. RE majors should have
completed RE 310. B 15 611 0 0511

614. Real Estate Appraisal. (3). Impact of
socioeconomic conditions on real estate val-
ues. Cost, sales comparison and capitalized
income approaches to market value. Demon-
stration appraisal. Prerequisite: RE 310. B 15
611 0 0511

618. Real Estate Investment Analysis.
(3). Equity investor decision criteria, insti-
1614. IReal Estate Appraisal. (3). Impact of
candidate in the field of rea-
valuation. Mortgage financing and underwriting.
Income approaches to market value. Demon-
sation appraisal. Prerequisite: RE 310. B 15
611 0 0511

619. Urban Land Development. (3). A
"hands-on" course to allow students to be-
come familiar with all aspects of land de-
velopment. Topics include supply and demand
analysis, site selection, feasibility analysis,
development financing, cash-flow budgeting
and creation of marketing strategies for de-
velopment projects. Both residential and
commercial development are considered.
Prerequisite: RE 310 or 611 or 618. B 15 619
0 0511

690. Seminar in Selected Topics. (1-
5). Repeatable with departmental consent.
Prerequisite: junior standing. B 15 690 9 0511

750. Workshop in Real Estate. (1-
4). Prerequisite: junior standing. B 15 750 9
0511

Courses for Graduate
Students Only

810. Real Estate Feasibility Analysis.
(3). Theory and practice of analyzing the
feasibility of both new construction and re-
development of income-producing projects.
Detailed comprehensive case studies are
approached with contemporary analytical
techniques. Prerequisite: RE 310, 614 and
618. B 15 810 0 0511

890. Seminar in Special Topics. (1-
3). Repeatable with departmental consent. B
15 890 9 0511

891. Directed Studies. (1-5). Prerequisite:
departmental consent. B 15 891 3 0511

893. Special Project in Real Estate. (1-
4). A special project including original case
research, supervised internships or field
research. Prerequisite: approval of the MS
Committee. Open only to MS in administration
degree candidates. B 15 893 2 0511

895-896. Thesis. (2-2). B 15 895 4 0511; B
15 896 4 0511

Small Business/
Entrepreneurship

Department of Marketing and
Small Business

A concentration in entrepreneurship is
available for students who complete a
three course sequence comprised of
Sm. Bus. 868, 893 and 891. Topics cov-
ered in these courses include new ven-
ture feasibility, innovation and entrepre-
nurship within organizations, and
directed independent studies.

Courses for
Graduate/Undergraduate Credit

560. Consulting with Small Business.
(3). This course will give hands-on experi-
ence consulting with an existing small busi-
ness. Students will work with the owner in
teams under the guidance of the instructor
to identify the problem, gather information rele-
vant to the problem, propose solutions to the
problem and help the owner implement
agreed upon solutions. The student will gain
a personal knowledge of the lifestyle of an en-
trepreneur both pro and con, as well as ex-
perienced-based knowledge about various
aspects of managing a small business. Pre-
requisites: Mkt. 300, Fin. 340, Mgmt. 360,
senior standing. Preferred Sm. Bus. 465 also
taken. B 17 560 2 0506

668. Advanced Entrepreneurship. (3).
This course will explore advanced subjects such
as leveraged buyouts, R&D limited partner-
ships, private placements of stock, role of
entrepreneur in economic development, mar-
teting strategy for smaller businesses and
strategic planning during early growth

stages. The student will prepare a business
plan and be required to present the plan for
evaluation by a panel of academicians from
various business disciplines. Prerequisite:
Sm. Bus. 361 or consent of instructor. B 17
668 0 0506

690. Special Topics in Entrepreneurship.
(3). This advanced course will have in-depth
discussion of emerging topics within the field of
entrepreneurship. Topics to be discussed
will be on a rotating basis, allowing the stu-
dent to repeat the class one time. Prerequi-
sites: Sm. Bus. 668, Sm. Bus. 465, senior
standing. B 17 690 9 0506

750. Workshop in Entrepreneurship. (1-
4). Prerequisite: junior standing. B 17 750 2
0501

Courses for Graduate
Students Only

(3). The focus of this course is on directed
students in the appropriate methods of se-
lecting financial sources and in raising seed
capital through the preparation of a compre-
nensive feasibility study. Topics to be cov-
ered are (1) sources of capital, such as ven-
ture capitalists, investment bankers, banks
and creative forms of financing, (2) marketing
opportunity analyses, (3) perform develop-
ment, (4) feasibility decision making and (5)
actual preparation of the loan package. Pre-
requisites: Sm. Bus. 668, Mkt. 360, Fin. 340,
DS 850, Mgmt. 860 or equivalent and ap-
proval of the instructor. B 17 868 9 0506

890. Seminar in Special Topics. (1-
3). Repeatable with departmental consent. B
17 890 9 0506

891. Directed Studies. (1-5). Prerequisite:
departmental consent. B 17 891 3 0506

893. Special Project in Entrepreneurship.
(1-4). A special project including original case
research, supervised internships or field
research. Prerequisite: approval of the MS
Committee. Open only to MS in administration
degree candidates. B 17 893 3 0506

The following abbreviations are used in the course de-
scriptions. R stands for lecture and L for laboratory. For
eexample, 4R: 2L means four hours of lecture and two hours of
lab.
College of Education

Offices: 102 Corbin Education Center
Maurine A. Fry, Dean
Ronald G. Davison, Associate Dean, graduate affairs
Robert D. Alley, Associate Dean, undergraduate affairs

Departments
Communicative Disorders and Sciences—
J. Keith Graham, chairperson; Kenneth W. Burk, coordinator
Industrial Technology—Sidney Connor, chairperson
Instructional Services—Dennis J. Kear, chairperson; Marcus Balenger, assistant chairperson; Michael A. James, graduate coordinator
Personnel Services—Glen R. Dey, chairperson; Leonard M. Chaffee, EAS graduate coordinator; Timothy S. Hartshorne, CSP graduate coordinator
Physical Education, Health and Recreation—John Hansen, chairperson and acting graduate coordinator

The College of Education offers programs leading to the Master of Arts (MA) and the Master of Education (MEd) in several fields; the Master of Science Education (MSE) for secondary teachers in biological sciences, chemistry, geology and physics; the Specialist in Education (EdS) in the fields of educational administration, and counseling and school psychology; and the Doctor of Philosophy (PhD) in communicative disorders and sciences. A transfer program in educational administration leading to the EdD or PhD is available in cooperation with The University of Kansas.

Graduate offerings include programs which help students meet requirements for state certification as elementary principals, secondary principals, supervisory personnel, district school administrators, school counselors, early childhood teachers, special education teachers, reading specialists, school psychologists, speech and language pathologists and audiologists, and other specialists. Other programs are designed to support the continuing development of practicing classroom teachers.

Programs in the College of Education testify to the need for both continuity and change in elementary, secondary and higher education. Offerings range from workshops, which are offered only once and devoted to the examination of a relevant topic, to course sequences that lead to advanced degrees.

Master of Education and Areas of Specialization

Master of Education (MEd) programs provide for specialization in educational administration, educational psychology, elementary education, early childhood education, early childhood/child-handicapped, physical education, secondary education, special education, and counseling and school psychology. Within the areas of elementary education, secondary education and educational psychology, students may choose to emphasize women's studies or other options as a program focus.

Admission Requirements

Admission to some MEd programs may require candidates to qualify for a teaching certificate. Many graduate programs in the college, however, provide appropriate preparation for students functioning in a variety of nonschool settings. These students may request exemption from state certification requirements. Certain degree specializations have specific admission requirements, as described under the appropriate department's section of the Bulletin.

Degree Requirements

The MEd requires the completion of 30 semester hours and a thesis, or 36 semester hours without a thesis. In both programs, at least one half of the required hours must be taken in courses numbered 800 or above. IS (E.P.) 801 or IS (E.P.) 704 may be required in these hours of credit, depending on the program selected.

Thesis: A thesis option in the MA or MEd programs may be elected. Appropriate topics range from basic to applied to action research, and approaches vary from historical to descriptive to experimental. The program requires 30 semester hours, approval of the thesis proposal by the student's graduate adviser and thesis committee, and an oral examination over the thesis topic. The committee is appointed by the graduate dean from nominees submitted by the student's adviser.

Examinations. During the final semester of enrollment, candidates are usually required to pass a written comprehensive examination in their major area. Within the first three weeks of the semester in which students take the exam, they should file an Application for Comprehensive Examination with the Office of the Associate Dean for Graduate Affairs, College of Education. Applications will not be accepted if submitted less than two weeks prior to the scheduled examination date. Thesis students must pass an oral examination over their research area. In most cases, nonthesis MEd candidates must sit for a written comprehensive examination. The comprehensive examination is waived for MEd students undertaking a thesis project. Specific examination requirements are described under the appropriate department's section of the Graduate Bulletin. The written comprehensive examination is scheduled the first Saturday in November for the fall semester, the second Saturday in April for the spring semester and the first or second Saturday in July for the Summer Session.

Communicative Disorders and Sciences

Graduate Faculty
Professors: Kenneth W. Burk (graduate coordinator), J. Keith Graham (chairperson), Roger K. Kasten, Frank Kleffner (adjunct), George Randall (adjunct), Robert L. Mcroskey (emeritus)
Associates: Jerry L. Cranford, Harold T. Edwards, Wesley L. Faires
Assistant Professors: Ronald D. Chambers, William J. Gavin (adjunct), Ken J. Kallail (adjunct), Thomas R. Knell, Christopher A. Moore, Rosalind R. Scudder

Degrees and Areas of Specialization

The Department of Communicative Disorders and Sciences offers courses of study leading to the Master of Arts (MA) and the Doctor of Philosophy (PhD). Academic and clinical training is provided for students at Wichita State who wish to become professionally qualified to work with communicatively handicapped children and adults. Instructional areas include communication sciences, speech and language pathology, and clinical and rehabilitative audiology. A graduate program culminating in a master's degree is required for professional certification as a speech-language clinician or audiologist in the public schools and for work in hospital clinics, rehabilitation centers or private practice. With an undergraduate preprofessional major, students can normally complete the master's program in one calendar year and be eligible for certification by the American Speech-Language-Hearing Association.
Admission Requirements

Admission to the master's degree program is granted to students who have completed an undergraduate major of at least 30 semester hours in the area of speech, language, and hearing disorders and closely allied courses. Admission also requires an overall grade point average of 2.750 and at least 3.000 for the last 30 hours of the undergraduate degree program and in the undergraduate major field of study, and acceptable scores on the general aptitude section of the Graduate Record Examination.

Admission to the doctoral degree program requires a master's degree and completion of at least one year of master's graduate work with a grade point average of 3.500 or better. Credentials must demonstrate that students have a background of knowledge appropriate for entry into an integrated program of advanced study and research, and provide evidence of personal qualities and traits indicative of further scholarly contributions to the selected area of study. To be admitted, students also must submit results of the general aptitude portion of the Graduate Record Examination.

Master of Arts Requirements

The Master of Arts (MA) in communicative disorders and sciences may be earned under a thesis option or a nonthesis option.

The thesis option requires the presentation and oral defense of an acceptable thesis and the successful completion of a minimum of 30 semester hours. Four hours may be earned in thesis preparation courses, CDS 895 and 899.

The nonthesis option requires the successful completion of a minimum of 32 semester hours. Written and oral comprehensive examinations must also be taken. Students may not take these examinations during any semester in which they are on academic probation. Candidates in either option must demonstrate competence in statistics, either by completing a beginning course with a grade of C or better or by passing an examination in this subject area. CDS 800, Introduction to Graduate Study and Research, and CDS 828, Advanced Speech and Hearing Science, or their equivalents, also are required of every graduate student. All students must enroll in a clinical practicum course in their major area of emphasis during each semester of enrollment. No more than four semester hours of credit in clinical practice—CDS 785, 834, 835 and 850—may be counted toward the minimum semester hour requirements for an MA. For all students, a minimum of 12 semester hours in courses numbered 700 or above is required. Evidence of successful clinical competence also must be demonstrated before the completion of the graduate program.

Participation in many of the department's clinical practicum courses requires that students obtain medical clearance prior to the start of the course. This requirement is indicated in the individual course descriptions. Procedures to be followed may be obtained from the department office. Also, graduate students who participate in active clinical practice during the year must purchase professional liability insurance in an amount of not less than $200,000—$600,000. This must be done on a yearly basis, when appropriate. Each entering graduate student, new to Wichita State, is required to take a speech and hearing proficiency test during the first semester of enrollment.

Doctor of Philosophy Requirements

Doctoral students, in conjunction with their advisory committee, formulate an integrated program of individual study. After taking into consideration previous academic and professional experiences, the students and their committee devise a program, which normally consists of at least 90 hours. Doctoral students may petition to take qualifying examinations after they have completed a major portion of their study program and satisfied three required tool subjects. Students also enroll in CDS 935, Advanced Practicum in Communicative Disorders and Sciences, or its equivalent, each semester of full-time study through the semester in which their dissertation prospectus is approved. The independent conduct and oral defense of a program of original research is the final requirement in the PhD program.

Financial Aid

Some financial aid to support graduate study is available and includes federal traineeships, assistantships and Wichita State fellowships.

Communication Sciences

Courses for Graduate/Undergraduate Credit

610. The Neurology of Speech and Language. (4). A consideration of basic neuroanatomy and neurophysiology necessary for obtaining an understanding of the representation of speech and language in the human central nervous system and of conditions resulting from neurological impairment. Prerequisite: at least senior standing. D 12 610 0 1220

735. Anatomy, Physiology and Pathology of the Auditory System. (3). Detailed anatomy and function of the auditory system. Normal and pathological conditions are studied, with emphasis on clinical manifestations. Prerequisite: CDS 231. D 12 735 0 1220

Courses for Graduate Students Only

828. Advanced Speech and Hearing Science. (3). 3R; 1L. Advanced study of speech and hearing processes, primarily in their normal aspects. Attention is devoted to the current understanding of speech generation, the speech signal and the normal function of hearing. Attention is also given to techniques of investigation of these processes. Prerequisite: CDS 315 or equivalent or departmental consent. D 12 828 1 1220

830. Laboratory Instrumentation. (3). 2R; 3L. An introduction to clinical and research instrumentation used in the fields of communicative disorders and sciences. Experience with instrumentation is gained through practical projects and applications within the laboratory. Prerequisite: CDS 828. D 12 830 1 1220

667. Introduction to Psychoacoustics. (3). 3R; 1D. Basic principles underlying the perceptual processing of sounds, the interdependencies between sound stimuli and subjective auditory experience as related to communication behavior. Prerequisite: CDS 540. D 12 867 0 1220

300. Communicative Sciences: Physiological Phonetics. (3). 3R; 2L. A critical review of pertinent research concerning the physiological bases of speech, respiratory, laryngeal, resonant and articulatory functions. Prerequisite: CDS 828. D 12 900 1 1220

910. Communicative Sciences: Acoustic Phonetics. (3). 3R; 2L. A critical review of research dealing with the acoustical characteristics of speech. Also included are the perception and techniques of speech synthesis and analysis. Prerequisite: CDS 828. D 12 910 1 1220

920. Neurophysiology of Communication. (2). Special lectures, seminars, clinical demonstrations and independent study. D 12 920 0 1220

Financial Aid

Some financial aid to support graduate study is available and includes federal traineeships, assistantships and Wichita State fellowships.

Speech and Language Pathology

Courses for Graduate/Undergraduate Credit

520. Language Disabilities in Children. (3). Psycholinguistic and cognitive approaches to language disabilities in children. Practical application of language assessment procedures, interpretation of results and methods of language intervention are covered. Prerequisite: CDS 1110 or 705, 220 or departmental consent. D 12 520 0 1220

700. Cleft Palate: Evaluation and Clinical Management. (3). Methods of evaluating and modifying articulation and resonance in cleft palate individuals. The role of the speech clinician within an interdisciplinary team is explored. Consideration is given to other organic anomalies. Prerequisite: prior consent for current enrollment in CDS 214. D 12 700 0 1220
705. Communicative Disorders. (3). Cross-listed as Comm. 665. A survey of speech, language, and hearing disorders; their identification, assessment, and consideration of the roles of health and educational specialists in the total rehabilitative process. Background in normal communicative structure, processes, and acquisition is provided for understanding communicative disorders. Areas introduced include language disabilities in children, adult aphasia, articulation disorders, voice disorders, cleft palate, language pathology, stuttering, cerebral palsy, and hearing impairment. Not open to students majoring in CDS. Credit in both CDS 1110 and 705 is not allowed. D 12 760 0 1220

720. Stuttering: Diagnosis and Clinical Management. (3). A review of current theories on the etiology and development of the disorder. Behaviorally based diagnostic procedures for children and adults are covered, as are methods for clinical management and real-life generalization, including procedures for parent and client interviewing and counseling. Opportunities for observation and demonstration therapy are provided. D 12 720 0 1220

726. Voice Disorders: Diagnosis and Clinical Management. (3). Review of current knowledge on therapy and diagnosis of voice disorders. Understanding of commonly encountered voice disorders in children and adults. Presentation of procedures for differential diagnosis and clinical management, based on a working knowledge of the anatomic and physiology of normal voice production. Prerequisites: at least senior standing and CDS 214. D 12 726 0 1220

727. Teaching English as a Second Language. (2-3). Cross-listed as Eng. 727 and Ling 727. Current methods of teaching English to nonnative speakers are discussed. Students learn to analyze language patterns and to design appropriate teaching units for class and language laboratory use. D 12 727 0 1220

Courses for Graduate Students Only

805. Adult Aphasia: Evaluation and Clinical Management. (3). Review of historical and contemporary literature, standard tests for evaluation of communicative disorders in aphasic and related neurological disorders. Identification and evaluation of speech and language impairments and treatment approaches. Prerequisite: prior or concurrent enrollment in CDS 610. D 12 805 0 1220

810. Cerebral Palsy: Evaluation and Clinical Management. (3). The study of cerebral palsy and related neurological disorders. An evaluation and modification of speech and language functions and a study of the cerebral palsied individual in society. Procedures employed in ongoing and terminal counseling are considered. D 12 810 0 1220

815. Interviewing and Parent Counseling. (3). Presentation of current techniques of case history taking and interviewing as they apply to speech, language, hearing, learning, and behavior disorders in handicapped children and adults. Procedures employed in ongoing and terminal counseling are considered. D 12 815 0 1220

820. Examination Methods in Speech and Language Pathology. (3). 3R; 3L. Appraisal and differential diagnostic techniques in speech and language pathology. A weekly diagnostic practicum in communicative disorders is held, with experiences in report writing and follow-up procedures provided. Prerequisites: medical clearance and terminal semester of graduate program. D 12 820 0 1220

824. Language Remediation Strategies—Birth to 5. (3). Discussion of current language intervention strategies and programs for infants, toddlers, and preschoolers, birth to 5 years. Assessment procedures leading to the development of individualized family programs are also examined. D 12 824 0 1220

825. Seminar in Communicative Disorders. (2-3). Review of recent development and study of methods of integrating research findings and newer clinical and therapeutic procedures and concepts into a rehabilitative procedure. D 12 825 0 1220

834. Beginning Graduate Practicum in Communicative Disorders. (1). 1R; 3L. Supervised application of diagnostic and/or clinical management techniques with children and adults presenting communicative disorders. Introduction to supervised practicum at the graduate level. Clinic and practicum procedures are stressed in the lecture portion of the course. Fifty hours of practicum are required. Intended for students in their first semester of full-time graduate study. Prerequisites: CDS 544 or an equivalent, departmental consent, and medical clearance. D 12 834 0 1220

835. Graduate Practicum in Communicative Disorders. (1-3). 3R; 1L. Supervised application of diagnostic and/or clinical management techniques with children and adults presenting communicative disorders. Fiftieth hour of practicum for each hour of credit is required. Repeatable. Prerequisites: CDS 834 or equivalent, departmental consent and medical clearance. D 12 835 0 1220

Audiology

Courses for Graduate/Undergraduate Credit

747. Rehabilitative Audiology. (3). Educational and psychological impact of hearing loss. Methods of improving the educational and family environment for the benefit of the hearing impaired are covered. Procedures for maximal usage of amplification are discussed. Use and care of hearing aids are studied as methodologies for dealing with speech and language deficits by utilizing auditory and visual cues. Prerequisite: CDS 231. D 12 747 0 1220

785. Supervised Practicum in Rehabilitative and Diagnostic Audiology. (1-3). 1R; 3-9L. Supervised experience in the teaching of speech, language, speech reading and listening skills to deaf or hard of hearing children and adults. Supervised experience in the fitting and care of hearing aids. Procedures employed in children with hearing disorders in the classroom are considered. D 12 785 0 1220

Courses for Graduate Students Only

850. Supervised Practicum in Audiomterics. (1-3). 1R; 3-9L. Application of audiometric testing to clinical situations. Experience is gained in complete patient management, counseling and rehabilitation follow-up when appropriate. Three to four hours of practicum per week are required for each hour of credit. Repeatable. Prerequisites: CDS 540 and prior or concurrent enrollment in CDS 747, diagnosis one semester prior to enrollment and medical clearance. D 12 785 0 1220

855. Auditory Evaluation of Infants and Children. (3). 3R; 1L. Demonstration and practice in assessing auditory functioning of infants and children through 48 months of age. Report writing and parent counseling, as well as a study of appropriate instruments and procedures, are included. Prerequisites: CDS 540 and medical clearance. D 12 855 0 1220

860. Hearing Aids. (3). 2L. The history and function of hearing aids. The measurement and significance of the electroacoustic characteristics, principles and procedures for the selection and recommendation of specific hearing aids for individual hearing losses, hearing aid orientation and counseling related to various age categories are covered. Prerequisite: CDS 540. D 12 860 0 1220

865. Advanced Clinical Audiology. (3). 2L. Diagnostic and rehabilitative procedures in the audiological clinic. Techniques and procedures for the administration and interpretation of special audiometric tests include acoustic impedance and aided audiometric measurement. Prerequisite: CDS 540. D 12 865 0 1220

870. Seminar in Audiology. (2-3). Review of recent developments and research, with attention given to industrial audiology and environmental noise problems. Prerequisite: CDS 540. D 12 870 0 1220

875. Psychologic Measures of the Auditory and Vestibular Systems. (3). 3R; 1L. Techniques and procedures for administration and interpretation of audiologic tests of the auditory and vestibular systems, including electrocochleography (ECoG), auditory brain stem response (ABR), electrophysiology (ENG) and acoustic reflex. Test administration and interpretation are included. Prerequisites: CDS 540, 735 and 610 (may be taken concurrently). D 12 875 0 1220

Deaf Education

Course for Graduate/Undergraduate Credit

760. Introduction to Deaf Education. (3). Evolution of educational programs and methods used with the deaf. Contributions of related disciplines to educational methodology and special aspects of curriculum development in schools and classes for the deaf are surveyed. Also included is a review of common communication systems and social and vocational considerations. Prerequisite: CDS 231. D 12 760 0 1220

General

Courses for Graduate/Undergraduate Credit

715. Selected Topics in Communicative Disorders and Sciences. (1-3). Individual or group study in specialized areas of communicative sciences and disorders. Repeatable. D 12 715 0 1220

750. Workshop in Communicative Disorders and Sciences. (1-4). A course offered periodically on selected aspects of speech and hearing habilitation. D 12 750 0 1220

Courses for Graduate Students Only

800. Introduction to Graduate Study and Research. (3). A general introduction to graduate study. A survey is made of research procedures utilized in the field of communic-
Industrial Technology

Graduate Faculty

Associate Professor: Sterling B. Lewallen
Assistant Professors: Alan A. Aagaard, Edgar L. Webb

The Master of Education (MEd) provides for specialization in secondary education with an emphasis in the field of industrial technology. Graduate courses provide the opportunity for study in selected areas of professional interest and may be used to satisfy specific requirements for certification.

Courses for Graduate/Undergraduate Credit

500. Industrial Field Studies. (1-4). An in-depth analysis of industrial concepts from the perspective of an industrial employee. A comprehensive written paper conceptualizing research and development, finance, marketing, production and industrial relations is a course requirement. The paper involves a comparison of the theoretical to the state-of-the-art in a local industrial firm. A one-hour group conference is held on campus each week for purposes of directing student perceptive. This course may be repeated by selecting specific areas from the industrial principles listed above. D 11 519 0 0 8 3 9

519. Shop Planning and Organization. (3). Selection, purchase and organization of shop equipment and supplies. Developing and maintaining necessary records and reports and the planning of shop facilities are included. Also reports. D 11 519 0 0 8 3 9

570. Directed Studies in Materials and Processes. (3). This course will provide an opportunity for the advanced student to pursue an area of interest related to the estimation of materials and processes on a synthesis level. The method of study will be research, basic applications, or a combination thereof, in consultation with the professor, culminating in a research project and/or report. Prerequisites: departmental consent. D 11 570 4 0 8 3 9

572. Basic N/C Programming. (3). Lecture/laboratory course provides instruction in numerically controlled machine tool design, utilization, programming, tooling and operations. Prerequisite: six hours machine tool operations or equivalent. D 11 572 0 0 8 3 9

575. Composite Material Applications. (3). An introduction to the description and application of composite materials. Prerequisite: postsecondary course in plastics or equivalent industrial experience. D 11 575 0 0 8 3 9

580. Directed Studies in Power and Energy. (3). Provides an opportunity for the advanced student to pursue an area of emphasis within the realm of power and energy on a synthesis level. The method of study will be research, basic applications, or a combination thereof, in consultation with the professor, culminating in a research project and/or report. Prerequisites: departmental consent. D 11 580 4 0 8 3 9

590. Directed Studies in Visual Communications. (3). Provides an opportunity for the advanced student to pursue an area of emphasis within the realm of visual communications on a synthesis level. The method of study will be research, basic and applied, or a combination thereof, in consultation with the professor, culminating in a research project and/or report. Prerequisites: departmental consent. D 11 590 4 0 8 3 9

592. Desktop Publishing. (3). Desktop publishing is the creation of text and graphic elements on a computer screen, which can then be printed on paper or other media. Prerequisites: familiarity with basic computer operations. D 11 592 0 0 8 3 9

594. Offset Lithography. (3). Principles and techniques of preparing computer-generated and original copy, processing lithographic negatives and plates, as well as operating offset printing presses. Laboratory included. Prerequisites: departmental consent. D 11 594 0 0 8 3 9

597. VersaCAD. (3). Introduction to Computer Aided Drafting (CAD). A course in interactive computer graphics that provides hands-on experience and basic information necessary for students to implement, modify and use a computer graphics system. Course work includes the design and production of sample drawings designed to cover the major operations of the software. Prerequisites: one year of general computer experience. D 11 597 0 0 8 3 9

598. AutoCAD. (3). A basic Computer Aided Drafting course utilizing AutoCAD software to produce mechanical and assembly-type drawings. Prerequisites: one year of general computer experience. D 11 598 0 0 8 3 9

750. Workshop in Industrial Technology. (1-4). Offered from time to time on various aspects of industrial technology. D 11 750 2 0 8 3 9

751. Institute in Industrial Technology. (1-4). A course designed to develop knowledge and competence related to curricular and methodological innovations in industrial technology. The content is designed to satisfy those competencies that are identified as essential for teaching a defined subject area. Prerequisites: departmental consent. D 11 751 0 0 8 3 9

792. Explorations in Technology. (3). Participants will experience the modular curricular approach for the middle level student, including technical materials, demonstration equipment and specific laboratory equipment. Teachers will gain insight into methodologies for proper delivery of the curriculum and gain familiarity with the presentation format and laboratory equipment. D 11 792 0 0 8 3 9
Instructional Services
The Department of Instructional Services offers programs with emphases in early childhood education, early childhood handicapped, educational psychology, elementary education, foundations of education, library science, secondary education, middle-level education, science education and special education. Certification requirements in learning disabilities, library science, mental retardation, gifted personal and social adjustment and reading may be included as part of a degree.

Master of Education
The Department of Instructional Services offers programs leading to the Master of Education (MED). With approval from the department, a graduate student may choose the master's thesis program (30 hours) or the nonthesis program (36 hours). Final evaluation on a thesis program is by oral examination on the thesis; evaluation on a nonthesis program is by written comprehensive examination. At least 60 percent of the course work in master's degree programs must be at the 700-level or above. Specific degree requirements are listed on program sheets available from the student's adviser or graduate coordinator.

Master of Education in Educational Psychology
Graduate students in educational psychology may choose from the following emphases:
1. General educational psychology
   a. The student's teaching area
   b. Research and evaluation
   c. Reading
   d. Special education
   e. Early childhood
2. Special education
   a. Mental retardation
   b. Learning disabilities
   c. Gifted education
   d. Personal and social adjustment
   e. Early childhood handicapped

Students who are working toward a degree or who hold a master's degree may pursue course work leading to certification in special education areas listed in Item 2 above.

Master of Education in Elementary Education
Degree requirements in elementary education have been developed to assist graduate students personalizing a program to meet their professional goals. Students may choose from the following emphases:
1. Improvement of instruction
2. Reading—remedial or classroom
3. Early childhood education
4. Study in a curriculum and instructional area
5. Special education
6. Library science—media
7. Middle school education

Students must possess a valid elementary education certificate or be certifiable in Kansas in elementary education in order for the degree to be granted.

Students who are working toward a degree or who hold a master's degree may pursue course work leading to certification in reading, early childhood education or library science.

Master of Education in Secondary Education
The program in secondary education offers graduate students an opportunity to increase their knowledge in their major fields as well as competencies in secondary teaching. Courses are selected with the approval of an adviser in one or more of the following:
1. Curriculum
2. Instruction
3. Communications
4. Middle school
5. Technology/program evaluation
6. Subject Areas
   a. Educational psychology
   b. English
   c. Foundations of education
   d. Gerontology
   e. Health care administration
   f. Library science
   g. Mathematics
   h. Nursing
   i. Reading
   j. Science
   k. Social sciences
   l. Special education
   m. Women's studies
   n. Others approved by secondary education faculty

Students who are working toward a degree or who hold a master's degree may pursue course work leading to certification in reading and library science.

Master of Science Education
The Master of Science Education (MSE) is available to secondary teachers who qualify for teaching assignments in biology, chemistry, geology or physics. The MSE is a 36-hour program, with 12 hours of approved courses in professional education and a minimum of 18 hours completed in science teaching fields.

Courses for Graduate/Undergraduate Credit

620. Introduction to Middle-Level Education. (3). An overview of the historical, philosophical, social and psychological factors affecting the movement toward better educational opportunities for learners from ages 10 to 14. D 21 620 0 0629

621. Curriculum/Instruction Alternatives for Middle-Level Education. (3). An exploration into the development of alternative curricular organization and instructional strategies for better meeting the needs of preadolescents in grades 5 through 9. D 21 621 0 0629

703. Research and Implementation of Learning Centers. (3). This course will consider a variety of alternative approaches to teaching of students at grade levels and subject matter levels. D 21 703 0 0601
714. Activities for Human Relations I. (3). Topics covered are values, communications, self-image, and self-awareness. Activities in the above areas can be used by individuals and groups in instructional settings. They are used to explain, teach, and enhance human relationships. D 21 714 0 0829

715. Activities for Human Relations II. (3). Topics covered are introductory activities, values, and self-awareness. Activities in the above areas can be used by individuals and groups in instructional settings. They are used to explain, teach, and enhance human relationships. D 21 715 0 0829

718. Group Dynamics for Educators. (3). A laboratory course in human relations and group dynamics based upon involvement in various group activities. D 21 718 0 0829

720. Microcomputers in the Classroom. (2). Course is designed to familiarize students with the various areas of computer application in education. No computer experience necessary. Students develop working knowledge of computer functions, applications, software and languages that are relevant to ordinary classroom use. Prerequisite: upper division standing. D 21 720 1 0829

721. Beginning AppleSoft BASIC. (1). An introduction to microcomputer programming applications. Students develop a practical and working level of skills in programming AppleSoft BASIC and are able to plan, write, debug and modify simple programs for classroom use. Prerequisite: IS 720 or equivalent. D 21 721 1 0899

722. LOGO Implementation. (3). Course is designed to acquaint students with the philosophy of LOGO, teach the LOGO language in its classroom applications, develop curriculum activities which stress problem solving and programming techniques. Prerequisite: IS 720 or equivalent. D 21 722 1 0899

745. Utilizing the Print Media in Classrooms. (3). Explores various ways the print media may be utilized to teach critical thinking, research, and evaluation skills through word study and writing practice, and improved reading through speed and comprehension practice. Special stress is placed upon the utilization of daily newspapers as a supplement to other materials in teaching the various school subjects. Preparation of teaching materials for the school classroom is also emphasized. D 21 745 0 0832

750. Workshops in Education. (1-4). D 21 750 2 0803

751, 752, 753 or 754. Special Studies in Education. (1-3). Designed for elementary and secondary school teachers. Prerequisite: with advisor's consent. Prerequisite: teacher certification or departmental consent. D 21 751 2 0862; D 21 752 2 0802; D 21 753 2 0802; D 21 754 2 0802

785. Instructional Media. (3). Selection, use and production of educational media. Includes instructional design, media planning skills, visual literacy, slide show production, design and production of transparencies, etc. Designed to introduce the processing of audio-visual equipment, and the operation of instructional audio-visual equipment. Student assignments involve the design and production of materials for teaching. D 21 785 0 0899

789. Values Clarification Education. (3). An introduction to one approach to values education. Students develop competence with values clarification strategies, valuing techniques and the essential skills for valuing. Dealing with values-laden issues in the school curriculum is emphasized. D 21 789 0 0829

Courses for Graduate Students Only

838. Curriculum Alternatives. (3). An examination of curriculum models that are alternative to the traditional curriculum and the socioeconomic, political and psychological factors that motivate their development. Attention is given to a comparison of historical and contemporary models for the curriculum. Prerequisite: ISFE 701. D 21 838 0 0829


862. Presentation of Research. (1-2). A project submitted in the manuscript form. Repeatable for a maximum total of 2 hours of credit. Prerequisite: IS 860. D 21 862 4 0824

875-876. Master's Thesis. (2-2). Prerequisite: IS 860. D 21 875 4 0824

890. Special Problems in Education. (1-4). Directed reading and research under supervision of a graduate instructor. Prerequisite: departmental consent. D 21 890 3 0802

Instructional Services—Early Childhood

Graduate Faculty
Associate Professors: Marcus T. Bailing, (Assistant Chairperson) Jon A. Carroll

In addition to the following courses, IS 728, Growth and Development I, and ISEP 740, Introduction to Early Childhood Special Education: Infancy and Preschool, relate to this area. These descriptions appear under the heading Instructional Services—Early Childhood Psychology and IS—Special Education.

Courses for Graduate/Undergraduate Credit

760. Parent Education for Preschool Teachers. (3). An introduction to ways of working with parents of preschool children and an analysis of formal and informal approaches, with emphasis on the teacher's role in developing these procedures. Prerequisite: IS 761 or instructor's consent. D 21 760 0 0823

761. Early Childhood Education. (3). An introduction to the problems and philosophy of educating children in the preschool years. Prerequisite: IS 761 or instructor's consent. D 21 761 0 0823

762. Methods and Materials in Preschool Education. (3). The study of teaching methods for the teacher of the preschool child and the preparation of materials to enhance the educational process of these children. Prerequisite: IS 761 or instructor's consent. D 21 762 0 0823

763. Teacher/Child Relations. (3). Designed to assist the student in developing the necessary skills for effective communication with children from birth to age nine. Emphasis is placed upon helping the child build a positive self image and a positive relationship with others. D 21 763 0 0823

764. Day-Care Services. (3). Instructional methods and operational procedures for day-care center workers. D 21 764 0 0823

Course for Graduate Students Only

870. Research and Contemporary Influences in Early Childhood Education. (3). Analysis of current early childhood educational programs and an in-depth study of contemporary programs influencing the education of young children. D 21 870 0 0823

Instructional Services—Educational Psychology

Graduate Faculty
Associate Professors: Orpha K. Duell (Educational Psychology Unit Coordinator), Randolph A. Ellsworth, Theodore S. Freimont, James L. Trammell
Assistant Professor: Douglas Lynch, Linda Busken

Courses for Graduate/Undergraduate Credit

700. Understanding Statistics in Research Literature. (1). Designed to increase understanding of statistical information in journal articles and other evaluative documents. Assumes no previous knowledge of statistics. D 21 700 0 0824

704. Introduction to Educational Statistics. (3). An introduction to statistics, including measures of central tendency, variability, correlation, chi square, median test, test, and analysis of variance. D 21 704 0 0824

716. Principles of Learning and Evaluation for Teachers. (3). A study of the learning process and principles related to learning in the classroom. Consideration and study are given to evaluation of the products of learning. Students extend their knowledge by a thorough review of research. It may be substituted for ISEP 433 but is not open to students with credit in ISEP 433. Prerequisite: ISEP 333. D 21 716 0 0822

728. Growth and Development I: Infancy and Early Childhood. (3). The growth of the infant and young child from birth to approximately age 5 in the areas of physical, cognitive, psychosocial, and moral development. Not open to students who have taken Ed. Psych. 730 (no longer offered). Prerequisite: IS 233 or 333 or instructor's consent. D 21 728 0 0822

729. Growth and Development II: Later Childhood. (3). The growth of the child from about age 5 through age 11-12 in the areas of physical, psychosocial and moral development. Not open to students who have taken Ed. Psych. 730 (no longer offered). Prerequisite: IS 233 or 333 or instructor's consent. D 21 729 0 0822

730. Growth and Development III: Adolescence. (3). The development in the areas of physical, cognitive, psychosocial and moral development. Prerequisite: IS 233 or 333 or instructor's consent. D 21 730 0 0822

731. Growth and Development IV: Adults and Aging. (3). Cross-listed as Ger. 731. The process of adult growth and development as well as the process of aging and death in the areas of physical, cognitive...
psychosocial and moral development. Prerequisite: IS 233 or 333 or instructor's consent. D 21 731 0 0622

732. Behavior Management. (3). Presentation and utilization of psychological principles and techniques for dealing with developmental behavior and learning patterns. Emphasis is on the preschool and elementary-school age child. Prerequisite: IS 233 or departmental consent. D 21 732 0 0818

Courses for Graduate Students Only

800. Principles and Applications of Educational Psychology. (3). A critical examination of the major topic areas traditionally defined as educational psychology. After examination of basic paradigms and strategies of the discipline, students apply them to such areas as instructional practices and design, classroom management and discipline, etc. Prerequisites: IS 233 or 333 or 433 or instructor's consent. D 21 800 0 0822

801. Introduction to Educational Research. (3). An introduction to research in education. Included in the course content are: (1) a survey of current educational research, (2) the nature of research methodology, (3) the preparation of research reports, and (4) criticism of current research. D 21 801 0 0824

811. Educational Measurement and Evaluation. (3). Issues and techniques for measurement and evaluation in the cognitive, affective, and psychomotor domains. D 21 811 0 0828

819. Social Psychology of Education. (3). A critical study of the individual in social interaction in a variety of educational settings. Application of theory and research to school-related issues and problems. D 21 819 0 0822

820. Learning Theory for Teachers. (3). Applications of some major learning theories and learning principles. Prerequisites: IS 601 or departmental consent. D 21 820 0 0822

823. Experimental Design in Educational Research. (3). A consideration of sampling theory, design for testing hypotheses about populations from samples, testing correlation coefficients, means and difference between means, simple factorial designs, designs involving matched groups, designs involving repeated measure of the same group and analysis of variance. Prerequisite: IS 704. D 21 823 0 0824

Instructional Services—Elementary Education

Graduate Faculty

Professor: John H. Wilson
Associate Professors: Marcus T. Ballenger (assistant chairperson), D. R. Bezzi, Joel A. Carroll, Michael A. James (graduate coordinator), Dennis J. Kear (chairperson), Joe D. Payne
Assistant Professors: Twyla G. Sherman, Jeff Corrett

Courses for Graduate/Undergraduate Credit

518. Methods for the Kindergarten Teacher. (3). To acquaint students with all aspects of the kindergarten program and introduce the wide variety of materials available and in use. Prerequisites: IS 233 and 233. D 21 518 0 0823

705. Introduction to the Reading Process. (3). Designed to acquaint students and teachers with all of the aspects of current reading theory and pertinent reading research to point out the possibilities of applying this theory and research to the actual teaching of children. D 21 705 0 0829

734. Affective Approaches to Teaching Reading. (3). The course develops specific methods for developing a literature program with children (preschool—elementary years). Specific emphasis is on extending literature and media through the reading environment, language arts, the arts, and creative expression. Prerequisite: junior, senior or graduate standing. D 21 734 0 0802

Courses for Graduate Students Only

802. Classroom Reading Diagnosis. (3). Designed to emphasize the understanding and use of reading survey tests, group diagnostic reading tests, criterion referenced assessment programs and appropriate teacher constructed tests. Will include the selection, administration, scoring and interpretation of group reading tests. Contains a diagnostic practicum. Prerequisite: IS 705. D 21 802 2 0830

806. Introduction to Graduate Study in Elementary Education. (3). The field of elementary education is explored: its history and trends, reasons for teaching, criteria of professionalism, program orientation and requirements and options for the student pursuing a degree are delineated. D 21 806 0 0802

821. Elementary Reading Practicum. (3). Designed to provide practical experience in delivering developmental and corrective reading instruction in the classroom setting. Prerequisites: IS 705 and 846, or 802, or equivalent. D 21 821 2 0830

842. Remedial Reading Practicum. (3). Emphasis upon individual corrective treatment of diagnosed reading difficulties. A laboratory practicum in remedial reading instruction is required. Prerequisites: IS 705 and 845 or equivalent. D 21 842 2 0830

845. Elementary School Curriculum. (3). Study of the elementary school curriculum includes all of the experiences of children for which the school will assume responsibility. The potential of this broad concept of the curriculum is explored as a means of developing desired elementary learner characteristics. Prerequisite: IS 806 or 21 845 0 0828

846. Remedial Reading Diagnosis. (3). Emphasis upon individual diagnosis. The use of standardized instruments, teacher-made instruments, corrective treatment of reading difficulties; a diagnostic practicum is included. Prerequisite: IS 705 or equivalent. D 21 846 2 0830

846. Seminar in Reading. (3). Designed to examine the organization and administration of reading programs. Additional time is spent investigating pertinent research in the area of reading instruction. Prerequisite: IS 705 or equivalent. D 21 849 0 0830

852. Improvement of Instruction in Language Arts. (3). Recent developments in the teaching of language arts in elementary and/or middle school grades: problems, concerns, methods, materials, and research related to listening and to oral, written, and visual communication, including "school" writing and creative writing. Students can select particular concepts and related skills for special attention. Excellent for teachers who want to review and apply developments during the past five years. Prerequisite: IS 701 or instructor's consent. D 21 852 0 0826

854. Improvement of Instruction in Social Studies. (3). A study of recent changes in social sciences curriculum and instruction designed to investigate strengths and limitations of various approaches. Competency in teaching for concept development, dealing with social issues, and teaching for inquiry are stressed. An inquiry-centered learning environment emphasizes personalizing the social studies curriculum for children. Alternative teaching strategies and complementary evaluative techniques are reviewed and practiced. Prerequisite: IS 406 or equivalent. D 21 854 0 0829

856. Improvement of Instruction in Mathematics. (3). For teachers in service. Consideration of recent trends in subject matter content and teaching guides to improve understanding of meanings, vocabulary and mathematical concepts. Instructional methods and materials are included. Prerequisite: IS 444 or equivalent. D 21 856 0 0833

858. Improvement of Instruction in Science. (3). For teachers in service. Discussion of the ideas and models of science that teachers should recognize, understand and consider from kindergarten through grade eight. Prerequisite: IS 321 or equivalent. D 21 858 2 0834

859. Seminar in Elementary Education. (3). Prerequisite: IS 806. D 21 859 9 0802

863. Trends in Theories of Instruction. (3). Instructional theory is considered through the use and application of models of teaching. Study of each model covers theoretical orientation, instructional procedures and effects. Practice of models in classroom settings is required. Prerequisite: IS 806. D 21 863 0 0829

Instructional Services—Foundations of Education

Graduate Faculty

Associate Professor: Louis Goldman
Assistant Professor: Betsy E. West

Course for Graduate/Undergraduate Credit

701. Foundations of Education. (3). A survey of the various foundations areas, including philosophical, historical, social and comparative. This course is prerequisite to subsequent foundations courses. D 21 701 0 0826

Courses for Graduate Students Only

807. Philosophy, History and Psychology of Elementary and Secondary Education. (3). An introduction to the analysis of concepts such as mind, experience and knowledge, and their place in the social and cognitive processes of problems and practices and to philosophical systems. Prerequisite: IS 701 or instructor's consent. D 21 807 0 0821

808. Sociology of Education. (3). An exploration of the relationship between education and society. Prerequisite: IS 701 or instructor's consent. D 21 808 0 0821

818. Anthropology of Education. (3). A cross-cultural examination of the educational...
process utilizing some of the basic concepts and perspectives of anthropology. Prerequisite: IS 701 or instructor’s consent. D 21 618 0 0821

Instructional Services—Library Science

The requirement for school library media certification endorsement is the successful completion of twenty-three (23) hours of specific courses in library science, instructional media, computers, and children’s or adolescent literature. The school library media certificate endorsement will be added to a current valid teaching certificate at the level for which the school library media certification is sought.

Courses may be taken either at the upper-division or graduate level.

Courses for Graduate/Undergraduate Credit

707. School Library Media Center Cataloging and Classification. (3). The principles of cataloging and classification are studied, and students will learn how to apply the Library of Congress classification system and Sears subject headings. Descriptive cataloging, types of entry and filing rules are also covered. D 21 707 0 1601

708. School Library Media Center Book Collection. (3). Basic resources for the development and evaluation of a school library media center collection are considered. Emphasis is placed on selection policies and procedures, the school library media specialist’s responsibilities in the selection process, and development of a selection resource file. D 21 706 0 1601

710. School Library Media Center Reference Materials. (3). Resources and techniques of providing reference service in a school setting are investigated. D 21 710 0 1601

712. Current Trends in Librarianship. (3). The course covers the history and development of librarianship; the role of the library media specialist in the educational system; methods of library management, and the impact of technology. D 21 712 0 1601

713. Administering The School Library Media Program. (3). The course provides a study of national and state standards, as well as an investigation of the school library media center role and the leadership role of the school library media specialist. Specific topics include goal-setting and budgeting, administrative styles and personnel policies, evaluation of programs and procedures, and development of a systematic instructional planning, including instructional theory, systems approach, and other recent approaches. D 21 713 0 1601

779. Practicum/Internship. (3). A. elementary school; B. middle school; C. high school. D. K-12. Students will pursue a professional experience in a school library media center under cooperative supervision of university personnel and an experienced practitioner in the field. Prerequisite: departmental consent. D 21 779 2 1601

790. Special Problems in the School Library Media Center. (1-3). Directed reading and research. Prerequisite: departmental consent. D 21 790 0 1601

Instructional Services—Secondary Education

Graduate Faculty

Professors: Robert D. Alley (associate dean, College of Education), Michael C. McKenna (director, Reading Center), Nancy C. Milet

Associate Professors: Bruce D. Ingrime, Michael C. McKenna (direct, Reading Center), Linda J. Nelson

Assistant Professors: James E. Fisher, Candace B. Wells, Betsy E. West, Catherine Yeus, Jeff Corbett

Courses for Graduate/Undergraduate Credit

516. Literature for Adolescents. (3). Extensive reading of literature in all genres consistent with studies of adolescents’ reading interests, abilities and responses to literature. Prerequisite junior standing. D 21 612 0 0829

711. Teaching Reading in the Content Areas. (3). Emphasis is placed on the teaching of reading in the content areas. Prerequisite: secondary teaching experience or departmental consent. D 21 711 0 0830

Courses for Graduate Students Only

831. Evaluation Techniques in an Effective Classroom. (3). Designed to create an awareness of classroom management and evaluation systems which include a variety of evaluation and management tools and formats. Prerequisite: IS 233 or 332. D 21 831 0 0829

832. Secondary School Curriculum, (3). Develops the student’s ability to describe, analyze, and evaluate curriculum models and programs. Particular attention is paid to the social, psychological, and philosophical foundations of curriculum as well as to current trends in curriculum design. Prerequisite: IS 701. D 21 832 0 0829

835. The Instructional Process. (3). Focuses on the process of instruction in order to develop skill in systematic instructional planning. Includes instructional theory, systems approach and other recent approaches to instruction. Prerequisite: IS 701. D 21 835 0 0829

837A, B and C. The Teaching of School Subjects. (3). Recent developments in English (A), Social Studies (B), or Science (C). Problems, concerns, methods, materials, and research. Excellent for teachers who want an extensive review of developments during the past five years. D 21 837 0 0834

850. Seminar in Secondary Education. (3). D 21 850 0 0803

Instructional Services—Special Education

Graduate Faculty

Associate Professors: Lyman W. Boomcr (director, Special Education), Theodore S. Fremont, Myrliss A. Hershey

Assistant Professor: Belinda Lazarus

Courses for Graduate/Undergraduate Credit

601. Introduction to Exceptional Children. (3). This course is designed as a survey of the characteristics of exceptional learners including the handicapped and the gifted. Service delivery models and current practices are presented. This course fulfills recertification requirements for teachers and serves as an introductory course in exceptionality for special education majors, administrators and school psychologists. Prerequisite: IS 233 or 332. D 21 601 0 0811

602. Introduction to the Gifted. (3). Emphasis on recognition and education of the gifted child. Prerequisite: IS 233 or 332. D 21 602 0 0811

604. Understanding of the Mentally Retarded. (3). Current research and historical approaches to the education of the mentally retarded and survey of the literature in this field. Prerequisite. IS 601. D 21 604 0 0810

702. Reading for Teachers of Exceptional Children. (3). Designed to survey the development and teaching of reading skills, diagnostic techniques and teaching approaches pertinent to students in special education settings, particularly IEP. Prerequisite: instructor’s consent. D 21 702 0 0830

740. Introduction to Early Childhood Special Education: Infancy and Preschool. (3). A basic introduction to the emerging field of early intervention for handicapped children and their families. Prerequisites: IS 720, IS 840, or IS 760, or permission of instructor. D 21 740 0 0820

742. Learning and Behavior Disorders. (3). A study of the incidence, classification, etiology, intellectual, personal, social and developmental characteristics of the learning disabled child. Current research, personal concerns and historical development of the educational approaches to learning and behavioral disorders are examined. Prerequisite: instructor’s consent. D 21 742 0 0818

744. Curriculum/Methods for the Mentally Retarded. (3). Adaptations of the standard curriculum and the teaching procedure to be beneficial for the teaching of the mentally retarded child. D 21 744 0 0810

749. The Emotionally Disturbed. (3). A study of the incidence, classification, etiology, personal, social and developmental characteristics of the emotionally disturbed. Current research, personal concerns and development of educational approaches are examined. D 21 749 0 0810

Courses for Graduate Students Only

805. Seminar for Reading and LD Teachers. (3). Designed to provide a forum for practicing reading and LD teachers in which to explore common interests, concerns, research and teaching techniques related to reading. Prerequisite: teacher certification in reading or LD. D 21 805 9 0830

840. Psychology of Exceptional Children. (3). A study of the conceptual and theoretical formulations, empirical evidence and research concerning behavioral characteristics of exceptional children. D 21 840 0 0808

841. Program Development in Special Education. (3). Examination of factors in classroom organization and management that affect the establishment and operation of programs for exceptional children. Prerequisite: IS 601 or 840. D 21 841 0 0810
1. If incidents related to the practicum experience are identified, appropriate action is taken by the course instructor.

   (3). Emphasis is placed on the theoretical and practical aspects of preschool and early childhood education. Materials for the education of the emotionally disturbed children are used in the self-contained and resource classrooms.

   (3). Students are exposed to various methods of teaching gifted learners. Requirements include mastery of specific competencies (reading, instruction, management, etc.) at both the elementary and secondary levels. Course credit may be taken in conjunction with LD Practicum.

   (3). Emphasis is placed on applied teaching techniques, adaptation of materials for specific needs and critical examination of incident-related to the practicum experience.

5. Methods for Teaching Learning and Behavior Disorders.
   (3). Students are exposed to various alternatives for teaching learning and behavior disorders, including computer-assisted instruction, computerized methods, and the teaching of student behaviors, with emphasis on the theoretical and practical aspects of special education.

   (1). Students are exposed to various methods of teaching learning disabled children in various settings.

7. Practicum Seminar: Mental Retardation.
   (1). Students are exposed to various methods of teaching mentally retarded children in various settings.

   (1). Students are exposed to various methods of teaching emotionally disturbed children in various settings.

9. Advanced Topics in Early Childhood Special Education.
   (1-4). Special topical seminars in early intervention will be periodically offered to facilitate opportunities for the in-depth study of critical issues and topical research in this rapidly developing field.

Personnel Services
The Department of Personnel Services offers programs in the areas of counseling and school psychology and educational administration and supervision.

Counseling and School Psychology
Graduate Faculty
Professor: Glen R. Dey (chairperson), John H. Schuh
Assistant Professor: Brooke B. Collins, David Meabon
Assistant Professor: Timothy S. Hartshorne (CSP graduate coordinator), Ruth A. Hitchcock, Nancy A. McKellar, Charles A. Romig

The counseling and school psychology unit offers several professional preparation programs which emphasize working with individuals, groups, and family systems. Program offerings are designed to provide students with knowledge and counseling skills sufficient to work with children and adults in educational and noneducational settings. Specific programs are available for persons wishing to meet requirements for educational certification as counselors at the elementary or secondary level or as school psychologists.

Persons interested in school psychology certification programs are encouraged to contact the counseling and school psychology staff for program information and career advisement.

The various areas afford students from a variety of undergraduate majors the opportunity to develop a specialization program of study leading to the Master of Education (MEd) or Specialist in Education (EdS).

Master of Education
The Department of Personnel Services offers programs leading to the Master of Education (MEd) in counseling and school psychology.

Admission Requirements
Admission to the MEd program is granted when applicants meet the grade point admission requirement of the Graduate School and have a 15-hour undergraduate background in the behavioral sciences (psychology, sociol-
ogy, anthropology, etc.). Entry into MEd programs in counseling and school psychology do not require the teaching certificate as an admission requirement. However, students whose career goals include Kansas school counseling certification must be eligible for a teaching certificate prior to recommendation for counselor certification.

**Specialist in Education**

The Specialist in Education (EdS) in counseling and school psychology is an advanced degree program with an emphasis in either counseling or school psychology. The plan of study may incorporate related specialties. The program normally involves 30 hours of post-master's degree course work for students having master's level training in counseling or its equivalent. The program content is appropriate for helping professionals in a variety of educational and community settings.

The program is oriented toward assisting candidates to incorporate counseling theory into procedures to assist clients and client systems in various aspects of communication, skill development and problem solving. Emphasis is placed on consultation processes and change strategies as they relate to a candidate's career interests in school counseling, postsecondary personnel, adult and family counseling or school psychology.

The specialist program is designed to place increased emphasis on student involvement in laboratory and field-based experiences. Students are involved in initiating, planning and conducting experiences with groups and/or organizations.

**Admission Requirements**

Candidates who have completed a master's degree in counseling or a related helping service degree may apply for admission to the Graduate School in nondegree status to begin course work. Specialist application blanks may be secured from the counseling and school psychology graduate coordinator.

Upon completion of the application procedures and formal acceptance, a three-person committee is appointed to assist in the design and supervision of the candidate's Plan of Study.

Applicants considered for admission must have:

1. A master's degree with appropriate course work from an accredited institution with a major in counseling or related field of education/helping services. Persons from related fields (e.g., nursing, ministry, social work) may be admitted with appropriate prerequisites.

2. A graduate grade point average of 3.250 or higher on a 4.000 scale

3. Submitted a Miller Analogies score

4. Submitted evidence of present knowledge and skills (previous graduate work, practicum field experience and placements)

5. Provided indications of personal attributes and experiences (vocational experiences in the field of helping services; recommendations from instructors, employers, practicum supervisors; and on-campus interviews with at least one member of the counseling and school psychology faculty).

**Courses for Graduate/Undergraduate Credit**

**652. Student Development.** (3). Training for students involved as group leaders. Prerequisite: DARE student leader. D 18 652 0 0826

**653. Studies in Student Development.** (1-2). Designed as a supervised experience for students preparing as peer advisors and leaders in developing activities for students entering or assigned to University College. Peer counseling and consulting skills are emphasized. Prerequisites: CSP 652 (former 752H) and DARE student leader. D 18 653 0 0826

**655. Studies in Student Services.** (1-6). Provides students with training in basic helping skills for paraprofessional counseling. The course involves training and periodic seminars. May be repeated for a maximum of 6 hours credit. Prerequisite: departmental consent. D 18 655 0 0826

**732. Counseling: Child Abuse and Neglect.** (2). The etiology, symptoms and indicators, treatment and prevention issues of physical abuse and neglect, emotional abuse and neglect, and sexual abuse. D 18 732 0 0826

**750. Workshop in Education.** (1-4). D 18 750 2 0826

**752. Special Studies in Education.** (1-5). The course is designed for students with personal and guidance interests. Different preselected areas may be emphasized during a semester. Repeatable with adviser's consent. Prerequisite: Instructor's consent. D 18 752 2 0826

**756. Guidance Services for the Preschool Child.** (3). A study of the social and emotional needs of the preschool child, including an exploration of theory, techniques and materials useful to persons providing guidance services for preschool children and their significant adults. D 18 756 0 0826

**Courses for Graduate Students Only**

**801. Principles and Philosophy of Guidance.** (3). The development of a guidance philosophy, including a study of the helping relationship and the services that are part of school, agency and other institutional settings. D 18 801 0 0826

**802. Introduction to Interaction Process.** (1). S/U grade only. A laboratory approach to an examination of the counselor's role in the counseling process. The course is designed to help the prospective counselor increase personal understanding of self as a variable in the counseling process. Prerequisites: CSP majors and instructor's consent. To be taken concurrently with CSP 801. This course may not be taken concurrently with CSP 825. D 18 802 2 0826

**803. Counseling Theory.** (3). A study of selected theories of counseling. Prerequisite: CSP 801 or concurrent enrollment. D 18 803 0 0826

**805. Educating the Poorly Adjusted Individual.** (3). Perceptual approach to the problems of emotionally disturbed or delinquent children and youth in both elementary and secondary schools. D 18 805 0 0816

**806. Children of Poverty.** (3). A perceptual approach to children and youth whose adjustment problems appear to be related to poverty in the affluent society. D 18 806 0 0816

**810. Elementary School Counseling.** (3). The role of the elementary counselor in providing individual and group counseling, group guidance and consultation in the school setting. Prerequisite: CSP 824. D 18 810 0 0826

**820. Occupational Information.** (2). The classification, collection, evaluation and use of informational materials in a guidance program. Also studies current occupational trends and developments and theories of occupational choice. Prerequisite: CSP 801 or concurrent enrollment. D 18 820 0 0826

**823. Psychometric Procedures in Counseling.** (3). Survey and study of standardized tests and their application in counseling, with an emphasis on their selection, use and interpretation. Study is made of the basic concepts pertaining to the interpretation of psychological tests and inventories, including basic measurement theory and the use of the computer in the testing process. D 18 823 0 0826

**824. Techniques of Counseling.** (3). Through simulated counseling situations and extensive examination of counseling case studies, techniques of counseling are examined and practiced. Prerequisite: CSP 803. D 18 824 0 0826

**825. Group Techniques in Guidance.** (2). S/U grade only. Laboratory approach to the study of group formation, process and communication as a tool for guidance services. Prerequisite: CSP 801 or concurrent enrollment. D 18 825 2 0826

**830. Introduction to Marriage and Family Counseling.** (3). A survey course on marriage and family counseling, including theory, techniques and research in the field. Prerequisite: CSP 803 or departmental consent. D 18 830 0 0826

**833. Administration of Guidance Services.** (3). Administration theory, with emphasis for the CSP major on relating theory to the problem of administration of guidance services. Prerequisite: 15 hours of CSP courses. D 18 833 0 0826

**852. Special Studies.** (1-4). A course covering specific topics identified by the department in consultation with institutions or groups of graduate students. Course procedures vary according to topic. Repeatable. Prerequisite: Instructor's consent or departmental consent. D 18 852 2 0826

**855. Individual Intelligence Assessment.** (2). Use of individual tests for appraisal of intelligence, adaptive behavior and learning styles. Research and clinical theory are considered in a lecture-discussion format, which includes some case simulation activities.
Concurrent enrollment in CSP 870 is recommended. Prerequisites: CSP 833 or concurrent enrollment, and instructor’s consent. D 18 855 0 0825

855. Practicum in Individual Counseling. (3) Supervised practice in individual counseling. Course requirements include at least 60 hours of applied experience. Repeatable for credit. Prerequisites: CSP 824, admission to the CSP program and instructor’s consent. D 18 858 2 0826

857. Professional and Ethical Issues. (2) Prerequisites: 15 hours in CSP sequence. D 18 857 9 0826

858. Diagnostic Testing. (2) Use of individual tests, rating procedures and behavioral techniques for the appraisal of perceptual development, linguistic development, classroom behavior and academic skills. Assessment theory and research relevant to these areas are considered in a lecture-discussion format, which includes some case simulation activities. Concurrent enrollment in CSP 870 is recommended. Prerequisites: CSP 823 and instructor’s consent. D 18 858 2 0825

862. Presentation of Research. (1-2) A project submitted in thesis manuscript form. Repeatable for a maximum of 2 hours of credit. Prerequisite: IS 860. D 18 862 4 0825

866. Practicum in Guidance Services. (2-3) Supervised practice in administration, test interpretation, group counseling, and other activities specific to guidance services. Prerequisites: CSP 833 and instructor’s consent. D 18 866 2 0826

867. Practicum in Group Guidance and Counseling Methods. (3) Supervised practice in group guidance and group counseling. Repeatable for 3 hours of additional credit. The second practicum must be in a different area or have a different focus from that of the first. Prerequisites: CSP 825, 856 and instructor’s consent. D 18 867 9 0826

870. Assessment Practicum. (2) Supervised experience in the administration, scoring and interpretation of individual assessment techniques. Report writing and case consultation are also considered in terms of the information needs of the client and referral agent. Repeatable for a maximum of 6 hours of credit. Prerequisites: CSP 823 and concurrent enrollment in an appropriate lecture-discussion course. D 18 870 2 0825

875-877. Master’s Thesis. (2-2) D 18 875 4 0826; D 18 876 4 0826

881. Seminar in School Psychology. (1-4) Directed reading and research under the supervision of a graduate instructor. Prerequisite: departmental consent. D 18 961 9 0826

893. Counseling Theory II. (3) In-depth review of research and applicability of major theories to the evaluation and design of interpersonal intervention strategy. D 18 903 0 0826

914. Consultation Techniques. (3) Intensive study of the literature in counseling, social psychology, and administration that provides a basis for consultation techniques in the interpersonal context of school and work settings. D 18 914 0 0826

915. Intervention Design. (2) Designed to give the student further experience and skill in utilizing the knowledge and skills developed in creating micro- and macro-learning experiences for individuals or groups experiencing dysfunctional situations. Individual and organizational effectiveness assessment skills are stressed. D 18 915 0 0826

926. Seminar: Selected Topics. (2) Intensive study of current issues, techniques, research and application of the selected topic. Repeatable for different topics for a maximum of 8 hours. Prerequisites: 15 hours of related graduate coursework. D 18 926 9 0825

934. Personality Assessment. (2) Focus is on theory and interpretation of instruments representing several major approaches to personality assessment, projective, behavioral, and self-report measures. (Repeatable for different topics for a maximum of 8 hours. Prerequisite: 15 hours of related graduate coursework. D 18 934 0 0825

935. Marriage and Family Counseling II. (3) An advanced course on marriage and family counseling. Content includes theories and techniques, and research in the field. Prerequisites: CSP 803, CSP 830, 30 graduate hours, or permission of instructor. D 18 935 0 0826

946. Practicum in School Psychology. (3 or 6) Supervised practice in providing school psychological services to children in school, community, clinical or other settings. Repeatable for a maximum of 6 hours. Prerequisites: CSP 823 and concurrent enrollment in an appropriate lecture-discussion course. D 18 946 2 0826

947. Internship: Internal or External. (6-8) The Internship is normally a full-time placement, appropriate to career objectives, in a supervised internship experience in the psychology internship site. Requires at least 300 hours of applied experience per 3 hours of credit. Repeatable for a maximum of 6 hours. Prerequisite: departmental consent. D 18 947 2 0826

948. Practicum in Marriage and Family Counseling. (3) Prerequisite: CSP 803, graduate student status, or departmental consent. D 18 948 2 0826

977. Internship in School Psychology. (2) Supervised experience as a school psychologist in a school setting. Requires at least 500 hours of applied experience. Repeatable for a maximum of 4 hours. Prerequisites: CSP 946 and departmental consent. D 18 977 2 0826

990. Special Problems in Counseling and School Psychology. (1-4) Directed problems in research for specialist degree students. Under supervision of a graduate instructor. Prerequisites: CSP 801 and instructor’s consent. D 18 990 4 0826

Educational Administration and Supervision

Graduate Faculty

Professors: Robert E. Anderson, Leonard M. Chaffee (EAS graduate coordinator)

Associate Professors: Ronald G. Davison (associate dean), J. Rex Douglas, M. Claradine Johnson

Assistant Professor: Charles F. Adams

Master of Education

The Department of Personnel Services offers a program leading to the Master of Education (MEd) in educational administration and supervision. Students pursuing administrative certification endorsements must submit a Graduate Record Examination (General Test) score. For admission to full standing in the Master of Education program, candidates must submit a Graduate Record Examination (General Test) score.

Admission Requirements

Applicants must meet the general requirements of the Graduate School, have a grade point average of 3.00 or better in the last sixty hours of previous work and submit a Graduate Record Examination (General Test) score.

Specialist in Education

The Specialist in Education (EdS) is awarded upon completion of an advanced program of study in educational administration or educational supervision. The program provides formal learning experiences for students of administrative supervision beyond the master's degree. Purposes of the specialist in education program are:

1. To provide learning experiences in specific intellectual and performance areas that result in superior accomplishment in leadership roles in educational administration or educational supervision.

2. To provide learning experiences that support the advanced graduate student's pursuit of specialized skills development in desired administrative or supervisory areas.

3. To provide integrated field experiences that enable the advanced graduate student to apply newly acquired intellectual and performance skills in a clinical setting, with appropriate professional and practitioner direction.
Admission Requirements

Candidates may apply for admission to Graduate School in nondegree status to begin course work. Submission of the Plan of Study leading to admission to candidacy for the Specialist in Education must be filed as soon as the admission requirements listed below are completed. The Plan of Study should be completed no later than one month following the completion of 12 semester hours of graduate credit that are a part of the Specialist in Education. Course work completed after the 12 graduate hours noted above and before the submission of the Plan of Study for the Specialist in Education may not count toward the minimum of 30 hours for the degree.

For admission to the Specialist in Education program, candidates must meet the following requirements:
1. A minimum of two or three years of teaching experience or experience in the schools will be required of candidates seeking Kansas school administrator certification.
2. A master’s degree from an accredited institution in an area of study related to the major field of the Specialist in Education degree.
3. A graduate grade point average of 3.100 or better on a 4.000 scale.
4. Submitted score on the Graduate Record Examination (General Test) to be utilized for counseling and advisement.
5. A conference with the adviser to develop a tentative Plan of Study.
6. The Graduate Record Examination requirement must be completed by Med and EdS admission candidates during enrollment in EAS 801, Educational Administration Theory.
7. A review and approval of the Plan of Study by the administrative administration and supervision unit of the Department of Personnel Services and the Graduate School.

Degree Requirements

To complete the program, candidates must:
1. Fulfill requirements of the Plan of Study.
2. Maintain a grade point average of at least 3.100 or better on a 4.000 scale throughout the Specialist in Education program.
3. Complete one semester of full-time study or one Summer Session of full-time study (Summer Session of approximately eight weeks).
4. Complete a minimum of 30 semester hours of graduate credit with:
   a. At least 12 hours in a candidate’s specialization of educational administration and supervision.
   b. At least six semester hours of 900-level courses.
   c. Completion of a research component that will include one of the following:
      (1) An acceptable thesis or major research study in earlier programs.
      (2) EAS 860, Research Seminar in Educational Administration and Supervision (or another acceptable graduate-level research course).
      d. Completion of an experience component that will include one of the following:
         (1) An internship (EAS 946-949 plus EAS 960) or
         (2) A practicum (EAS 891).

   A maximum of one-third, or 12 hours, of the graduate work, whichever is greater, on a minimum of 90 hours required for the Specialist in Education degree may be transferred from another accredited graduate school. Specific courses must be approved by the major adviser, the department and the Graduate School.

Courses considered for transfer must have been completed at an accredited graduate school, must carry a minimum grade of B and must have been in courses started not more than six years earlier than the semester in which the degree work is completed.

Courses started more than six years before the semester in which the degree work is completed may not be used as part of a degree program. However, in some cases courses taken before this time may be validated. To have courses validated, students must petition the Graduate School and pass a special written examination with a grade of B or better. Transfer courses and work that originally received a grade of C may not be validated. Courses completed ten or more years before the degree is granted, even if previously validated, may not be used to meet degree requirements.

Doctor of Philosophy and Doctor of Education

A transfer program in educational administration leading to the Doctor of Philosophy or Doctor of Education is available in cooperation with The University of Kansas. Program information and career advisement are available at the Department of Personnel Services, College of Education.

Courses for Graduate/Undergraduate Credit

750. Experienced Administrator’s Workshop. (1-2). Offers a variety of administrative topics. D 16 750 2 0827

752. Special Studies in Educational Administration and Supervision. (1-3). Designed to provide study in a selected area of administrative and supervision. Repeatable for credit with departmental consent. D 16 752 0 0827

Courses for Graduate Students Only

801. Introduction to Administration and Supervision. (3). An examination of the essential theories of administration and their application to specific problems. Emphasis is on an overview of administration of the school district, especially problems involving the community and staff. Includes collecting and analyzing data gathered for self-evaluation of supervisory potential. Open to all College of Education graduate majors. D 16 801 0 0827

804. Supervision and the Improvement of Instruction. (3). The application of curricular theories and method of supervision to the problems of implementing instruction and teaching methods. D 16 804 0 0827

810. The Principalship. (3). Designed primarily for individuals who are completing a master’s program in educational administration and supervision. Course content focuses on the role expectations of building principals at the elementary, middle and high school levels. Specific work is designed for each student’s major work level. Prerequisite: Prior completion of 27 hours of EAS courses and departmental consent. D 16 810 0 0827

814. Instructional Management: Hunter Model. (3). Development of the skills required to assess and assist teachers in improving classroom instruction. A review of effective teaching practices using the model developed by Madeline Hunter and associates. Emphasis is on upgrading supervisory proficiency through the direct observation of teaching episodes, using assessment, analysis, and scripting techniques. Supervisors confronting and coaching skills are stressed to improve teacher time utilization, pupil motivation, and pupil productivity. Prerequisite: EAS 804 or Instructor’s consent. D 16 814 0 0828

826. Curriculum Management. (3). A study of curriculum philosophies, theories and developmental processes. Included are the following topics: examination of recent programs and proposals, curriculum development at the building and school system levels and techniques of program evaluation. Prerequisite: EAS 804. D 16 826 0 0828

828. Management and Evaluation of Alternative Programs. (3). A study of the management of organizational patterns appropriate to continuous learning, nontraditional, individualized instruction, flexible scheduling, team teaching, large group instruction, independent study and other current trends in education. Includes evaluation of children’s learning progress and evaluation of accountability for school administrators, supervisors and teachers. Prerequisite: graduate standing. D 16 828 0 0827

836. School Personnel Management. (3). Advanced study of staff problems—
selection and recruitment, certification, orientation, in-service training, evaluation, transfer and dismissal, and retirement. Prerequisites: EAS 801, 804 and 842. D 16 836 0 0827

842. School Law. (3). General concepts of law, interpretations of statutes and court decisions affecting education and legal responsibilities of school personnel. D 16 842 0 0827

852. Special Studies in Educational Administration and Supervision. (1-3). Group studies in new materials, research or innovations in advanced educational administration and supervision areas for practicing administrators or advanced students. Repeatable for credit with departmental consent. Prerequisite: departmental consent. D 16 852 0 0827

853. School Business Management. (3). School budgeting processes, accounting, risk management, purchasing and data management procedures. Management of custodian, maintenance, food and transportation services. Prerequisite: EAS 801 and 804 or instructor's consent. D 16 855 0 0827

860. Research Seminar in Educational Administration and Supervision. (3). Designed primarily for students in advanced studies in the college of education. Course content and emphasis are varied according to the needs of students as research proposals and studies are developed, conducted and evaluated. Prerequisite: completion of master's degree or advisor's consent. D 16 860 9 0824

863. School Business Management. (3). A laboratory-based course in which the various aspects of group processing in school business management are experienced by class members in a group setting and activities. These experiences for potential and practicing administrators and supervisors have carry-over application to their present and future job responsibilities in an organizational setting. D 16 971 0 0826

871. Group Process for Administrators and Supervisors. (3). A laboratory-based course in which the various aspects of group processing in school business management are experienced by class members in a group setting and activities. These experiences for potential and practicing administrators and supervisors have carry-over application to their present and future job responsibilities in an organizational setting. D 16 971 0 0826

872. Conflict Management. (3). This course is designed to study the effects of language, attitudes, beliefs on interpersonal communication and relationships which lead to the types and sources of organizational role and personality conflict. Approaches to interpersonal and organizational conflict resolution will be emphasized. D 16 872 0 0827

875-876. Master's Thesis. (2-2). D 16 875 4 0827; D 16 876 4 0827

878. Strategies for School Improvement. (3). An examination of organizational and institutional characteristics of schools as determinants of their effectiveness (i.e., pupil academic achievement). Various school improvement strategies and planning programs designed specifically for elementary and secondary schools. Research studies considered examine established correlations of school effectiveness, as well as related teacher effectiveness variables. Prerequisites: EAS 801 and 804. D 16 878 0 0827

884. School Plant Design and Operation. (3). Planning new educational facilities based upon educational programs. The evaluation of existing schools, remodeling and renovation and maintenance of present school plant are included. Prerequisite: instructor's consent. D 16 884 0 0827

888. Data Management for School Administrators. (3). An advanced course for microcomputer literate students in extending administrative data processing skills and concepts of management information systems. Hands-on experience in machine language programming, data base management, word processing and spreadsheet programs, using Apple computers. D 16 888 0 0827

890. Special Problems in Administration. (1-3). Designed for master's students experiencing under supervision of a graduate instructor. Prerequisite: instructor's consent. D 16 890 3 0827

891. Preservice Building Administrator Practice. (3). The practicum is designed as a preservice experience for prospective seeking building-level administrator certification in Kansas. Emphasis is on the acquisition of knowledge and skill in administrative practices and procedures through a building-level experience. An student must file an application for the practicum, approved by the supervising EAS faculty member, the cooperating building administrator and the school district coordinator. Prerequisites: EAS 810 or supervisory or concurrent enrollment. D 16 891 0 0827

892. Clinical Supervision for Administrators/Supervisors. (3). An examination of theories of clinical supervision and their applications by administrators in the supervisory process. Emphasis is on improving leadership experiences for students by facilitating improved or alternative instructional solutions to problems. Prerequisite: EAS 804. D 16 892 0 0827

899. Planning in Educational Administration. (3). Seeking out, analyzing and making appropriate use of information in effective school planning. Examines systems analysis, management information systems in school settings and strategies for long and short-range planning. Prerequisites: EAS 801 and 804. D 16 909 0 0827

948. 949, 948, 949. The Internship. (2, 3, 4, 5). Administrative assignment in educational institutions. Prerequisites: 9 semester hours of post-master's graduate courses in education, internship, experience and supervision and 3.000 graduate grade point average. Arranged on an individual basis. D 16 948 2 0827; D 16 947 2 0827; D 16 948 0 0827

963. Financial Support of Education. (3). Concepts of the financial support of education at local, state and national levels. Emphasis is on methods of taxation, budget preparation and efficient expenditures. Prerequisites: EAS 801 and 804 or instructor's consent. D 16 953 0 0827

955. Field Project in Administration and Supervision. (3). Students are planned to meet a legitimate need in an educational setting in which the student, under professional guidance, can become directly involved. The project may fulfill a community need in the departmental concern or a needed activity and the school as it relates to the administrative process. Systems of control, social class, power structure, human relations and group dynamics are studied. D 16 955 0 0827

965. Politics and Power in Education. (3). An examination of the interaction of society and the school as it relates to the administrative process. D 16 965 0 0827

962. School Community. (3). A study of the relationships between the school and its community and the administrative responses that show promise of improving relationships between students, staff and parents. D 16 962 0 0827

990. Special Problems in Administration. (1-2). Directed problems in research for specialist and doctoral degree students under supervision of a graduate instructor. Prerequisite: instructor's consent. D 16 900 3 0827

991. Practicum in Educational Administration and Supervision. (1-2). The course is designed for persons who have been employed in their first administrative position and are seeking recertification in Kansas. The course of study will be individually designed by an EAS faculty member with the student and his/her school district supervisor. The course will address the needs of the student and the district. The thrust will be to assist the student to extend basic skills relevant to a particular administrative assignment. The student must register for 3 hours of credit in EAS 991 to meet recertification requirements. Prerequisite: completion of master's degree and departmental consent. D 16 961 2 0827

Physical Education, Health and Recreation

Graduate Faculty

Associate Professor: John Hansen (chairperson and graduate coordinator)

Assistant Professors: Kathy Campbell, Natalie Fife, Richard Laptad, Dave Pizarro, F. Yvonne Slingerland, Nancy Stubbs, Larry Thye, Tom Wood

Master of Education

The Master of Education (MEd) may be earned by selecting a 30-hour sequence with a thesis or a 36-hour sequence without a thesis. The core requirements are the same for both programs. Students selecting the 30-hour sequence must take PE 875-876, Thesis. Students selecting the thesis option will not be required to complete the written comprehensive examination at the conclusion of their program. An oral examination over the written thesis will be the culminating activity. Core requirements are: PE 800, 810, 812, 860, 880, IS 704 and 890. The department strongly recommends that PE 800, 880 and IS 704 be taken early in the program. The college requirements for the MEd are summarized at the beginning of the College of Education section of the Graduate Bulletin.

Sports Administration

The MEd may also be earned with an emphasis in sports administration. The
program is designed to prepare students for career opportunities in the administration of sports programs at the public school, university or professional level.

For admission to full candidacy, students must:
1. Submit a letter of application
2. Be accepted by the Graduate School
3. Submit three letters of reference to the department
4. Complete either the Graduate Record Exam (GRE) or the Miller Analyses Test by the end of the first enrolled semester and
5. Interview with the Sports administration committee.

Students will have conditional candidacy until the above items have been completed. This is a nonthesis program with a total of 36 hours required (including internship). The core requirements are PE 801, 847, 544 and 770. An oral exam over all portions of the candidates' program will be the culminating activity.

Exercise Science/Wellness

The master's degree program in exercise science/wellness is a 36-hour program with a 4-hour independent study and an internship required, or a 34-hour program with a thesis and an internship required.

Students electing the thesis option are required to complete the oral examination in defense of the thesis, and those individuals selecting the nonthesis program are required to complete the comprehensive examination as their culminating experience.

Core requirements for the exercise science/wellness program are as follows: PE 800, 815, 830, 847 and 860; HS 531; and ISEP 704 for a total of 23 hours.

The entrance requirements for the College of Education and the exercise science/wellness program are summarized at the beginning of the College of Education section of the Graduate Bulletin.

Professional Courses

Professional courses for physical education, health and recreation are offered in the College of Education and, unless otherwise indicated, are open to both men and women.

Courses for Graduate/Undergraduate Credit

500. Health Education. (3). Health problems and organization of materials for health instruction. Individual projects are required for graduate students. D 13 500 2 0837

502. Applied Health II. (2). Introduction to public health problems and practices. Field exercises are arranged. Prerequisite: departmental consent. D 13 502 2 0837

504. Applied Health II. (2). Intensive study of selected health problems with regard to illness prevention and the present state of world health. Prerequisite: PE 502 or departmental consent. D 13 504 2 0837

515. Rhythmic Activities in the Elementary School. (2). This course is designed to teach methodology and current content of rhythmic activities appropriate for elementary school children. D 13 515 2 0835

530. Physiology of Exercise. (3). 3R: 1L. To provide the student with a working knowledge of human physiology as it relates to exercise. D 13 530 1 0835

533. Measurement and Evaluation in Physical Education. (3). A study of the modern practices utilized in the total evaluation of physical education programs; included in the course content: (1) basic statistical procedures, (2) evaluating students, (3) evaluating teaching aids, and the routine survey of measurement tools. D 13 533 0 0835

544. Organization and Administration of Physical Education Programs. (3). The organizational and administrative problems of physical education programs and the management of the physical plant. D 13 544 2 0835

547. Field Option Internship. (6). Culminating activity for students in fitness, sports business, safety or athletic training. Students will spend the equivalent of full-time employment in the appropriate agency for one full semester. Prerequisites: departmental consent. D 13 547 0 0835

750. Workshop in Education. (1-4). D 13 750 2 0835

752. Special Studies in Health, Physical Education, and Recreation. (1-3). Group study in a preselected area of health, physical education or recreation. Repeatable for credit with departmental consent. Prerequisite: departmental consent. D 13 752 0 0835

770. Psychology of Sport. (3). An in-depth analysis of the psychology of motor learning and its implications for the teacher-coach. D 13 770 0 0835

781. Cooperative Education Field Study. (1-8). The goal of this course is to provide the graduate student with a field placement which integrates theory with a planned and supervised professional experience designed to complement and enhance the student's academic program. Individualized programs must be formulated in consultation with appropriate graduate faculty. The plan of study for a graduate degree-bound student must be filed before approval of enrollment for cooperative education graduate credit. May be repeatable for credit with a limit of 8 hours counting toward the graduate degree. Offered Cr/NoCr only. D 13 781 2 0835

Courses for Graduate Students Only

800. Recent Literature in Health, Physical Education, and Recreation. (3). Survey and critical analysis of research and other pertinent materials in the field. D 13 800 0 0835

801. Seminar in Sports Administration. (3). This course is designed to provide the student with a comprehensive overview of problems relating to sports administration programs. A sample of topics covered follows: public relations, promotion, personnel management, finance, accounting, conflict management and travel. D 13 801 9 0837

810. Adapted Physical Education. (3). Philosophical, principles and methods of adapting physical education and recreational activities to the needs of the handicapped and the exceptional individual. Laboratory experience is provided. Prerequisite: PE 328 or departmental consent. D 13 810 1 0819

812. Advanced Techniques in Physical Education. (3). Comprehensive coverage of selected physical activities, with special emphasis on class procedures. Laboratory experiences are included. D 13 812 1 0835

815. Fitness Assessment and Exercise Prescription. (3). Introduces techniques appropriate for the measurement, health appraisal, and fitness assessment as required for prescribing exercise programs for individuals without disease or with controlled disease. Prerequisites: PE 530 or equivalent and graduate standing. D 13 815 0 0835

825. Physical Education in Elementary Schools. (2). New concepts, recent trends, methodology, programming and supervision. This course is designed for the elementary teacher and physical education specialist. D 13 825 0 0835

830. Advanced Physiology of Exercise. (3). In-depth study into the physiological basis of exercise. Includes energy metabolism, respiratory dynamics, cardiovascular function and regulation, muscle fatigue, steady state and exhaustion of exercise. Special emphasis is given to immediate and long-term adaptation to exercise and training. Prerequisite: HPER 530. D 13 830 1 0835

847. Internship. (6-12). Internship in selected area of specialization of the sports administration program. Prerequisite: departmental consent. D 13 847 2 0835

860. Research Methods in Health, Physical Education, and Recreation. (3). An introduction to research in health, physical education and recreation. Included in the course content are (1) and importance of research, (2) a literature search, (3) laboratory and nonlaboratory studies, and (4) the research report. D 13 860 0 0835

875. Thesis. (2). Prerequisites: IS 704 and PE 880. D 13 875 4 0835

876. Thesis. (2). Prerequisites: IS 704 and PE 860. D 13 876 4 0835

880. Analysis of Motor Skills. (3). Movement and sport skills analyzed in terms of mechanical principles by means of films and experimentation. D 13 880 0 0835

890. Problems in Health, Physical Education, and Recreation. (1-4). Directed reading and research under supervision of a graduate instructor. D 13 890 3 0835

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 4R, 2L means four hours of lecture and two hours of lab.
College of Engineering

Offices: 100 Wallace Hall

William J. Wilhelm, Dean
Barbara E. Bowman, Assistant Dean

Departments
Aeronautical—Bert L. Smith, chairperson; Walter J. Horn, master's graduate coordinator; Glen W. Zumwalt, doctoral graduate coordinator
Electrical—Roy H. Norris, chairperson; Mark T. Jong, graduate coordinator
Industrial—Brian Lambert, chairperson; Jeffrey Fernandez, graduate coordinator
Mechanical—Al Gosman, chairperson and graduate coordinator

The College of Engineering offers graduate programs leading to a Master of Science (MS) in aeronautical engineering, electrical engineering, mechanical engineering and engineering management science. The Doctor of Philosophy (PhD) in engineering is described below.

Admission to any engineering program of study at Wichita State requires a bachelor's degree in an accredited engineering or related program and the fulfillment of other requirements given elsewhere in the Graduate Bulletin. Applicants unable to meet full requirements for admission may be accepted on conditional status at the recommendation of the chairperson of the department and the dean of the college. International students entering the College of Engineering for the graduate programs must have a TOEFL score of at least 550.

Doctor of Philosophy

A PhD in engineering is offered by the four departments of engineering at WSU. This program is enhanced by the presence of the industrial complex in Wichita.

Typical fields of specialization include analytical and computational fluid mechanics, applied statistical methods, avionics, biomechanics, communications, computers, control systems, engineering management science, engineering materials, electromagnetic fields, ergonomics/rehabilitation, failure analysis, heat transfer, information systems, manufacturing, mechanical design, production processes, productivity enhancement, propulsion, signal processing, structural dynamics, structures and thermodynamics.

These fields will be used in determining testing areas for the qualifying examination in the major and minor fields.

Admission Requirements

Admission to the PhD in engineering program requires that the student has completed (or nearly completed) a master's degree in engineering or physical science. Some students may find it necessary to take prerequisite courses to be able to meet the course breadth requirements. The student is recommended to the graduate dean for admission by the department chairperson in consultation with the graduate coordinator of the department where the graduate student will be housed.

Qualifying Examination

Before 18 post-master's graduate hours are completed, after admission to the PhD program, the student under the direction of his/her advisory committee must take written examinations in (1) mathematics, (2) major field of study, and (3) minor field of study. The qualifying examinations are two hours each and are offered as requested. The schedule for the exams will be established by the graduate coordinator in the department where the student is housed and the exams will be established and graded by members of the student's advisory committee. The first attempt, the student must take at least two parts of the exam. No part may be attempted more than twice. This examination tests students' breadth of knowledge and determines their ability to formulate mathematical representations of real physical situations. Upon passing, a student is known as an Aspirant for the PhD.

Plan of Study and Advisory Committee

Within the first 12 hours of PhD course work, the department chairperson, in consultation with the graduate coordinator and the student, recommend to the Engineering Graduate Committee an advisory committee for each student, consisting of a minimum of four engineering faculty members with at least one from an engineering department other than the student's major department, and one graduate faculty member from outside the College of Engineering. The chairperson of the advisory committee should be the student's dissertation adviser. The student and advisory committee chairperson will formulate a plan of study and a tentative dissertation topic for approval by the advisory committee, the department chairperson, the engineering graduate committee and the graduate dean. The plan of study will include designation of major and minor fields and all graduate-level course work which is applicable to the degree.

Course Breadth Requirements: To insure proper breadth of course work, the Plan of Study must include at least 12 hours of mathematics, at least 15 hours in the student's major field and a minor field of study as defined by the student's advisory committee. A Plan of Study normally contains about 60 semester hours of courses, including courses from the master's degree and should have a minimum of 60 percent of the hours (approximately 54 hours) beyond the master's level at the 800-900 level or equivalent.

Foreign Language or Research Tools Requirement (FLORT): The Plan of Study must include either (1) proof of translating ability in one foreign language in which a significant amount of printed material in the student's field exists, or (2) six hours of course work (not necessarily at the graduate level) in advanced computing skills, statistics or experimental methods.

Time Limits and Residency Requirement

From the time the student is admitted to the program, no more than six years may elapse until requirements for the degree have been completed. However, the student may petition the advisory committee for a leave of absence to pursue full-time professional activities related to his/her doctoral program and long-range professional goals. At least two semesters shall be spent in residency on the WSU campus involved in full-time academic pursuits. This may include up to half-time teaching and research. Well-designed plans for obtaining dissertation research experience under the supervision of the student's adviser will be considered in lieu of the residency requirement.

Dissertation Approval Examination (DAE)

When the PhD aspirant has completed the major portion of the course work and FLORT requirement, the advisory committee can petition for permission to administer the DAE. The aspirant will submit a written dissertation proposal to the advisory committee and to the engineering graduate committee. After reading the proposal and receiving approval
of the topic from the engineering graduate committee and permission of the graduate dean, the advisory committee will conduct an oral examination to determine the applicant's ability to carry out the proposed research and whether or not this research qualifies as a PhD dissertation. Any essential change in the project requires committee approval and a recommendation from the engineering graduate committee.

After passing the DAE, the student is known as a Candidate for the PhD Degree. A candidate must be continuously enrolled in PhD Dissertation for a minimum of six hours each semester and two hours in the Summer Session until completion of the dissertation or 24 hours of PhD Dissertation have been taken. After this, two hours per semester and one hour per summer are required. In any case, no less than 24 hours of enrollment for PhD dissertation will be required. The dissertation may be performed in absentia with the approval of the advisory committee.

Final Dissertation Examination
The student must defend the dissertation before the advisory committee. At least five months must elapse between the DAE and the final examination. The final examination will be open to the public. Invited guests or external examiners may be invited if the committee desires.

General Engineering

Courses for
Graduate/Undergraduate Credit

510. Topics in Engineering. (1-3). New or special courses of general engineering interest are presented on sufficient demand. Repeatable for credit when subject matter warrants. E 10 510 0 0901

565. Computer Graphics. (3). 2R: 2L. Forms of computer graphics, input-output devices, generation of points, vectors, etc. included are interactive versus passive graphics and the mathematics of three dimensions, projections and the hidden line problem. Animated movies, computer-aided design and instruction are included as well as applications. Prerequisites: Math. 344, EE 199 or AE 327 or equivalent. E 10 565 1 0901

600. Integration of Engineering Concepts. (3). A course designed for senior students to integrate their coursework into a coherent concept of the major principles, tools and techniques of engineering. Prerequisites: senior standing, preferably taken last semester of undergraduate work. E 11 600 0 0901

Aeronautical Engineering

Graduate Faculty

Distinguished Professors: William H. Wentz, Jr., Glen W. Zumwalt (doctoral graduate coordinator)

Professors: Walter D. Bernhart, Andrew J. Craig, Bert L. Smith (chairperson), Melvin H. Snyder

Associate Professors: Walter J. Hom (master's graduate coordinator), M. Gawad Nagait

Assistant Professors: Steven J. Hooper, L. Scott Miller, Michael Papadakis

The Department of Aeronautical Engineering offers programs leading to Master of Science (MS) and Doctor of Philosophy (PhD) degrees. The department's faculty have developed an ongoing research program that provides valuable educational opportunities for students. Research areas include mechanics of advanced composite materials, mechanics of aircraft deicing, wind energy aerodynamics, crashworthiness, low speed aerodynamics, computer-aided engineering and stall-spin resistance.

The department's programs are enhanced by Wichita's aviation heritage and the presence of leading aviation companies, including Beech, Boeing, Cessna and Learjet. Graduate course work is scheduled so that engineers employed in local industry may pursue graduate degrees.

The department's faculty, which are among the finest found in academic institutions, include seven wind tunnels, a water tunnel, a structures lab and a composite materials lab. Graduate students have opportunities to use equipment in all laboratories for their research programs.

Master of Science

Courses of study leading to the MS degree are available with specializations in aerodynamics and propulsion sciences (fluid mechanics), flight stability and control (flight mechanics), and structures (solid mechanics). Both thesis and nonthesis options are available.

Admission Requirements
To be admitted to graduate programs in aeronautical engineering, students must have completed the equivalent of an undergraduate major in engineering or related areas. Students' records are examined individually prior to admission so that their potential for graduate study can be evaluated. For admission with full standing, a grade point average of 2.750 is required for (1) the last two years of undergraduate work, (2) all engineering courses and (3) mathematics and physical sciences courses.

Degree Requirements
The Master of Science requires completion of a plan of courses that is approved by a student's adviser and the department graduate coordinator. The program includes required courses and technical electives; details may be obtained from the department chairperson or graduate coordinator.

Two options are available: (1) the thesis option requires a minimum of 30 total hours, including six hours of thesis (AE 876) and (2) the nonthesis option requires a minimum of 33 hours of course work.

At least 60 percent of the course work in either option must be 700-level or above.

Examinations
Before the degree is granted, candidates must pass an examination. Candidates pursuing the thesis option must pass an oral examination of their thesis research program and graduate course work. Candidates pursuing the nonthesis option must pass a comprehensive written examination of their graduate course work. Details of the examinations can be obtained from the department graduate coordinator.

Doctor of Philosophy

For admission and degree requirements, see the Graduate Programs in Engineering section.

Graduate Courses

All graduate courses must be approved in advance of enrollment by a student's graduate adviser.

Courses for
Graduate/Undergraduate Credit

508. Systems Dynamics. (3). Lumped parameter modeling; classical, numerical, transform and state model methods of solution; introduction to systems feedback; analogies of various physical systems. Prerequisites: AE 373 and Math. 550. E 11 508 1 0901


527. Numerical Methods in Engineering. (3). Error analysis. Polynomial approximations and power series. Iterative solutions of equations, eigenvalues and systems of linear equations, numerical differentiation and integration, approximate solution of differential equations by finite differences are included. Prerequisites: AE 327 and Math. 950 which may be taken concurrently. E 11 527 1 0901

528. Airplane Design I. (3). 2R: 2L. Methodology of airplane design, mission objectives, regulations and standards, use of hand and computer methods for configuration development and component sizing. Prerequisites: AE 514. E 11 528 1 0902
532. Propulsion. (3). Turbojet and turboprop engines; cycle analysis and performance prediction, study of mist and exhaust problems, engine integration with airframe. Prerequisites: AE 227, and AE 424 which may be taken concurrently. E 11 520 0 0902


625. Flight Structures II. (3), 2R; 3L. Stress analysis and design of flight vehicle components. Introduction to energy methods and variational principles. Application of finite element method to the analysis of flight vehicle structures. Special projects in structural analysis and design. Prerequisite: AE 525. E 11 625 0 0902

628. Airplane Design II. (2) 2R; 3L. Computer-aided design (CAD) of airplanes. Design, computer-aided design, sensitivity studies, optimization. Prerequisite: AE 528. E 11 628 0 0902

653. Basic Composite Material Technologies. (3). An introduction to the basic composite material technologies including mechanical behavior, material classification, testing for mechanical properties, manufacturing methods, nondestructive inspection and design. Prerequisite: AE 333. E 11 653 0 0921

654. Manufacturing Composite Structures. (1) 2R; 3L. Techniques and methods for making fiber-reinforced polymeric structures and structural components. Prerequisites: ME 350 and AE 683 recommended. E 11 654 0 0921

660. Selected Topics. (1-3). Prerequisite: instructor's consent. E 11 660 0 0902

700. Structural Dynamics I. (2). Matrix methods for the analysis of the free and forced vibrations of multiple degree of freedom systems. Prerequisite: AE 677. E 11 700 0 0921

702. Jet Propulsion. (3). Analysis of jet propulsion devices; study of cyclic, effect of operating variables; presentation of problems of installation, operation and instrumentation. Prerequisite: AE 532 or equivalent. E 11 702 0 0902


711. Intermediate Aerodynamics. (4). A study of equations of motion, potential flow, computational transformations, finite wing theory, nonlinear aerodynamics and advanced numerical techniques in aerodynamics. Prerequisite: AE 424 or 420 or ME 621. E 11 711 0 0921

714. Advanced Aerodynamics Laboratory. (2) 1R; 2L. Advanced topics in wind tunnel testing, data analysis and sensitivity modeling techniques, shock wave visualization, boundary layer and turbulence, control surface loads and moments. Prerequisite: AE 524 or instructor's consent. E 11 712 1 0902

715. Space Dynamics I. (2). Orbit mechanics, orbit determination, orbit maneuvers, attitude dynamics and maneuver control. Prerequisite: AE 373. E 11 715 0 0902

716. Aerodynamics of Compressible Fluids I. (3). Analysis of compressible fluid flow for one- and two-dimensional cases, moving shock waves, one-dimensional flow with friction and heat addition, linearized potential flow, numerical methods of characteristics, conical shocks and subsonic similarity laws. Prerequisite: AE 424, AE 420, ME 621 or equivalent. E 11 716 0 0902


731. Analysis of Elastic Solids I. (3). The equations of the theory of elasticity are developed and, with appropriate boundary conditions, the displacement fields in linear elastic isotropic bodies. Airy stress functions are used to obtain solutions. Energy principles and variational methods are introduced. Prerequisite: Instructor's consent. E 11 731 0 0921

733. Mechanic of Deformable Solids I (3). The course is an extension of AE 333. Typical topics studied are: transformation of stress and strain in three dimensions, noncircular torsional members, curved beams, beam theory, vibration of beams, plates and shells. Energy methods and the finite element method of analysis, stress concentration, theories of failure, fracture mechanics, etc. Prerequisite: AE 333. E 11 733 0 0921

753. Mechanics of Fiber Composites. (3). Classical laminate theory, failure theories, hygrothermal behavior. Other topics taken from fatigue, fracture toughness, damage tolerance, interlaminar stresses, flexure, buckling and vibration. Prerequisite: AE 653 or equivalent. E 11 753 0 0921

757. Vibration Analysis. (3). A study of free, forced, damped and undamped vibrations for one and two degrees of freedom, as well as classical, numerical and energy solutions for multidegree freedom systems. An introduction to continuous systems is given. Prerequisites: Math. 550, AE 333 and 373. E 11 757 0 0921

Courses for Graduate Students Only

801. Structural Dynamics II. (2). A study of vibration of strings and membranes; longitudinal, torsional and lateral vibration of bars; lateral vibration of plates and shells; classical, numerical and energy solutions for multidegree freedom systems. An introduction to vibrations in continuous systems is given. Prerequisite: AE 424 or equivalent. E 11 801 0 0921


811. Panel Methods in Aerodynamics. (2) An introduction to panel method theory and solution methods for viscous attached flows. Utilization of some two and three-dimensional computer codes. Prerequisites: AE 711 and Math 757 or equivalent. E 11 811 0 0921

812. Aerodynamics of Viscous Fluids. (3). Viscous flows, flow theory and boundary layer theory. Prerequisite: AE 424 or 420 or ME 621. E 11 812 0 0902


815. Space Dynamics II. (2). Missile and interplanetary trajectories, orbital perturbations, attitude control methods. Prerequisite: AE 716 or equivalent. E 11 815 0 0902

817. Transonic Aerodynamics. (2). Experimental and analytical difficulties in flow and flight near Mach one. Basic equations and solution methods; linearized potential equation; shock-occurrence criteria on wings. Transonic Area Rule; shock wave position and detached shock wave computations; computational methods. Prerequisites: AE 424, 420 or equivalent; and AE 711 or 716. E 11 817 0 0902

818. Hypersonic Aerodynamics. (3). Classical hypersonic theory and approximations; Newtonian flow. Flight corridors and trajectories. Hot gas effects. Experimental difficulties; short-time test facilities. Computational techniques. Prerequisite: flight mechanics or equivalent; and AE 711 and 716 or equivalent. E 11 818 0 0902

822. Finite Element Analysis of Structures. (3). Formulation of the finite element equations by variational methods; the use of isoparametric and higher order elements for analyzing two- and three-dimensional problems in solid mechanics; introduction to solutions of nonlinear problems. Prerequisites: AE 722 and 731. E 11 822 0 0902

831. Analysis of Elastic Solids II. (3). The course is a continuation of AE 731 covering more advanced topics in the theory of elasticity such as the analysis of nonlinear elastic bodies and anisotropic bodies. Prerequisite: AE 731. E 11 831 0 0921

832. Theory of Plates and Shells. (3). Small deflections of thin elastic plates; classical solutions for rectangular and circular plates; approximate solutions for plates of various shapes; introduction to the analysis of thin shells. Prerequisite: AE 731. E 11 832 0 0921

833. Theory of Elastic Stability. (3). Buckling of columns, frames, beams, plates and shells. Prerequisite: AE 731. E 11 833 0 0921

838. Random Vibration. (3). Includes characterization, transmission and failure of mechanical systems subjected to random vibration. Analysis and measurement methods for random data are included. Prerequisite: instructor's consent. E 11 838 0 0921

860. Selected Topics. (1-3). Prerequisite: instructor's consent. E 11 860 0 0921

875. MS Thesis. (1-6). E 11 875 0 0902

878. Directed Studies. (1-2). A course involving directed study under the supervision of the instructor.
of a graduate faculty member. A written report is required. Repeatable toward an MS directed study project up to three hours. Prerequisite: graduate standing. E 11 878, 40902.

911. Airfoil Design. (2). Historical development of airfoils, underlying theories and experiments; modern airfoil design philosophies and techniques; theories used in modern airfoil computation methods; application of computer programs for practical airfoil design problems including high lift and control devices. Prerequisites: AE 711, Math. 757. E 11 911.0 0902.

913. Aerodynamics of Aeroelasticity. (3). A study of thin airfoils and infinite wings in steady flow and thin airfoils oscillating in incompressible flow. Extension to compressible and three-dimensional airfoils and modern methods for low aspect ratio lifting surfaces are included. Prerequisites: AE 711 and 677 or instructor's consent. E 11 913.0 0902.

916. Aerodynamics of Compressible Fluids. (3). An exploration of perfect gas flows past bodies of revolution. Also included are axisymmetric methods of characteristics, hypersonic and transonic similarity. Newtonian theory of high temperature gases in equilibrium and frozen flows and one- and two-dimensional moving shock waves. An introduction is made to separated flows and jet mixing. Prerequisite: AE 716. E 11 916.0 0902.


936. Theory of Plasticity. (3). Includes criteria of yielding, including plastic stress-strain relationships and stress and deformation in thick-walled shells, rotating discs and cylinders; bending and torsion of prismatic bars for ideally plastic and strain-hardening materials. Two-dimension and axially symmetric problems of finite deformation and variational and extremum principles are included. Prerequisite: AE 731. E 11 936.0 0902.

960. Advanced Selected Topics. (1-3). Prerequisite: instructor's consent. E 11 960.0 0902.

976. PhD Dissertation. (1-16). Repeatable up to a maximum of 36 hours. Prerequisite: admission to doctoral aspirant status. E 11 976.4 0902.


Doctor of Philosophy and Master of Science
The Master of Science (MS) program in electrical engineering includes courses ranging from fundamentals to the current state-of-the-art. The department also participates in the Doctor of Philosophy (PhD) in engineering program.

Admission Requirements
Admission to the program in electrical engineering requires the completion of an undergraduate major, or the equivalent, in electrical engineering or related areas with a grade point average of 2.750 for (1) the last two years of undergraduate work, (2) all engineering courses and (3) mathematics and physical sciences courses.

Degree Requirements
The MS in electrical engineering requires the completion of a course plan approved by a student's adviser and the department's chairperson. Two options are available with separate requirements: (1) the thesis option requires a minimum total of 30 hours, including four to six hours of thesis through EE 676 and (2) the nonthesis option requires a minimum of 34 total hours, including two to four hours of directed studies through EE 678.

Programs in either option must have at least 50 percent of the course work numbered at the 700 level or above and must include at least six hours outside the department. Students must have a 3.00 grade point average in electrical engineering courses for graduation as well as in all work on the plan of study. Specific course requirement information will be supplied by a student's graduate adviser.

Examinations
Before the degree is granted, all candidates must pass an oral examination over their course work. Thesis option candidates must also pass an oral defense of their thesis. For information on the Doctor of Philosophy, see the Graduate Programs in Engineering section.

Facilities
Modern electrical engineering laboratories contain facilities for experimental work in areas of instrumentation, feedback control, computers and digital systems, radio science, electronics, circuits, energy conversion, antennas and communication systems.

Courses for Graduate/Undergraduate Credit

585. Electrical Design Project I. (1). 3L. A design project under faculty supervision chosen according to the student's interest. Prerequisite: departmental consent. May not be counted toward a graduate electrical major. E 12 585.3 0909.

588. Advanced Electromechanical Energy Converters. (3). EE 588, including solid-state control. Computer applications are stressed. Prerequisites: EE 482 and 488. E 12 588.1 0909.

595. Electrical Design Project II. (1). 3L. May not be counted toward a graduate electrical major. Prerequisite: EE 585 or departmental consent. E 12 595.3 0909.

598. Electric Energy Systems. (3). 3L. Concepts of electric energy systems, high-energy transmission lines, system representation, load-flow analysis, load-flow control, economic operation, symmetrical and unsymmetrical faults and system stability. Computer application is required. Prerequisite: EE 488. E 12 598.0 0909.

638. Engineering Applications of Small Computers. (3). This course is designed to provide an understanding and appreciation of small computer capability and the application of those computers to engineering problems. Thorough operation of such small computers as interfacing to special equipment, graphics, special programs, Computer Aided Designs. Local Area Networks, organization and programming of microcomputers are studied and applications emphasized. Prerequisites: EE 228 or equivalent and at least one EE course at 500 level or above. E 12 638.0 0909.

663. Waves, Waveguides and Antennas. (3). A study of radiation and transmission of electromagnetic waves. Topics include plane wave propagation in various media, normal and oblique reflections, dielectric windows, transmission through waveguides and introduction to small computer. E 12 663.0 0909.

681. Electronic Circuits II. (4). 3R; 3L. An investigation of the theory and application of discrete and integrated circuits. Includes, but are not limited to, feedback, active and switched capacitor filters, nonlinear circuits, analog and digital phase locked loops, switched-mode power conversion and RF circuits. Prerequisite: EE 492 and 480 or departmental consent. May not be counted for credit toward a graduate electrical major. E 12 681.1 0909.

682. Energy and Information Transmission. (2). 2R. A study of the theory and application of transmission lines. Both pulsed and steady state sinusoidal signals are treated. Topics include line parameters and transmission line effects, terminal conditions and resonant lines and stubs. Prerequisite or corequisite: EE 480. May not be counted for credit toward a graduate electrical major. E 12 682.0 0909.


686. Information Systems. (4). 3R. Properties of signals and noise, introduction to information theory; AM and FM and pulse modulation and detection. Principles of sampling, coding and multiplexing and the organization of analog and digital data systems for information processing are included. May not be counted toward a graduate electrical major. Prerequisite: EE 480 and either Stat. 871 or IE 354. E 12 686.1 0909.

585. Electrical Design Project I. (1). 3L. A design project under faculty supervision chosen according to the student's interest. Prerequisite: departmental consent. May not be counted toward a graduate electrical major. Prerequisite: EE 480 and either Stat. 871 or IE 354. E 12 585.3 0909.

The following abbreviations are used in the course descriptions: R stands for lecture and L for laboratory. For example, 4R; 2L means four hours of lecture and two hours of lab.
689. Electrical Laboratory. (2). 4L. This course provides training in laboratory methods and in experimental design methods. It includes experiments and experiments related to EE 682 and several of the other prerequisites, depending on the background of the student enrolled. May not be counted for credit toward the MS degree as an electrical topic. Prerequisites or corequisites: EE 682 and any two of EE 494, 588, 638, 663 and 684. E 12 689 0 0909

694. Digital Computer Design Fundamentals. (3). An introductory but reasonably detailed study of stored program digital computer architecture and hardware-software approach. Consideration is given to computer logical design, arithmetic units and operation, large capacity storage systems, input-output units and systems integration. Prerequisite: EE 494 or departmental consent. E 12 694 0 0909

754. Probabilistic Methods in Systems. (3). This is a course in random processes which is designed to prepare the student for work in communications, controls, computer systems, information theory and signal processing. This course covers basic concepts and useful analytical tools for engineering problems involving discrete and continuous-time random variables. Topics such as random processes to system response and identification, analog and digital signal processing, data compression, parameter estimation and related disciplines will be discussed. Prerequisites: EE 480 and STA 354 or departmental consent. E 12 754 0 0909

781. Analog Filters. (3). A detailed study of analog filter design methods. Both passive and active filters are included. Analog filter approximations are discussed; sensitivity and noise analysis are covered. Prerequisite: EE 681. E 12 781 0 0909

782. Methods of Discrete Systems Analysis. (3). A study of methods of analysis of discrete-time signals and systems. Time-domain techniques include difference equations and discrete convolution. Z-transform methods and frequency responses of discrete systems, discrete Fourier transform and fast Fourier transform are covered. Applications in digital signal processing and sampled data systems are surveyed. Prerequisite: EE 480 or departmental consent. E 12 782 0 0909

786. Digital Communication Systems. (3). The theoretical and practical aspects of digital and data communication systems are presented. Topics covered include the modeling and analysis of information sources as discrete processes; basic source and channel coding; multiplexing and framing; spectral and time domain considerations related to ASK, PSK, DPSK, FSK, MSK and other techniques; approximation techniques; communicating digital information in both base-band and band-pass systems; intersymbol interference; effects of noise on system performance; optimum systems; and general M-ary digital systems in signal-space. Prerequisites: EE 754 and 666. E 12 786 0 0909

790. Independent Study in Electrical Engineering. (1-3). Arranged individual, independent study in specialized content areas in electrical engineering under the supervision of a faculty member. Repeatable for credit. Prerequisite: departmental consent. E 12 790 0 0909

792. State-Variable Techniques in Systems. (3). Review of mathematics fundamental to state-space concepts. Formulation of state-variable models for linear and nonlinear continuous and discrete systems and concepts of controllability and observability. Advanced systems are studied in addition to Lapunov and Lagrange stability and computational approximation techniques. Prerequisite: EE 480 or departmental consent. E 12 792 0 0909

794. Advanced Digital Systems. (3). A course covering primarily two topics: (1) microprocessors and (2) microprogramming. The operation and application of microprocessors are covered and a survey of available devices is reviewed. The characteristics of microprogrammable architecture are covered and the techniques of microprogramming are presented. The techniques are applied on the department's microprogrammable minicomputer. Prerequisites: EE 694 and 228 or equivalent, E 12 794 0 0909

798. Advanced Energy Systems. (3). A continuation of EE 598 with the topics treated in greater depth. Computer applications are stressed. Prerequisite: EE 598 or departmental consent. E 12 798 0 0909

Courses for Graduate Students Only

854. Stochastic Control Systems. (3). Review of the pertinent aspects of deterministic system models and linear dynamic system models with emphasis on linear systems driven by white Gaussian noise. Linear estimation and optimal filtering, design and performance analysis of Kalman filters. Prerequisites: EE 684 and 754. E 12 854 0 0909

875. MS Thesis. (1-3). Repeatable for credit toward the MS thesis option up to six hours. Prerequisite: prior consent of MS thesis advisor. E 12 875 4 0909

877. Special Topics in Electrical Engineering. (3). New or special courses are presented under this listing on sufficient demand. Repeatable for credit. Prerequisite: departmental consent. E 12 877 0 0909

873. Directed Studies in Electrical Engineering. (1-4). Repeatable toward the MS directed study option for up to four hours. The student must write a paper and give an oral presentation. Prerequisite: departmental consent. E 12 873 4 0909

883. Digital Filters. (3). A study of digital filter design methods. Both IIR and FIR filters are included. Software and hardware implementations are discussed; two-dimensional digital filters are introduced. Prerequisite: EE 786 or departmental consent. E 12 883 0 0909

884. Discrete-Time Control Systems. (3). Fundamentals of input/output and state-space analysis, reference equations and state-space representations; pole placement and observer design; near-optimal control and discrete minimum principle; linear state regulator design; inequality-constrained control problems. Prerequisites: EE 684 and 782. E 12 884 0 0909

885. Error Control Coding. (3). Fundamentals from information theory which underlie source and channel coding are presented. Topics from finite field theory and vector spaces essential for the study of coding are reviewed. The concepts of codes, space, sphere packing and perfect code are presented. Linear (n,k) block codes are considered in some detail including topics such as error detection and correction concepts, parity check matrices and syndromes. Hamming codes, cyclic codes, error-trapping decoding, BCH codes, burst-error-correcting codes, interleaving and product codes, convolutional codes and topics such as the Viterbi algorithm for decoding are presented. Prerequisites: EE 686 and 754. E 12 886 0 0909

888. Selected Topics in Antennas and Propagation. (3). Determination of characteristics of practical antenna systems; radiation patterns and antenna impedance; diffraction, horns, slots, etc.; and wave propagation in the earth's environment, including tropospheric and ionospheric phenomena. Prerequisite: EE 693. E 12 888 0 0909

889. Advanced Electrical Laboratory. (2). 8L. Training in fundamental experimental technology in some field of electrical specialization. This course consists of selected experiments in various areas of electrical engineering. The general subfield area is announced each semester the course is offered. Repeatable for credit. Prerequisite: departmental consent. E 12 889 0 0909

890. Topics in Control Systems. (3). A study of various concepts such as multi-loop systems, multivariable systems and decoupling, nonlinear systems; and sampled-data systems. Repeatable for credit. Prerequisite: EE 684 or departmental consent. E 12 890 0 0909

893. State-Variable Techniques in Systems II. (3). A continuation of the study of state-space concepts in the areas of nonlinear systems and optimal and suboptimal control systems with wide classes of performance measures. Prerequisite: EE 792 or departmental consent. E 12 893 0 0909

895. Nonlinear Control Theory. (3). An introduction to the analysis and design of nonlinear control systems with an emphasis on stability. Topics include stability definitions, phase-plane methods, linearization time and frequency domain stability criteria, limit-cycle criteria and exact methods for relay control systems. E 12 895 0 0909

960. Advanced Selected Topics in Engineering. (1-3). New or specialized advanced topics in engineering are presented. Repeatable for credit. Prerequisite: instructor's consent. E 12 960 0 0909

976. PhD Dissertation. (1-16). Repeatable up to a maximum of 66 hours. Prerequisite: admission to doctoral aspirant status. E 12 976 4 0909

990. Advanced Independent Study in Engineering. (1-3). Arranged individual, independent study in specialized content areas in engineering under the supervision of a faculty adviser. Repeatable toward the PhD degree. Prerequisites: advanced standing and departmental consent. E 12 990 0 0909

993. Sensitivity Methods in Control Systems Design. (3). Sensitivity analysis of deterministic and stochastic systems; sources of uncertainty in control systems, e.g., plant parameter variation, time delays, small nonlinearities, noise, model uncertainty; quantitative systematic methods; and stochastic design; quantitative study of the effects of uncertainties on system performance; low-sensitivity design strategies; state and output feedback design techniques; singular perturbation and model reduction techniques; adaptive systems and near-optimal control. Prerequisites: EE 893. E 12 993 0 0909
Industrial Engineering

Graduate Faculty

Distinguished Professor: Randall Chambers
Professor: Brian Lambert (chairperson), Don Malzahn
Associate Professors: Zbigniew Czajkiewicz, Don Hommer unfitzheim, Abu Masud
Assistant Professors: Osama Eyada, Jeffrey Fernandez (graduate coordinator), Ming Lui, Majid Najm, Shekhar Venkataraman

Doctor of Philosophy and Master of Science

The Department of Industrial Engineering offers a graduate program leading to the Master of Science (MS) in engineering management science and participates in the Doctor of Philosophy (PhD) in engineering program.

Admission Requirements

To be admitted to a graduate program in industrial engineering, students must have completed the equivalent of an undergraduate major in engineering or other quantitatively oriented fields. Applicants' records are examined individually prior to admission to evaluate their potential for graduate study. Normally, a grade point average of 2.750 is required for full admission for (1) the last two years of undergraduate work and (2) all mathematics, engineering and physical sciences coursework.

Degree Requirements

The MS in engineering management science requires the completion of a plan of courses that is approved by the student's adviser. The program includes required courses and electives; details may be obtained from the department chairperson. Two options are available: (1) the thesis option requires a minimum of 30 total hours, including three hours of thesis through IE 876 and (2) the non-thesis option requires a minimum of 34 hours. Degree programs in either option must include at least 18 credit hours of 700-level (or above) coursework. The thesis option allows six hours maximum and the non-thesis option allows 12 hours maximum of electives in business, engineering, mathematics, computer science and psychology or any other discipline approved by the department.

Examinations

Before a degree is granted, candidates in the thesis option must pass an oral examination over their thesis topic, administered by their thesis committee. Candidates in the non-thesis option must pass a written examination over the core courses and major area.

Courses for Graduate/Undergraduate Credit

509. The Human Factor in Engineering Design. (3). A systematic approach to the optimization of human-environment interaction. Topics include human information processing and limitations, work space design and environmental factors. Prerequisite: IE 354. E 13 548 0 0913

553. Production Control. (3). Quantitative techniques used in the analysis and control of production systems. Topics include forecasting, inventory models, operation planning and scheduling. Prerequisite: IE 450. E 13 553 1 0913

554. Statistical Quality Control. (3). Measurement and control of product quality using process control and acceptance sampling techniques. Prerequisite: IE 13 554 1 0913

555. Introduction to Information Systems. (3). A study of the design, implementation and economic analysis of computer-based information systems. Prerequisite: IE 355. E 13 555 0 0913

558. Manufacturing Methods and Materials. (3). A study of modern manufacturing methods. Topics include metal cutting, metal forming, casting, nonmetallic materials, and nontraditional processing. Introduction to automation and numerical control. Prerequisite: ME 350. E 13 558 0 0913

570. Manufacturing Process Control. (3). Fundamentals of microprocessors and microcomputers for industrial engineering applications. Topics include basic digital concepts, data acquisition, system design, time counting, decision making and control; and sensor characteristics and applications. Prerequisite: EE 199. Corequisite: EE 382. E 13 570 0 0913

590. Senior Projects in Industrial Engineering. (1-3). Selection and research of a specific industrial engineering topic. Prerequisites or corequisites: IE 452 and 553. E 13 590 3 0913


665. Management Systems Simulation. (3). The design of simulation models for the study of industrial process improvement and replacement, and systems too complex to be solved analytically. Emphasis is on general purpose computer simulation packages, such as: E 199 and IE 354. E 13 665 1 0913

670. Industrial Robotics I. (3). A study of principles and applications of industrial robots in modern manufacturing systems. Topics include robot classifications and configuration, actuators, robot sensors, control systems, robot programming and physical integration. Prerequisite: E 199. E 13 670 0 0913


720. Urban Systems. (3). Cross-listed as P. Adm. 720. This course develops the principles of systems analysis and the tools in which these principles can be applied. Example applications are taken from urban problems. Emphasis is on the formulation of realistic models and solutions. Computer techniques are developed in class as necessary. Prerequisite: departmental consent. E 13 720 0 0913

740. Analysis of Decision Processes. (3). A study of time value of money, economic evaluation of equipment selection and replacement, engineering estimates, evaluation of proposals, computer analysis and the solution of economic problems by the analysis of certainty and uncertainty. Prerequisites: IE 354 and 355. E 13 740 0 0913

743. Applied Operations Research. (4). A study of various techniques used in operations research. Included topics are mathematical programming, queuing theory, inventory models and simulation. Prerequisites: IE 354 and EE 199. E 13 743 0 0913


749. Advanced Human Factors. (3). A study of human factors in the design of the workplace, displays, control systems, hand tools and various video display terminals. Prerequisite: IE 549. E 13 749 0 0913

750. Industrial Engineering Workshops. (1-4). Various topics in industrial engineering. Prerequisite: departmental consent. E 13 750 2 0 0913

753. Facilities Planning and Design. (3). Quantitative and qualitative approaches to problems in facilities planning and design, with emphasis on activity relationships, space requirements, materials handling and storage, plant layout planning and facilities location. Prerequisite: IE 553. E 13 753 0 0913

754. Reliability and Maintainability Engineering. (3). The problems of quantifying, assessing and verifying reliability are studied. Various factors that determine the capabilities of components with emphasis on technical applications are presented. The examples and problems cover a broad range of engineering fields. Prerequisite: IE 354. E 13 754 0 0913

756. Decision Support Systems. (3). A study of various decision support system techniques including relational database, spreadsheets and expert systems. Prerequisite: IE 558 or departmental consent. E 13 756 0 0913

757. Modern Techniques in Safety Engineering. (3). An advanced study of the principles and quantitative measures of industrial safety and the Occupational Safety and Health Act. Prerequisite: IE 357 E 13 757 0 0913

760. Engineering Probability and Statistics II. (3). A study of hypothesis testing, regression analysis, analysis of variance, correlation and analysis of data. Emphasis is on the formulation of statistical techniques with emphasis on applications to engineering. Prerequisite: IE 354. E 13 760 0 0913

764. Systems Engineering and Analysis. (3). Presentation of system design process from the identification of a need through con-
computational design, preliminary design, detail design and development, and system test and evaluation. Operational feasibility, reliability, maintainability, safety and economic feasibility are studied. Prerequisites: IE 364 and IE 355. E 13 764 0 0913

775. Computer Integrated Manufacturing. (3). Analysis and design of manufacturing systems using computers. Topics include computer aided techniques, group technology, flexible manufacturing, and computer simulation techniques. Prerequisites: IE 558 and 570. E 13 775 0 0913

780. Topics in Industrial Engineering. (3). New or special courses are presented under this listing. Repeatable for credit when subject matter warrants. E 13 780 0 0913

Courses for Graduate Students Only

830. Advanced Linear Programming. (3). A continuation of IE 450. Included topics are the mathematical development of the simplex method, revised simplex, decomposition, duality, and parametric programming. Prerequisite: IE 450. E 13 830 0 0913

831. Classical Optimization Techniques. (3). An extensive treatment of those optimization techniques that do not require the use of linear programming. A development of variational methods, direct search and numerically based techniques is given. Prerequisite: IE 450. E 13 831 0 0913

832. Queueing and Inventory Systems. (3). Analysis of the behavior of queuing and inventory systems and their interrelationship to production and inventory control. Markov chain queueing models are discussed. Includes the development of single and multiple item constrained inventory models and periodic and continuous review policies. Prerequisite: IE 650. E 13 832 0 0913

835. Applied Forecasting Methods. (3). Analysis of prediction techniques in forecasting and scheduling by time series and probability models, smoothing techniques and time series analysis. Prerequisite: IE 654. E 13 835 0 0913

842. Advanced Simulation Analysis. (3). Advanced development of the techniques and methods for simulating complex systems. Emphasis is on the design of simulation experiments and on the statistical analysis of results. Prerequisite: IE 665. E 13 842 1 0913

843. Operations Research. (3). A study of the theory and application of nonlinear model-building techniques for the problems found in industry. Included topics are the Lagrange method; Lagrange multipliers; and separable, convex, variational, geometric, and stochastic programming. Prerequisites: IE 450 and 650. E 13 843 1 0913

844. Sequencing and Scheduling. (3). Deterministic/stochastic sequencing problems with static/dynamic models. Problems involving non-identical machines and existing solution techniques are discussed. Prerequisites: IE 743 and 844. E 13 844 1 0913


857. Environmental Hygiene Engineering. (3). Evaluation and control of mechanical, physical and chemical environments. Environmental factors considered include heat, cold, noise, vibration, light, pressure, acceleration, radiation and air contaminants. Prerequisite: IE 549. E 13 857 0 0913

860. Engineering Management Communications. (3). This course is a study of the design of technical communications for specific audiences, the writing process, the editing of your own and others' technical writing, formal presentation of technical material and the design of visual aids. E 13 860 0 0913

870. Flexible Manufacturing Systems. (3). Advanced study of modern computer integrated manufacturing systems. Topics include integrated CAD/CAM systems, date base in FMS, robots, machine selection, interfacing machines, computers and measuring devices. Prerequisite: IE 570. E 13 870 0 0913


879. Seminar in Management Science. (3). Application of management science methods and models to real problems. A special project, including original case research and results, is assigned. Prerequisite: departmental consent. E 13 879 0 0913

880. Topics in Industrial Engineering. (3). New or special courses are presented under this listing on sufficient demand. Repeatable for credit when subject matter warrants. E 13 880 0 0913

930. Multiple Criteria Decision Making. (3). An extensive treatment of decision making for the multiple criteria problem. Prerequisites: IE 450 or 743. E 13 930 0 0913

943. Work Physiology. (3). The study of cardiovascular, pulmonary and muscular responses to industrial work including aspects of endurance, strength, fatigue, recovery and the energy cost of work. Utilization of physical work capacity and job demand for task design, personnel assignment and assessment of work-rest scheduling. Prerequisite: IE 549. E 13 943 0 0913

950. Occupational Biomechanics. (3). Theoretical fundamentals of the link system of the body and kinematic aspects of body movement. Includes application of biomechanics to work systems. Prerequisites: IE 549 and AE 323. E 13 950 0 0913

956. Knowledge-Based Systems. (3). Introduction to the concepts and techniques in knowledge-based systems or expert systems. Includes design and development of single and multiple knowledge-based systems using microcomputer-based software. E 13 956 0 0913

970. Industrial Robotics II. (3). An advanced study of modern robotics systems. The course emphasizes the design of the robotic cell and manufacturing industry. Topics include artificial intelligence in robotics, vision systems, robot workshop automation, and robotics and flexible assembly. Prerequisites: IE 670. E 13 970 0 0913

976. PhD Dissertation. (1-16). Repeatable up to a maximum of 36 hours. Prerequisite: admission to doctoral aspirant status. E 13 976 4 0913

990. Advanced Independent Study in Engineering. (1-3). Arranged individual, independent study in specialized content areas. Repeatable toward the PhD degree. Prerequisites: advanced standing and departmental consent. E 13 990 3 0913

Mechanical Engineering

Graduate Faculty
Professors: Albert L. Gosman (interim chair and graduate coordinator), A. Richard Graham, Mahesh S. Greywall
Assistant Professors: Jharna Chauduri, James A. Harris, Mohammed R. Naji, Paul O. Steranka, Jorge E. Talia
Adjunct: James M. Bowyer, Jr., Francis W. Cooke, Dan E. Olson

Doctor of Philosophy and Master of Science and Areas of Specialization

The Department of Mechanical Engineering offers courses of study leading to the Master of Science (MS) that allow specialization in engineering materials properties and failure modes, instruments and controls and automation; mechanical engineering design; and thermodynamics and transport processes. The department also participates in the Doctor of Philosophy (PhD) in engineering program.

Admission Requirements

Full admission to the program requires the equivalent of an undergraduate major in mechanical engineering, or related areas with a grade point average of 3.00 for (1) the last two years of undergraduate study, (2) all engineering courses and (3) mathematics and physical science courses.

Degree Requirements

The MS in mechanical engineering requires the completion of one of two options: (1) the thesis option requires a minimum of 30 credit hours, including four hours of thesis through ME 876 and (2) the nonthesis option requires a minimum of 34 credit hours, including two hours of directed study through ME 876. In the nonthesis option, an ad hoc faculty committee gives an oral examination to students in relation to their project.

Students must have the Plan of Study in either option approved by their graduate adviser and graduate coordinator, and the department chairperson and must have their plan meet the department's requirements.

Course work in either option must include (1) a minimum of 18 credit hours at the 700 level or above and (2) a minimum of six hours outside of the department.

Examinations

Before a degree is granted, candidates must pass an oral examination over the thesis or directed study and/or course work. For information on the Doctor of
Philosophy, see the Graduate Programs in Engineering section.

Courses for
Graduate/Undergraduate Credit

The courses numbered 502 through 758 are not automatically applicable toward an advanced degree in engineering. They must be approved by the student's adviser, the graduate coordinator and the chairperson of the department. Courses required for the BS degree normally are not permitted for use toward the graduate degree in mechanical engineering.

502. Thermodynamics II. (3). Continuation of ME 388, with emphasis on availability, irreversibility, Maxwell's equations and thermodynamic property relations. Prerequisite: ME 398. E 14 502 0 0910

503. Mechanical Engineering Laboratory. (2). 6L. Selected experiments designed to illustrate the methodology of experimental as applied to mechanical and thermal systems. Prerequisites: Departmental consent. E 14 506 0 1910

504. Instrumentation. (3). 2R; 3L. A more complete treatment of the measurement problem with careful examination of modern instrumentation systems, including dynamic behavior and nonlinearity. Criteria for design, synthesis and selection of instrumentation systems are included. Prerequisite: ME 402. E 14 503 0 0910

514. Mechanical Engineering Design II. (3). 2R; 3L. Applications of the engineering design principles to the creative design of mechanical equipment. Problem definition, conceptual design, feasibility studies, design calculations to obtain creative solutions of current real engineering problems. Introduction to human factors, economics and reliability theory. Group and individual design projects. Prerequisites: ME 350 and 439 with a grade of C or above in both. E 14 541 0 0910

544. Environmental Engineering. (3). Theory, analysis and design of heating, ventilating and air-conditioning systems based on psychrometrics, thermodynamics and heat transfer fundamentals. Emphasis is on design procedures for space air-conditioning and heating and cooling loads in buildings. Prerequisites: ME 400 and 502. E 14 544 0 1910

540. Mechanical Engineering Projects. (1). A design, analysis or research project under faculty supervision. Problems are selected according to student interest. Prerequisites: ME 402 and senior standing. E 14 548 0 0910

550. Selected Topics in Mechanical Engineering. (1-3). New or special topics are presented under this listing on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: Departmental consent. E 14 550 0 0910

562. Fluid Mechanics. (3). Continuation of fluid mechanics stem of ME 400. Analysis of steady and unsteady, incompressible and compressible, multidimensional flow fields with emphasis on continuity, momentum and energy equations. Included are potential flow, boundary layer analysis, and thin film fluid machinery. Prerequisites: ME 400. E 14 621 0 0910

622. Heat Transfer. (3). A continuation of heat transfer stem of ME 400; steady and transient, multidimensional conduction, free and forced convection, radiation and combined. Prerequisites: ME 400, 425. Methods, analogies, numerical methods and approximate solutions are discussed. Prerequisites: ME 400 and 621 may be taken concurrently. E 14 622 0 0910

630. Biomechanical Engineering. (3). Study of the physiology and biomechanics of body motion, including the mechanical engineering principles. Various artificial organs and life support systems are introduced and discussed. Prerequisites: ME 400 and Math 550. E 14 630 0 1910

641. Thermal Systems Design. (3). Modeling, simulation and optimization used as tools in thermal systems design. Prerequisites: ME 400 and 502 both with a grade of C or better. E 14 641 0 0910

648. Mechanical Engineering Projects. (1). A design, analysis or research project under faculty supervision. Problems are selected according to student interest. Prerequisite: ME 548. E 14 648 0 0910

650. Selected Topics in Mechanical Engineering. (1-3). New or special topics are presented under this listing on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: Departmental consent. E 14 650 0 0910

659. Mechanical Control. (3). Modeling and simulation of dynamic systems theory and analysis of the dynamic behavior of control systems, based on the laws of physics and linear mathematics. Prerequisite: Departmental consent. E 14 659 0 0910

662. Mechanical Engineering Practice. (2). An exercise in the practice of mechanical engineering in which students engage in a complete design and analysis, integration of knowledge gained in prerequisite engineering science and design courses. Open only to mechanical engineering students in their last semester of study. Prerequisites: ME 541. E 14 662 0 0910

670. Senior Thesis I. (1). A design, analysis or research project performed under faculty direction. Open only to mechanical engineering students in their last two semesters of studies and requires recommendation of the department chairperson and approval of the department chairperson. Prerequisites: ME 581, which may be taken concurrently. E 14 670 0 0910

671. Senior Thesis II. (1). A continuation of ME 670. Prerequisites: ME 670. E 14 671 0 0910

705. Design of Engineering Experiments. (3). Study of theoretical, analytical and statistical aspects of basic engineering experiments. Prerequisites: ME 670, E 14 671 0 0910

734. Solar Engineering. (3). A study of solar energy with methods of collection conversion system analysis and economics. Emphasis on solar basic and water heating systems. E 14 734 0 0910

741. Nuclear Engineering. (3). Study of the fundamental aspects of nuclear physics and its application in energy production, including nuclear reaction, reactivity, neutron interaction, reactor core physics, nuclear heat transfer and nuclear reactor. Prerequisites: Math 550, E 14 741 0 0910

744. Advanced Environmental Engineering. (3). A continuation of ME 544 with an emphasis on building energy systems related to the design and selection of heating, ventilating and air-conditioning equipment and distribution systems. Prerequisite: ME 544 or departmental consent. E 14 744 0 0910

749. Kinematics and Dynamics of Machines. (3). Study of the mechanics of machines. Prerequisite: ME 549. E 14 749 0 0910

750. Special Topics in Mechanical Engineering. (1-3). New or special topics are presented under this listing on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: Departmental consent. E 14 750 0 0910

755. Intermediate Thermodynamics. (3). Laws of thermodynamics, introduction to statistical concepts of thermodynamics, thermodynamic properties, chemical thermodynamics. Prerequisite: ME 550 or departmental consent. E 14 755 0 0910


Course for
Graduate Students Only

801. Boundary Layer Theory. (3). Development of the Navier-Stokes equation, laminar boundary layers, transition to turbulence, turbulent boundary layers and an introduction to homogeneous turbulence. Prerequisite: Math 651 or departmental consent. E 14 801 0 0910

845. Fracture. (3). Ductile and brittle fracture: phenomena and mechanisms, linear elastic fracture mechanics, transition temperature approaches, tests for fracture resistance and design methods. Prerequisite: Departmental consent. E 14 845 0 0910

846. Fatigue and Wear. (3). Fatigue of metals and nonmetals: phenomena, fatigue testing procedures and design methods. Survey of wear problems in engineering. Prerequisite: departmental consent. E 14 846 0 0910

850. Special Topics in Mechanical Engineering. (3). New or special topics are presented under this listing on sufficient demand. Repeatable for credit when subject material warrants. Prerequisite: Departmental consent. E 14 850 0 0910
Theory and measurement, Fourier's equation, steady and unsteady state with and without heat sources and sinks and numerical methods. Prerequisites: ME 622, Math. 651 or departmental consent. E 14 851 0 0910

852. Heat Transfer-Convection. (3).
Free and forced convection in laminar and turbulent flow. Analysis and synthesis of heat transfer equipment are included. Prerequisite: ME 622 or departmental consent. E 14 852 0 0910

Radiative properties of real surfaces, configuration factor analysis, radiative transfer in participating media, exchange factor analysis, Monte Carlo methods. Prerequisite: ME 622 or departmental consent. E 14 853 0 0910

856. Advanced Thermodynamics. (3).
Statistical thermodynamics, Boltzmann Boise-Einstein and Fermi-Dirac statistics, calculation of thermodynamic properties, elementary kinetic theory, introduction to irreversible thermodynamics. Prerequisite: ME 502 or departmental consent. E 14 856 0 0910

858. Computational Fluid Dynamics and Heat Transfer II. (3).
Vector form of the Navier-Stokes and the energy equation. Generalized transformation of the flow equations to the computational domain. Numerical methods for inviscid flow equations, boundary layer type equations, "parabolized" Navier-Stokes equations and the Navier-Stokes equations. Prerequisite: ME 758 or equivalent. E 14 858 0 0910

Description, analysis and design of electromechanical control systems, with an emphasis on actual devices. Prerequisite: ME 659 or departmental consent. E 14 860 0 0910

861. Similarity in Engineering. (2).
Critical analysis of models and analogies as aids to engineering design. Prerequisite: departmental consent. E 14 861 0 0910

862. Rational Design Methods. (3).
The principles of creativity, decision theory, modeling, optimization and reliability as applied to problems of engineering design. Prerequisite: departmental consent. E 14 862 0 0910

878. Directed Studies. (1-4).
Repeatable as approved in the Graduate School plan of study. The student must write a paper. Students selecting the directed study option to fulfill the degree requirement need also to take an oral examination on the study made. Prerequisite: departmental consent. E 14 878 4 0910

901. Advanced X-Ray Diffraction Theory. (3).
The first part of this course concentrates on the fundamental X-ray diffraction theories, including dynamical theory of X-ray and anomalous absorption, with which a serious student in this field must be thoroughly familiar. The second part of this course emphasizes the general theory of X-ray diffraction in a concise and elegant form using Fourier transforms. The general theory is then applied to various atomic structures, ideal crystals, imperfect crystals and amorphous bodies. Prerequisites: ME 750, Math. 651. E 14 901 0 0910

Repeatable up to a maximum of 36 hours. Prerequisite: admission to doctoral aspirant status. E 14 976 4 0910

990. Advanced Independent Study in Engineering. (1-16).
Arranged individual, independent study in specialized content areas. Repeatable toward the PhD degree. Prerequisites: advanced standing and instructor's consent. E 14 990 3 0910
College of Fine Arts

Offices: 415 Jardine Hall
Rhoda-Gale Pollack, Dean
Walter J. Myers, Associate Dean
John D. Boyd, Coordinator for graduate studies in art
Donald L. Corbett, Coordinator for graduate studies in music

School of Art and Design—Lanny Milbrandt, acting chair
Art Education—Mary Sue Foster, director
Art History—Richard Leslie, director
Graphic Design—Clark V. Britton, Jr., senior faculty
Studio Arts—Kathleen E. Shanahan, director
School of Music—William E. Mathis, chair
Music Education—James L. Hardy, director
Musicology-Composition—J. William Thomson, director
Keyboard Performance—Paul E. Reed, director
Strings Performance—Andrzej Grabiec, director
Voice/Choral Performance—Harri­son C. Boughton, director
Winds/Percussion Performance—Mylo­ A. Mazur, director
School of Performing Arts—Richard C. Welsbacher, chair
Dance—Carol Iwasaki, director
Theatre—Richard C. Welsbacher, director

Art Education

Graduate Faculty
Associate Professor: Mary Sue Foster, Lanny Milbrandt
Visiting Assistant Professor: Mary Barr

Master of Arts with Emphasis in Art Education

The Master of Arts (MA) degree with emphasis in art education meets the needs for advanced study in the field. The program is designed for students pursuing a career in public school art teaching, supervision, college teaching, museum education or art research.

Admission Requirements

To be admitted without deficiencies, students must have completed a baccalaureate program in art education and meet requirements for Kansas state certification in this field. Also required are a 2.750 overall grade point average during the last two years of undergraduate study and a 3.000 grade point average in art, with a minimum of 12 hours in art history or equivalent, 15 hours in one studio area and nine hours in art education curriculum. Applicants are required to present for evaluation a personal and professional resume and ten examples of their work in either portfolio or slide form. Up to half of the portfolio may be work produced by students of the applicant. All work should be identified with name, title, size and media. When deemed necessary, undergraduate courses determined by the major professor may be required before students are admitted to the MA program with full standing. All correspondence should be addressed to the program director of art education.

Degree Requirements

Two major plans may be followed in meeting the requirements for the MA degree.

Plan A. The minimum requirements though Plan A are summarized below. Of the 30 hours required, 18 must be in courses numbered 700 or above.

Art education including 3 hour thesis 18 hours
Major art areas and related fields 12 hours
Total 30 hours

Plan B. The minimum requirements though Plan B are summarized below. Of the 33 hours required, 20 must be in courses numbered 700 or above.

Art education (includes 6 hours of research problems) 18 hours
Major art areas and related fields 15 hours
Total 33 hours

All candidates must pass an oral examination after completing 12 semester hours. Candidates must pass an oral defense of their thesis if following Plan A. If following Plan B, they must make a verbal and/or visual presentation of their terminal project.

Plan of Study

In order to define a program of study for the graduate degree, students must submit in triplicate the Plan of Study form leading to admission to candidacy for the degree no later than one month following the completion of 12 semester hours of graduate credit.

Transfer of Credit and Extension Work

A maximum of six semester hours of graduate work may be transferred from another graduate school with the approval of the major adviser and the dean of the Graduate School, preferably before the work is taken. Correspondence courses are not accepted for credit, and extension credit is accepted only if the major department and the dean of the Graduate School approve the transfer of credit. If the course is taught by The Wichita State University graduate faculty, only six hours of such work will be accepted. Six hours of graduate-level courses in one department may be taken on a nondegree student basis will be accepted. Courses taken outside of one department before acceptance into the art education masters program may or may not apply toward the degree.

Courses for Graduate/Undergraduate Credit

510Q. Stimulating Creative Behavior, (3). Topics include theories of creativity, strategies for problem-finding and problem-solving, identifying various external and internal blocks to creativity, testing for creativity, the relationships of creativity, cognition and visual thinking, creative challenges and stimuli. Course emphasizes methods to elicit creative behavior. Repeatable once for credit. F 14 510Q 0 0831

514Q. Aesthetic Inquiry, (3). The course will focus on contemporary trends in aesthetics relative to the visual arts. Students will be expected to write critical observations and interpretations in response to art work. Prerequisite: upper-division art major. F 14 514Q 9 0831

515. Developing Visual Materials for Art Education, (3). A production laboratory that
concentrates on the use of technological equipment for making multimedia experiences (films, slides, tapes, projectors, etc.) for art education students. Students engage in constructing units of visual learning. F 14 515 9 0831

516. Art Education Practicum. (3). The development of art curriculum materials for secondary levels. Students will work with children on art-related projects and conduct art workshop sessions for art classes. Concurrent enrollment in IS 433. F 14 516 0 0831

517. Students Teaching Seminar in Art. (1). The objective is to refine skills encountered in the art classroom during student teaching. Concurrent enrollment in seven hours of student teaching courses is required. Prerequisites: Art Ed. 516 and departmental approval for student teaching. F 14 517 9 0831

518. Art for the Exceptional Child. (3). Follows regular art education principles with appropriate adaptations and teaching methods for exceptional children in school settings. Among the exceptionalities considered will be types of mental retardation, emotional disturbance, and auditory and visual impairments. F 14 518 0 0831

702. Metal Processes for Jewelry Construction. (3). Emphasis in this course is on fabrication techniques, design analysis and function of jewelry designed and produced by students and acknowledged craftsmen. Repeatable once for credit. Prerequisite: Art Ed. 212, 302 or instructor's consent. F 14 702 0 0831

708. Creative Behavior and Visual Thinking. (3). Emphasis in this course is on perception, design analysis and function of jewelry designed and produced by students and acknowledged craftsmen. Repeatable once for credit. Prerequisite: Art Ed. 212, 302 or instructor's consent. F 14 708 0 0831

710. Seminar in Art Education: Topic to Be Announced. (1-3). Supervised study and research of contemporary issues in art education. Prerequisite: instructor's consent. F 14 710 9 0831

712. Development of Art Understanding in the Early Childhood Program. (3). Readings, observation and evaluation of early creative and critical thinking. Emphasis on strategies for problem solving and visual thinking and procedures to implement those strategies. Students will identify an area for individual investigation. Repeatable once for credit. F 14 712 0 0831

713. Fiber and Fabric Processes. (1-3). Fiber processes and structuring in traditional and experimental processes in woven forms and other structural techniques using natural and man-made fibers. Repeatable once for credit. Prerequisite: instructor's consent. F 14 713 0 0831

715. Research Problems in Art Education. (3). Orientation in research methods, findings and designs related to the analysis of studies and current problems in art education. Repeatable once for credit. Prerequisite: instructor's consent. F 14 715 0 0831

719. Electronic Imaging. (3). Emphasis will be placed on personal and group research and on computer processes and their application to art and art education. Students will generate digital computer images with a variety of software and hardwared equipment. The student will make use of this new technology to prepare lessons in art history and art criticism, and will develop curricular materials for art instruction that employ computer graphics procedures. The graduate student will prepare a research paper on selected topics related to computer graphics and art learning. F 14 719 0 0831

720. Art and Early Childhood. (1-3). Emphasizes the cognitive and aesthetic domains of young children and develops the potential for creative and visually expressive behavior as a natural means of children responding to environmental stimuli. F 14 720 0 0831

750. Art Workshop. (1-3). Repeatable for credit. (The area to be covered is determined at the time the course is offered.) F 14 750 2 0831

Courses for Graduate Students Only

815. Individual Research Problems in Art Education. (1-4). Directed independent study in art education not normally covered in other graduate courses or workshops. Repeatable for credit. Prerequisite: instructor's consent. F 14 815 4 0831

818-819. Thesis-Art Education. (1-3). F 14 818 4 0831; F 14 819 4 0831

818-819. Terminal Project-Art Education. (1-3). F 14 818 3 0831; F 14 819 3 0831

Art History

Graduate Faculty
Professor: Mila P. Herriman
Assistant Professor: Stockton H. Garver

Although there is no graduate degree in art history, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

520. Seminar in Art History. (3). Systematic study in selected areas of art history. Course content varies but individual areas are not repeatable for credit. F 15 520 9 1003

521Q. Italian Renaissance. (3). A study of the architecture, sculpture and painting in Italy during the 16th century. Emphasis is given to early developments in Florence and Siena and late developments in Rome. F 15 521Q 1003

522. Italian Baroque. (3). A study of Baroque painting, sculpture and architecture in Rome, Venice and Bologna from 1600 to 1750 with emphasis on the Carracci, Bernini and Tiepolo. F 15 522 0 1003

523. 18th and 19th Century European Art. (3). A history of European art from Watteau through post-impressionism. F 15 523 0 1003

524. 18th and 19th Century American Art. (3). A history of American art during the colonial period through the 19th century. F 15 524 0 1003

525. 20th Century Art Before 1945. (3). A history of American and European art in the first half of the 20th century. F 15 525 0 1003

526. Art Since 1945. (3). A study of the history of art in the United States from 1945 to the present, stressing the relationship between contemporary trends in criticism and artistic practice. F 15 526 0 1003

528. Museum Techniques I. (3). Designed primarily for the graduate student interested in museum work. Included is specialization in art conservation and a field trip to several museums in the area. F 15 528 0 1003

529. Modern Architecture. (3). A course designed to offer an overall view of the development of modern architecture from its inception in the early 20th century until today. Theoretical connections between architecture and the arts of painting and sculpture as they developed in the United States and Europe are stressed. F 15 529 0 1003

530. The Art of Classical Greece. (3). A study of the painting, sculpture and architecture of Greece during the Hellenistic period, 5th to 1st centuries B.C. F 15 530 0 1003

531. The Art of Hellenistic Greece. (3). A study of the painting, sculpture and architecture of Greece during the Hellenistic period, 4th to 1st centuries B.C. F 15 531 0 1003

532. Independent Study in Art History. (1-3). Work in a specialized area of the study of art history. Directed readings and projects. Prerequisite: instructor's consent. F 15 532 0 1003

533. Seminar: Topics in Modern Art. (3). Selected readings and problems in art of the modern era. Course content varies but individual areas are not repeatable for credit. F 15 533 9 1003

721. Introduction to Art History for Teachers I. (3). A historic and stylistic overview of the development of art from antiquity through medieval times. Emphasizes how art history can be integrated into art and nonart classroom curriculums. Specifically designed for elementary and secondary classroom teachers. Approved for recertification credit for elementary and secondary teachers by KSBOE. F 15 721 0 1003

722. Introduction to Art History for Teachers II. (3). A historic and stylistic overview of the development of art from the Renaissance to the present. Emphasizes how art history can be integrated into art and nonart classroom curriculums. Specifically designed for elementary and secondary classroom teachers. Approved for recertification credit for elementary and secondary teachers by KSBOE. F 15 722 0 1003

732. Independent Study in Art History. (3). Work in specialized area of the study of art history. Directed readings and projects for graduate students in all disciplines. Prerequisite: instructor's consent. F 15 732 9 1003

Courses for Graduate Students Only

828. Thesis. (2). F 15 828 4 1003

829. Thesis. (2). F 15 829 4 1003

832. Independent Study. (1-3). Individually supervised work in a specialized area of the study of art history. Directed readings and research projects. Repeatable for credit. Prerequisites: suitable preparation for graduate study in art history (e.g. BA or BFA in art history) and instructor's consent. F 15 832 3 1003

Graphic Design

Graduate Faculty
Professor: Clark V. Britton, Jr.

Although there is no graduate degree in graphic design, the following course is available for graduate study.
Course for Graduate/Undergraduate Credit

530. Seminar in Graphic Design. (3). Supervised study and research. Weekly consultation and reports are required. Repeatable for credit. Prerequisites: departmental consent. F 17 530 9 1009

Studio Arts

Graduate Faculty

Professor: Richard St. John
Associate Professors: Raymond Olivero, John Boyd, Ronald Christ, Kameen Shanahan
Assistant Professors: David Olson, Christopher Staley

Master of Fine Arts

The Master of Fine Arts (MFA) degree is offered for qualified students planning careers as professional artists, either working independently or as artists-teachers on the college or art school level. The program is designed for a major in ceramics, painting, printmaking or sculpture.

Admission Requirements

Admission without deficiencies requires a 2.750 grade point average during the last two years of undergraduate study and a 3.250 overall grade point average in the major field of study: ceramics, painting, printmaking or sculpture. Also required is a Bachelor of Fine Arts (BFA) degree, or the equivalent, that includes a minimum of 12 hours of art history, 15 hours in the major field and 20 hours of related work. Applicants should present examples of work for evaluation. They should submit 15 color slides (2" x 2") in their major area. All work should be identified with name, title, size and media. Applicants should also include a short statement of their artistic philosophy. Also list all honors, awards, scholarships, exhibitions, special recognition for work in art or services rendered through art. Three letters of recommendation should be forwarded. No application is considered until an application to Graduate School, transcripts and the materials listed above are received. A stamped return envelope for all materials should be included.

Students holding degrees from institutions where requirements differ from those at Wichita State may be required to take undergraduate courses to make up deficiencies as determined by the major professor and the graduate art coordinator. Applicants should address all correspondence to the graduate art coordinator.

Degree Requirements

Minimum course requirements for completion of the MFA degree are summarized below. In addition, 45 of the 60 hours must be taken in courses numbered 800 or above.

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studio courses in the major area</td>
<td>23 hours</td>
</tr>
<tr>
<td>Studio courses in a minor option area</td>
<td>15 hours</td>
</tr>
<tr>
<td>Courses in art history</td>
<td>9 hours</td>
</tr>
<tr>
<td>Terminal project in the major area</td>
<td>10 hours</td>
</tr>
<tr>
<td>Course in art seminar or directed readings</td>
<td>3 hours</td>
</tr>
<tr>
<td>Total</td>
<td>60 hours</td>
</tr>
</tbody>
</table>

*Minor option can be taken in one studio area, a variety of studio areas or in the major area, with advisor's approval.

**These nine hours are mandatory.

The terminal project consists of an exhibition of original studio art work, accompanied by either (1) a written report in thesis form or (2) the MFA terminal project report, which is a photographic documentation of the candidate's studio work (submitted in duplicate).

Plan of Study

In order to define a program of study for the graduate degree, students must submit in triplicate the Plan of Study form leading to admission to candidacy for the degree no later than one month following the completion of 24 semester hours of graduate credit.

Graduate Review

MFA degree students must satisfactorily complete four graduate reviews conducted in their major MFA area at the end of each fall and spring semester. At this time, the graduate faculty makes observations and recommendations regarding the quality of the students' works and their standing in the program. No graduate review is held during Summer Session.

Transfer of Credit

All graduate credit for transfer will be at the discretion of the departmental advisor and graduate coordinator. A maximum of 12 semester hours from prior graduate study may be considered for transfer to the MFA program. However, no transfer work will be considered until the students have successfully completed 24 semester hours and their first graduate reviews and no hours can be applied to a major field of study. If a transfer of credit is allowed, it may reduce course requirements but not entrance requirements. A ruling of hours converted to the MFA program by the dean of the Graduate School, graduate art coordinator and the major professor is final. Graduate nondegree work obtained before admission to a planned degree program will not be accepted.

Required Prerequisite

Students who have not been accepted to degree standing in the MFA Studio or MA Art Education programs may enroll in 800-level courses only with written consent of the art graduate coordinator.

Examinations

At the beginning of and during the semester in which the degree is to be conferred, two interviews between candidates and their committees are conducted. The proposed content of the MFA exhibition is discussed and evaluated. The committee's findings, upon final review and the MFA terminal exhibition, are filed by the major professor with the graduate dean at least two weeks before the end of the final semester. This procedure constitutes the terminal examination for MFA candidates.

Policy Toward Student Art

The School of Art and Design reserves the right to select and retain a maximum of three pieces from the graduate exhibition MFA printmaking candidates may be required to deposit one print from any or each edition for the University Collection.

General

Course for Graduate/Undergraduate Credit

500. Topics in Visual Art and Design. (3). Topics of special interest and significance to faculty and students in Studio Arts. Content varies in subject matter from one semester to another. Repeatable for credit with departmental consent. F 16 550 1 1002

Ceramics

Courses for Graduate/Undergraduate Credit

570. Advanced Ceramics Studio. (3). Lab fee. Advanced studio problems involving forming methods, glaze formulation and firing procedures. Lecture periods are held involving advanced studies of ceramic materials and glaze formulation. Repeatable for credit. Prerequisites: SA 370. F 16 570 1 1009

574. Advanced Study of Kiln Methods. (3). Advanced study of kiln design and construction with research in the area of refractory materials. Reading assignments, notebook and laboratory work required. Prerequisites: SA 374. F 16 574 1 1009

575. Study of Ceramic Materials II. (3). Lab fee. Lectures and research covering clays, glazes and refractory materials. Reading assignments are made concerning physical and chemical characteristics of clays. Prerequisites: SA 275 and 370. F 16 575 0 1009

576. Study of Ceramic Glazes II. (3). Lab fee. The study of glaze formulation and the color and crystalline effects of oxides on base glazes. Notebook, formulation records and laboratory work required. Prerequisites: SA 575. F 16 576 1 1009

578. Independent Study in Ceramics. (1-3). A professional emphasis on technical
or aesthetic research in the ceramics field. Available only for the advanced ceramics student with consent of instructor. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent. F 16 578 0 1009

774. Advanced Study of Kiln Methods. (3). Advanced study of kiln design and construction with research in the area of refractory materials. Prerequisite: instructor's consent. F 16 774 1 1009

Courses for Graduate Students Only

800. Seminar in Art Topics. (3). Designed to explore areas of common interest in the arts. Supervised study, research and discussion. Repeatable for credit. F 16 800 9 1009

870. Special Problems in Ceramics. (1-5). Research in advanced problems in ceramics. Repeatable for credit. F 16 870 3 1009

875. Advanced Research of Ceramic Materials. (3). Lectures and advanced research concerning physical and chemical characteristics of pottery materials. Notebook and outside lab work are required. F 16 875 4 1009

876. Advanced Study of Ceramic Glazes. (3). The study of glaze formulation and the color and crystalline effects of oxides on base glazes. Notebook, advanced formulation records and laboratory work required. Prerequisite: SA 875. F 16 876 4 1009

878-879. Terminal Project—Ceramics. (2 or 3 or 5; 3 or 5). F 16 878 4 1009. F 15 879 4 1009

Drawing

Courses for Graduate/Undergraduate Credit

545. Advanced Drawing Studio. (1-3). Drawing with a variety of media. Graphical problems relative to individual technical and aesthetic development are used. Critiques are given. Repeatable for credit. Prerequisites: SA 340 and 345. F 16 545 1 1002

549. Independent Study in Drawing. (3). A professional emphasis on technical or aesthetic research in the drawing area. Available only for the advanced drawing student with instructor's consent. Statement of intent must be submitted for faculty approval before registration. Prerequisites: SA 340 and 345 and instructor's consent. F 16 549 1 1009

749. Independent Study in Drawing. (3). A professional emphasis on technical or aesthetic research in drawing. Prerequisites: graduate status and instructor's consent. F 16 749 1 1009

Courses for Graduate Students Only

800. Seminar in Art Topics. (3). Designed to explore areas of common interest in the arts. Supervised study, research and discussion. Repeatable for credit. F 16 800 9 1009

840. Special Problems in Life Drawing. (1 or 2). Drawing from life. Sketchbooks and/or portfolio required. Repeatable for credit. F 16 840 3 1002

845. Special Problems in Drawing. (1-3). Advanced drawing in various media with emphasis on independent work and the development of personal expression. Repeatable for credit. F 16 845 3 1002

Painting

Courses for Graduate/Undergraduate Credit

550. Advanced Painting Studio. (1-3-6). Designed for the professionally oriented student Emphasis is on independent study. Repeatable for credit. Prerequisites: four semesters of SA 350 and interview with instructor. F 16 550 1 1002

551. Advanced Watercolor Studio. (3). Sketchbook and/or portfolio required. Prerequisite: completion of Foundation program and SA 251. F 16 551 1 1002

553. Independent Study in Painting. (3). A professional emphasis on technical or aesthetic research in the painting area. Available only for the advanced painting student with consent of instructor. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent. F 16 553 1 1009

Courses for Graduate Students Only

800. Seminar in Art Topics. (3). Designed to explore areas of common interest in the arts. Supervised study, research and discussion. Repeatable for credit. F 16 800 9 1009

850. Special Problems in Painting. (1-5). Professional and experimental painting with emphasis on the development of maturity, ideas, independent thinking and personal expression. Mediums include oil, watercolor and synthetic media. Repeatable for credit with the consent of the drawing/painting faculty. F 16 850 3 1002

858-859. Terminal Project—Painting. (3 or 5; 3 or 5). F 16 858 4 1002; F 16 859 4 1002

Printmaking

Courses for Graduate/Undergraduate Credit

560. Advanced Printmaking Studio—Intaglio. (1-3). Intaglio, collagraph and mixed techniques. For the students interested in professional printmaking, the course offers specialization in color printing or black and white. Repeatable for credit. Prerequisites: SA 260, 262 and 364. F 16 560 1 1002

561. Advanced Printmaking Studio—Lithography. (1-3). Lithography, black and white color. For the students interested in professional printmaking, the course offers specialization in color printing. Repeatable for credit. Prerequisites: SA 260, 262 and 364. F 16 561 1 1009

565. Independent Study in Printmaking. (3). A professional emphasis on technical or aesthetic research in the printmaking area. Available only for the advanced printmaking student with consent of instructor. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent. F 16 565 1 1009

765. The Techniques and Materials of Printmaking. (3). Lecture, assigned reading and reports on the tools, materials, methods and origins of basic printmaking techniques, including woodcut, relief, intaglio, lithograph, collagraph and color printing. Special art research project required in addition to assigned reading and reports. Prerequisite: six hours of printmaking. F 16 765 0 1002

Courses for Graduate Students Only

800. Seminar in Art Topics. (3). Designed to explore areas of common interest in the arts. Supervised study, research and discussion. Repeatable for credit. F 16 800 9 1009

860. Special Problems in Printmaking—Intaglio. (1 or 3 or 5). Advanced printmaking on an individual basis. Encouragement is given to individual student combined with a craftsman-like approach. Techniques include all intaglio, relief and combined methods, black and white and color. Repeatable for credit. F 16 860 3 1002

862 & 863. Special Problems in Printmaking—Lithography. (1 or 3 or 5). Advanced printmaking on an individual basis. Encouragement is given to investigation combined with a craftsman-like approach. Included are lithography and allied techniques, black and white and color. Repeatable for credit. F 16 862 3 1002 & F 16 863 3 1002

868-869. Terminal Project—Printmaking. (3 or 5; 3 or 5). F 16 868 4 1002; F 16 869 4 1002

Sculpture

Courses for Graduate/Undergraduate Credit

580. Advanced Sculpture Studio. (1-3). Sculpture in any medium, with an emphasis on individual development and creativity. Repeatable for credit. Prerequisite. SA 380. F 16 580 1 1002

581. Advanced Handbuilding Techniques in Clay. (3). Advanced studio problems involving sculptural handbuilding forming methods, glaze and surface formulation and firing procedures. Lectures and research on advanced studio problems of clay sculpture in contemporary society. Prerequisite: SA 380. F 16 582 1 1009

585. Independent Study in Sculpture. (3). A professional emphasis on technical or aesthetic research in sculpture. Available only for the advanced sculpture student with consent of instructor. Statement of intent must be submitted for faculty approval before registration. Prerequisite: departmental consent. F 16 585 1 1009

785. Independent Study in Sculpture. (3). A professional emphasis on technical or aesthetic research in sculpture. Prerequisite: instructor's consent. F 16 785 1 1009

Courses for Graduate Students Only

800. Seminar in Art Topics. (1, 3 or 5). Designed to explore areas of common interest in the arts. Supervised study, research and discussion. Repeatable for credit. F 16 800 9 1009

860. Special Problems in Sculpture. (3 or 5). Advanced sculpture with emphasis on experimentation and high quality work on an individual basis. Special projects in casting, architectural sculpture, mixed media or new materials and techniques are stressed. Repeatable for credit. F 16 860 3 1002

888-889. Terminal Project—Sculpture. (3 or 5; 3 or 5). F 16 888 4 1002; F 16 889 4 1002
School of Music

William E. Mathis, Chair

Graduate degree programs in the College of Fine Arts, School of Music, are designed to extend and broaden the professional competency of men and women desiring careers in music. Students may pursue graduate studies in history-literature, theory-composition, music education, performance, and pedagogy. While providing for advanced training in the specific skills of music, these graduate programs help to cultivate the student's capacity to think—to consider impersonally, dispassionately and without prejudice any problem related to the art of music.

Master of Music

The Master of Music (MM) degree allows for specialization in history-literature, piano pedagogy, theory-composition and performance. The general requirements for the degree are outlined below, while the specific information about the requirements for each specialization is given in the section concerning courses offered in the area of specialization.

Admission Requirements

A recital is not a terminal requirement for college and returning to full school enrollment the following semester; such students need not be concurrently enrolled in any other course. Prerequisites: successful completion of the freshman year and satisfactory academic standing prior to the first job assignment. May be repeated for credit. Offered CR/NC only. F 11 761 2 0832.
or choral emphasis under the MME degree. Prerequisite: instructor and departmental consent. F 11 844 4 0832

845A. Seminar in Instrumental Music Education Literature. (2). Critical analysis of literature for band, orchestra and small ensembles in elementary and secondary schools. Current bibliography is used. Repeatable for credit. F 11 845A 9 0832

851. Psychology of Music. (2). An overview of music behaviors from a psychological perspective. Recent literature concerning human psychoacoustics; melodic, rhythm and harmonic perception; and major learning theories are related to current trends in music education. F 11 851 0 0832

852. Introduction to Graduate Study. (3). See course listing under musicology-composition department. F 13 852 0 1006

854. Research Seminar in Music Education. (3). Continued application of techniques of research. The completion of a major research project is required. Prerequisite: Mus.-Comp. 852. F 11 854 9 0832

871. History and Philosophy of Music Education. (2). A study of historical trends and contemporary philosophies relevant to music education, behavioral objectives and curriculum planning. Prerequisite: Mus. Ed. 851. F 11 871 0 0832

875. Thesis Research. (1-2). F 11 875 4 0832

876. Thesis. (2). F 11 876 4 0832

Music Performance
Graduate Faculty
Professors: Harrison C. Boughton, Joseph C. Combs, Jay C. Decker, George H. Gibson, James Jones, Walter J. Myers
Associate Professors: Dorothy Crum, Andzej Grabiec, Paul E. Reed, Frances K. Shelly, Nicholas E. Smith, Robert Tava, Vernon L. Yenue
Assistant Professors: Julie Bees, Sylvia Coats, Robert Glassman, Benson Headley, Myles A. Mazur, Russell D. Widener

Master of Music with Emphasis in Performance
Admission to the Master of Music (MM) program with emphasis in music performance requires a performance background with a Bachelor of Music degree in the performance area of specialization or the equivalent. Background deficiencies must be satisfied before admission to candidacy is granted. All performance degree candidates must complete a satisfactory audition in their performance area of specialization. The audition should be completed as early as possible—but no later than the end of the first semester of enrollment. Final acceptance in a performance specialty is dependent upon approval of the respective performance faculty.

A formal graduate recital, in lieu of a thesis, must be presented in partial fulfillment of the requirements for the MM degree with emphasis in performance.

In order to have permission to schedule a degree recital, students must satisfy the general performance degree expectations. Permission to schedule the recital must be obtained no later than the semester before the semester in which the recital is to be performed. The student's performance repertoire and the recital program must be in accordance with the guidelines and expectations established by the performance area concerned.

Students studying for the MM degree with emphasis in performance should plan to be in residence during at least one full or spring semester, since continuous study opportunities may not exist in Summer Session.

Master of Music with Emphasis in Piano Pedagogy
The Master of Music (MM) degree with emphasis in piano pedagogy gives primary emphasis to the development of tutorial concepts specific to keyboard skills and artistry; secondary, but significant, emphasis is placed on an acceptable demonstration of keyboard performance at the master's degree level. The pedagogy option includes extensive preparation in the area of keyboard literature and stresses the relationship of performance to selected repertoire and teaching-skills development.

Admission Requirements
Students must have completed a Bachelor of Music in piano performance degree or its equivalent. All candidates must complete a satisfactory audition as early in the program as possible—in no event later than the close of the first semester of enrollment. Permission to pursue the degree is tentative pending approval of the audition. Deficiencies, if noted, must be satisfied before admission to candidacy for the degree.

Degree Requirements
The MM degree with emphasis in piano pedagogy requires the completion (minimum) of 32 graduate hours, including a graduate degree recital. Of these hours, 20 must be in courses numbered 700-800 or above. The degree must include the following courses:

1. 652, Introduction to Graduate Study, 3 hours
2. 830, Seminar in Music Theory, 3 hours
3. Election of a minimum of two courses (6 hours) in graduate music history-literature from 893, Music of Antiquity through the Renaissance, through 897, Music of the 20th Century
4. Pedagogy and literature courses as specified in the pertinent MM (piano pedagogy) curriculum guide.
Applied Music

Private Study

712. Applied Music Instruction for Non-
majors. (2) Basic applied instruction for persons who are not active in a music degree program. May not be used to fulfill music degree requirements. Repeatable for credit. F 12 712 3 1004

731. (1). Repeatable for credit. Graduate. F 12 731 3 1004

732. (2). For majors only. Repeatable for credit. Graduate. F 12 732 3 1004

734. (4). For performance majors or students preparing for master's degree recitals only. Repeatable for credit. Graduate. F 12 734 3 1004

Applied Music Classes

717W. Violin Class for Adult Beginners. (2). Beginning violin class fundamentals of learning to play violin with emphasis on tone and intonation development; basic techniques for reading (notes and rhythm). May not be applied to music majors requirements. Repeatable for credit. F 12 717W 3 1004

717Y. Popular Vocal Styles. (2). Cappella Choir; University Singers; Concert Chorale; (C) Jazz Arts Ensembles; (F) A Cappella Choir; University Singers; Concert Chorale; (J) Piano Accompaniment; (K) Opera Theater; (L) Madrigal Singers; (P) Brass Chamber Ensemble; (S) Beginning String Ensemble and String Chamber Ensemble; (T) Jazz Arts Ensembles I & II; (V) Guitar Ensemble Repeatable for credit. F 12 717Y 3 1004

Courses for Graduate/Undergraduate Credit

580. Piano Pedagogy. (2). Primarily concerned with the art and science of teaching. Includes observations of master teachers in the University and community. F 12 580 0 1004

581. Piano Teaching Materials. (2). A survey of teaching methods and materials from beginning through early advanced levels. F 12 581 0 1004

620. String Pedagogy; Violin and Viola. (2). A study of instructional techniques for violin and viola, including the teaching of mini-lessons for instructor and class critique. Prerequisite: permission of instructor. F 12 620 0 1004

625. Voice Pedagogy. (2). Designed to acquaint the voice major with vocal techniques, concepts, and materials of private and class instruction. F 12 625 0 1004

651. Advanced Conducting and Score Reading. (3). DATON technique, score reading and musicianship. Prerequisite: Mus. Perf. 217 or 218 or equivalent. F 12 651 0 1004

680. Woodwind Pedagogy. (2). A comprehensive study of woodwind instrument techniques, concepts and materials of studio instruction for the advanced student, including the teaching of mini-lessons for instructor and class critique. Prerequisite: performance capability on a woodwind instrument or consent of instructor. F 12 680 0 1004

681. Brass Pedagogy. (2). A comprehensive study of brass instrument techniques, concepts and materials of studio instruction for the advanced student, including the teaching of mini-lessons for instructor and class critique. Prerequisite: performance capability on a brass instrument or consent of instructor. F 12 681 0 1004

682. Percussion Pedagogy. (2). A comprehensive study of percussion instrument techniques, concepts and materials of studio instruction for the advanced student, including the teaching of mini-lessons for instructor and class critique. Prerequisite: performance capability on percussion instruments or consent of instructor. F 12 682 0 1004

691. Advanced Choral Conducting. (2). A comprehensive study of conducting and choral techniques, analysis and ear training, and types of choral composition for the advanced student. Prerequisite: Mus. Perf. 217 or 218 or equivalent. F 12 691 0 1004

707. Piano Repertoire. (1). Designed to give performing and listening experience to students majoring in piano. Repeatable for credit. F 12 707 2 1004

710-712-713-714. Ensembles. (1-1-1-1). (A) Orchestra; (G) Concert Band; Marching Band; Symphony Band; Wichita Community Band; Wind Ensemble; (C) Choral Union; (D) Women's Glee Club; Men's Glee Club; (F) A Cappella Choir; University Singers; Concert Chorale; (J) Piano Accompaniment; (K) Opera Theater; (L) Madrigal Singers; Chamber Singers; (P) Brass Chamber Ensemble; (S) Beginning String Ensemble and String Chamber Ensemble; (T) Jazz Arts Ensembles I & II; (V) Guitar Ensemble Repeatable for credit. F 12 710 1 004; F 12 711 1 004; F 12 712 1 004; F 12 713 1 004; F 12 714 1 004

715Y. Voice for Music Theatre. (2). Basic repertoire and singing techniques with weekly master class devoted to music theatre techniques and concepts. Restricted to persons other than vocal majors. F 12 715Y 3 1004

750. Music Performance Workshop. (1-4). Repeatable for credit. F 12 750 0 1004

760. Group Piano Practicum. (2). Supervised group piano teaching for graduate students. Prerequisites: Mus. Perf. 580 and 581. F 12 760 2 1004

761. Studio Piano Practicum. (2). Supervised studio teaching for graduate students. Prerequisites: Mus. Perf. 580 and 581. F 12 761 2 1004

790. Special Topics in Music. (1-4). For individual or group instruction. Repeatable with departmental consent. F 12 790 2 1004

Courses for Graduate Students Only

841. Special Project in Music. (1-3). Individual supervised study or research, with emphasis upon the personal needs of the student. Repeatable for credit. Prerequisite: instructor's consent. F 12 841 4 1004

842. Special Project in Music. (1-3). Individual supervised study or research, with emphasis upon the personal needs of the student. Repeatable for credit. Prerequisite: instructor's consent. F 12 842 4 1004

843. Piano Pedagogy Seminar. (2). Variable topics, such as (1) advanced techniques in class piano or private piano (college curriculums); (2) class piano in early childhood; (3) class piano for leisure-age students; (4) class piano in public (or private) schools, extending the advanced preparation of piano pedagogy students as needed. Repeatable for credit. Prerequisite: Mus. Perf. 580. F 12 843 0 1004

552. Introduction to Graduate Study. (3). See course listing under musicology-composition department. F 12 552 0 1004

873. Graduate Recital. (2). Performance of a full recital featuring the chief performing medium. Prerequisite: consent of instructors in applied area. F 12 873 4 1004

874. Professional In-Service Presentation Project. (2). Planning, organizing and presenting a three-hour in-service presentation ("workshop") to groups of music teachers, perhaps in conjunction with an established community piano teacher's league, etc. Available as a terminal requirement alternative (in lieu of performance recital) in the Master of Music (piano pedagogy emphasis) Students approved for this terminal requirement option will also be required to perform a major piano work, prepared at acceptable recital level, during semester jury examination within the final year (two semesters) of the degree program. Requires approval of piano performance area faculty. Prerequisite: departmental consent. F 12 874 4 1004

Musicology-Composition

Graduate Faculty

Professors: William E. Mathis, Walter A. Mays, John W. Thomson
Assistant Professors: Katherine Murdock, Bertil van Boer

Master of Music

Emphasis in Music History-Literature

Completion of a Master of Music (MM) degree with emphasis in history-literature requires a demonstrated reading proficiency in one of three languages: German, French or Italian. Students may demonstrate proficiency by satisfactorily completing the Graduate School Foreign Language Test, designed by the Education Testing Service. Students may also demonstrate proficiency by completing equivalent language courses, such as French 060 or German 010, at Wichita State. A thesis is also required for the degree.

The general requirements for the MM degree are summarized at the beginning of the School of Music section of the Graduate Bulletin.

Emphasis in Music Theory-Composition

Admission to the MM program with emphasis in theory-composition requires a Bachelor of Music degree with a major in theory-composition or the demonstrated equivalent. Background deficiencies must be satisfied before students may enroll in graduate composition courses. Applicants must also submit representative compositions for examination by the composition faculty; approval for admis-
Completion of the MM degree with emphasis in theory-composition requires at least one semester of 840A-C, Seminar in the Techniques of Composition. In addition, students must complete a terminal project which must consist of one of the following: (1) a composition of major proportions, (2) a body of works in various media or (3) a written thesis in the area of music theory. Composition majors may be required by the thesis committee to have a work or works performed publicly. The composition or compositions must be submitted in a minimum of two ink copies and bound in keeping with the procedures established through the Graduate School of The Wichita State University. These ink copies represent high quality of musical manuscript and must be completed in the candidate's own hand.

The general requirements for the MM degree are summarized at the beginning of the School of Music section of the Graduate Bulletin.

Courses for Graduate/Undergraduate Credit

523. Form and Analysis. (2). Extensive analysis of the forms and formal processes of musical literature. Prerequisite: Mus.-Comp. 227. F 13 624 0 1006

531. Introduction to Electronic Music. (2). Basic techniques of electronic music. Instruction is directed toward musicians who wish to use the electronic medium in teaching, performing or communicating in any way with their constituency. F 13 531 0 1004

559-560. Applied Composition. (2-2). Individual study in advanced musical composition, with emphasis on writing for small ensembles in the smaller forms. Designed for theory-composition majors. Repeatable. Prerequisites:Mus.-Comp. 260 with consent of theory-composition area faculty and department chairperson to continue as a theory-composition major. F 13 559 3 1004; F 13 560 3 1004

561. 18th Century Counterpoint. (2). Study of the counterpointal devices of the 18th century as found in class and in music literature. Prerequisites: Mus.-Comp. 228 and 230. F 13 641 0 1004

563. Band Arranging. (2). Fundamental principles of arranging and scoring musical materials for various bands and wind ensembles. Prerequisite: Mus.-Comp. 227. F 13 643 3 1004

564. Choral Arranging. (2). Booming or women's, men's and mixed choirs. Performance and analysis of student's arrangements in class is included. Prerequisites:Mus.-Comp. 228 and 230. F 13 644 0 1004

565. String Literature and Materials. (2). A survey and analytical study of music for solo strings and chamber combinations, beginning with the early baroque period. F 13 665 0 1006

566. 16th Century Counterpoint. (2). Analysis and application of the counterpointal techniques of the 16th century. Prerequisite: Mus.-Comp. 227. F 13 671 0 1004

567. Chromatic Harmony. (2). Advanced study of chromatic-harmonic materials of all periods with special emphasis to the 18th century. Analysis and creative writing are emphasized. Prerequisite: Mus.-Comp. 227. F 13 672 0 1004


570. Musicology-Composition Workshop. (1-4). Repeatable for credit. Prerequisite: Instructor's consent. F 13 750 2 1004

572. Choral Literature. (3). A historical survey of choral literature from the Renaissance to the 20th century. F 13 752 0 1006

575. Teaching of Theory in the Community Junior College. (2). Designed to prepare the urban college theory teacher. Attention is given to contemporary trends in music theory and the application of planning courses of study, evaluation of texts, and pedagogical techniques. F 13 758 0 1004

576. Cooperative Education. (1-8). A field placement which integrates course work with a planned and supervised professional experience designed to complement and enhance the student's academic program. Individualized programs must be formulated in consultation with and approved by appropriate faculty sponsors and cooperative education coordinators. Students enrolled in Co-op 781 may follow one of two scheduling patterns: parallel, enrolling concurrently in a minimum of six hours of course work in addition to their co-op assignment; alternating, working full-time one semester in a field study and returning to full school enrollment the following semester, such students need not be concurrently enrolled in any other course. Prerequisites: successful completion of the freshman year and satisfactory academic standing prior to the first job assignment. May be repeated for credit. Offered Cr/NCr only. F 13 781 2 1006

752-753. Piano Literature. (2-2). Survey of the historical era of professional piano repertory. F 13 782 0 1006; F 13 783 0 1006

790. Special Topics in Music. (1-4). For individual or group instruction. Repeatable with departmental consent. F 13 790 2 1006

791-792. Seminar in Music History. (3-3). Areas of interest in music history are developed as time permits. No effort at a chronological survey is made. Ideas evoking the most interest and considered by the instructor to be of the greatest professional benefit are included when interest warrants. F 13 791 9 1006; F 13 792 9 1006

Courses for Graduate Students Only

830. Seminar in Music Theory. (3). An analytical study of the materials used in musical compositions from different periods, employing analytical approaches such as Schenker, Hindemith and serial techniques. The course is designed to develop analytical perception rather than compositional skill. F 13 830 0 1004

840A-C. Seminar in the Techniques of Composition. (2). The nature of compositional techniques is examined through selected works in different media: (A) large ensembles, (B) small ensembles and (C) solo literature. Prerequisites: Mus.-Comp. 871, 672 and 641, or departmental consent. F 13 840A 9 1004; F 13 840B 9 1004; F 13 840C 9 1004

841-842. Special Project in Music. (1-3, 3-3). Individually supervised study or research based on the professional needs of the student. Repeatable for credit. Prerequisite: instructor's consent. F 13 841 4 1006; F 13 842 4 1006

862. Introduction to Graduate Study. (3). Techniques of research and development of bibliography in music and music education. The course must be elected the first available semester of enrollment, F 13 852 0 1006

859-860. Advanced Composition. (2-2). Original work in the large forms and a continuation and expansion of Mus.-Comp. 569-560. Prerequisites: Mus. Comp. 569 or equivalent. F 13 859 3 1004; F 13 860 3 1004

875. Thesis Research. (2). F 13 875 4 1006

876. Thesis. (2). F 13 876 4 1006

893. Music of Antiquity Through the Renaissance. (3). F 13 893 0 1006

894. Music of the Baroque Era. (3). F 13 894 0 1006

895. Music of the 18th Century. (3). F 13 895 0 1006

896. Music of the 19th Century. (3). F 13 896 0 1006

897. Music of the 20th Century. (3). F 13 897 0 1006
School of Performing Arts

Richard C. Welsbacher, Chair

Dance

While a formal major in dance at the graduate level is not offered, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

501. Modern Dance IV. (3). Continuation of Dance 401. Advanced level. Emphasis on professional technique and performance quality. Repeatable for credit. Prerequisite: instructor's consent or by audition. F 18 501 5 1008

505. Choreography III. (3). Course focuses on the choreographic process. Students create and choreograph studies for more than one dancer utilizing elements studied in Choreography I and II and exploring different choreographic approaches. Further exploration may include environmental, chance, and collaborative choreographies and multimedia approaches. Students are encouraged to explore new approaches to accompaniment, scenic and sound arrangements, scales and color, music, unusual or innovative sources. Prerequisites: Dance 405 and concurrent enrollment in appropriate-level modern dance or ballet technique class. F 18 535 5 1008

510. Ballet IV. (3). Continuation of Dance 410. Advanced level. Emphasis on professional technique and performance quality. Repeatable for credit. Prerequisite: instructor's consent or by audition. F 18 510 5 1008

545. Methods of Teaching Dance. (3). Course in developing teaching skills for elementary schools, high schools, recreation centers, private and professional schools and universities, through lesson planning and in-class teaching practice. Prerequisite: Dance 401 or 410. F 18 545 5 1008

605. Choreography IV. (3). Further work on the choreographic process begun in Choreography III. The class produces a concert of the students' works at the end of the semester. Prerequisites: Dance 505 and concurrent enrollment in appropriate-level modern dance or ballet technique class. F 18 605 5 1008

635. Mid-America Dance Theatre. (1-6). The student company performs on campus and in the community and tours as the occasion arises. Prerequisites: members accepted by audition, which is open to community and University dancers. Concurrent enrollment in appropriate-level modern and ballet technique class is required. Mid-America Dance Theatre is repeatable for credit. F 18 635 5 1008

645. Practice in Teaching Dance. (3). Actual placement in teaching situation with responsibility of teaching ballet, modern and/or jazz in private studios, elementary, high schools, Y's or recreation centers. Prerequisite: Dance 545. F 18 645 5 1008

650. Dissertation. (3). A Master of Arts degree in communication with an emphasis in theatre is available through Wichita State. The following courses may apply for graduate credit.

Courses for Graduate/Undergraduate Credit

510. Design Project. (1). Advanced work in the problems of stage lighting, design, costume design or scenic design. With the permission and supervision of the appropriate faculty member, the student will design for specific productions for either Mainstage or Experimental Theatre. Course is repeatable for credit if taken in different design areas. Prerequisite: instructor's consent. F 18 510 2 1007

516 & 517. Playwriting I and II. (3 & 3). Cross-listed as Eng. 517 and 518. The writing of scripts for performance. Emphasis is on both verbal and visual aspects of playwriting. If possible, the scripts are performed. Prerequisite: instructor's consent. F 19 516 0 1007 & F 19 517 0 1007

542. Advanced Acting. (3). Continued development of methods established in Thea. 243Q with additional emphasis on contemporary vocal and movement techniques. Prerequisite: Thea. 243Q and sophomore standing. F 19 642 0 1007

544. Advanced Stagecraft. (3). R; L arr. Advanced construction techniques are explored for the fabrication of stage scenery and stage properties. Such operations may include welding, vacuum forming, carpentry and working with a variety of new materials. Students complete practical studio work in design for a variety of productions in dance and theatre. Prerequisite: Thea. 244. F 19 644 0 1007

546. Scene Painting. (3). Course is presented with a lecture-demonstration-studio arrangement. Various theatre painting materials and techniques will be explored enabling the student to develop some skills as a scenic artist. Prerequisite: Thea. 244. F 19 546 0 1007

559. Directing II. (3). R; L arr. Staging and rehearsal techniques with emphasis on the problems of the period and stylized play. Prerequisites: Thea. 259 or departmental consent and junior standing. F 19 559 0 1007

610. Directing the Musical. (3). An interdisciplinary course utilizing interdepartmental expertise (theatre, dance, music) to teach the student how to produce a musical. Prerequisite: instructor's consent. F 19 610 0 1007

621. Advanced Oral Interpretation. (3). Intensive study and analysis of various forms of literature, the techniques of effective oral communication and the building of the individual or group concert recital. Arranged workshops and projects. Prerequisite: Thea. 2210 and junior standing. F 19 621 0 1007

622. Academic Theatre Practicum. (2). The investigation and exploration of the theatrical act in the classroom situation within the University community. This course is designed to reinforce the researching, writing, directing and performing skills of students functioning as a company, producing and performing for various disciplines on campus. Repeatable once for credit. F 19 622 2 1007

6230. Development of the Theatre I. (3). The history of theatrical activity as a social institution and an art form, from its beginnings to the 17th century. Representative plays and the study of staging and theatrical architectural design of various periods is included. F 19 6230 0 1007

6240. Development of the Theatre II. (3). From the 17th century to the present. F 19 6240 0 1007

643. Styles in Acting. (3). Training in, and development of, the special techniques required for period or stylized plays with special emphasis on Greek, Shakespearean, Restoration and modern nonrealistic styles. Prerequisites: Thea. 243Q, 542 and junior standing. F 18 643 0 1007

647. Stage Design II. (3). A continuation of Scene Design I with more advanced work in designing settings for the stage and including studies in scenic graphic techniques and exercises in model building. The student will design settings for a production having a single set, production requiring a complex setting and a production using multiple settings. No laboratory work in theatre production is included. Prerequisites: Thea. 344 and 345. F 19 647 0 1007

649. Stage Lighting I and Theatre Sound. (3). Course continues the study and application of the theories and techniques of Stage Lighting I, emphasizing advanced concepts of design, and provides an introduction to theatre sound production. Prerequisite: Thea. 345. F 19 649 0 1007

651. Scene Study. (3). The course is designed as the synthesis of all previous acting courses. Scenes are studied in depth as preparation for performance. Course goal is to develop a broad understanding of the elements of the actor's craft learned in the prerequisite courses. Prerequisites: Thea. 643 and junior standing. F 19 651 2 1007

653. History of Costume. (3). R; L arr. Historical survey and individual research of dress from ancient Egypt to present day with emphasis on social, political, economic and religious influences. Theory and practice of adapting period styles to the stage. Prerequisite: Thea. 253 or departmental consent. F 19 653 0 1007

657. Costume Design I. (3). Course will cover the techniques of costume design for the stage. Students will be exposed to and expand their knowledge of techniques in costume design for the stage, film and television. Prerequisites: Thea. 653, Art 1215, 1220 or 124, and Art 240 or 333. F 19 657 0 1007

675. Directed Study. (2-4). Cross-listed as Sothe 75. Individual study. Repeatable for credit with departmental consent. Prerequisite: departmental consent. F 19 675 3 1599
725. Dramatic Theory. (3). Critical examination of selected aesthetic theories of the theatrical arts and the relationship of the theories to major dramatic works and theatrical periods. Prerequisite: Thea. 623Q or 624Q or departmental consent. F 19 725 0 1007

728. Playscript Analysis. (3). The course is designed to develop students' abilities to analyze playscripts from the point of view of those who face the task of staging them. The focus is on studying and testing practical methods of analysis developed by outstanding theater directors, teachers and critics. Collective analysis and individual projects are part of the course work. Prerequisite: Thea. 623Q or 624Q. F 19 728 0 1007

Courses for Graduate Students Only

820. Investigation and Conference. (2-3). Cross-listed as Spch. 820. Directed research and experimentation for graduate students in some phase of (a) public address, (b) theatre history and production, (c) radio-television or (d) the teaching of speech. Repeatable for credit up to a total of six hours. F 19 820 3 1599

823. History of Dramatic Criticism. (3). A survey and analysis of major critical theories from Aristotle to the present. F 19 823 0 1007

824. Development of Modern Theatre Styles. (3). An examination of the major movements in the modern theatre since 1870. Emphasis is on both literary and physical elements of styles. F 19 824 0 1007
College of Health Professions

Offices: 400 Ahlberg Hall
M. Diane Roberts, Dean

Departments
Clinical Sciences—James Jackson, chairperson
Dental Hygiene—Mary Martha Stevens, chairperson
Health, Administration and Gerontology—Stephen C. Gladhart, chairperson
Nursing—Elizabeth See, chairperson
Physical Therapy—Mary Jo Mays, chairperson
Physician Assistant—J. Dennis Blessing, chairperson

The College of Health Professions offers graduate programs leading to a Master of Health Science (MHS) degree with options for emphasis in administration, education or advanced clinical studies, and a Master of Nursing (MN) degree with opportunities for students to develop competency as advanced nursing practitioners who function as clinicians, administrators and educators.

Admission to either of these programs of study requires a bachelor's degree and the fulfillment of requirements listed for each program and elsewhere in the Graduate Bulletin.

Master of Health Science

Graduate Faculty
Associate Professors: Frank Chan, Jean Cumberson, Diane Humley, James Jackson (chairperson, clinical sciences department), Diane Roberts (dean, College of Health Professions)
Assistant Professors: Wilmer Beachy, J. Dennis Blessing (chairperson, physician assistant department), JoLynne Campbell, Mary Conrad, Ann Copeland, Marc Dicker, Stephen Gladhart (chairperson, health, administration and gerontology department), Linda Hogan, Caria Lee, Mary Jo Mays (chairperson, physical therapy department), Maurice Perrier, Kenneth Pitetti, Susan Shannon, Barbara Smith, Mary Martha Stevens (chairperson, dental hygiene department), Abel Whitmore, Haris Zafar

This graduate program for health professionals is organized to meet the needs of practicing health care practitioners who hold the baccalaureate degree. The programs in dental hygiene, health administration and education, medical technology, physical therapy, physician assistant and respiratory therapy participate in the MHS program through faculty and curricular involvement and many health professionals in these disciplines will find the MHS program applicable to their interests. The major roles within the health care system for which graduates will be prepared are those of educators, administrators and practitioners.

Although opportunity for full-time study is available, the program has been developed especially for the employed part-time student, and a selection of required courses is available in the evening. The program must be completed within six years.

Admission Requirements

Admission to the MHS program requires that candidates be appropriately credentialed in a health field; however, students may request admission based on the applicability of the MHS degree to their goals and objectives. Admission requests based on professional necessity and background of health experience may be made to the director of the graduate program. Certain practicum courses and the advanced clinical studies emphasis have special requirements.

1. An applicant must have a baccalaureate degree from a regionally accredited educational institution and credentials (if available) in a health area. The basis on which credit is awarded for these disciplines will find the MHS program applicable to their interests. The major roles within the health care system for which graduates will be prepared are those of educators, administrators and practitioners.

2. A student must have participated in the health field. A new baccalaureate student may enter the program, but will be declared a candidate for the degree only after completion of the equivalent of one year of full-time professional experience in the health care field. No more than nine hours of courses may be taken before acceptance as a candidate. Exceptions to this requirement must be approved by the MHS Council.

3. A personal interview is necessary with the master of health science director and a designated department coordinator, or, in the absence of an appropriate department, a designated adviser.

4. The student must complete an MHS application and statement of interest.

5. The student must have earned a minimum GPA of 3.000 in the last 60 credit hours of undergraduate course work for full standing. Probationary status will be granted according to Graduate School guidelines.

6. Students may be required to meet additional requirements established by their departments.

Degree Requirements

The award of the MHS degree requires a minimum of 34 credit hours of graduate work with a thesis. At least 22 hours must be in courses numbered 700 and above. The nonthesis option requires a minimum of 37 credit hours.

The curricula are planned with study directed toward analysis, synthesis and evaluation of the health care delivery system. Courses of study can provide comprehensive, in-depth review of the various forces acting upon the health care delivery system and the health care provider in their various roles. The director of the MHS should be contacted for detailed information on the curriculum.

A core of 12 hours is required of all students in the MHS program. The foundation courses address concerns common to all health professions and include current issues, research and quality assurance in the health professions. Students then continue in an area of emphasis to achieve a greater understanding of the issues and research problems facing the health field.

Areas of Emphasis. The MHS director must be consulted for planning sheets which list all requirements for available emphasis areas of administration, education and clinical studies. Specific courses are required within each emphasis, and electives are identified to meet the individual's specific needs and career goals. Each student is assigned an adviser designated for each area of emphasis. These advisers work with the students in developing individual plans of study and in selecting and evaluating learning in light of career interests and goals. Supportive courses are drawn from many disciplines in the University, including business, education, psychology, biology and chemistry.

Academic Standards. Students enrolled in the MHS program are expected to maintain grades of B or better in all required courses and a B average in all other coursework attempted. Students in the clinical emphasis are required to complete an acceptable thesis. The student must gain approval of the thesis proposal by the graduate adviser(s) and thesis committee and...
must pass a final oral examination covering the thesis topic. In lieu of a thesis, the student may choose the practicum/project option in the education or administration emphasis. Seminars, reports and independent study assignments may be required for completion of the practicum/project, resulting in a major written report.

Nondegree Students. Students not seeking degrees may take some graduate courses listed under the MHS program as long as all prerequisites are satisfied and the enrollment has the approval of the graduate coordinator. Refer to the Graduate School criteria for nondegree students.

Gerontology

Department of Health, Administration and Gerontology

Graduate Faculty

Professors: Lowell Holmes (anthropology), Roger Kasten (communicative disorders and sciences)

Associate Professors: William Hays (gerontology), Gregory Meissen (psychology), Ram P. Singhal (chemistry), James Snyder (psychology), James Tramill (instructional services), Samuel Yeager (public administration)

Assistant Professors: Elwin Barrett (social work), Elena Bastida (sociology), Nancy Brooks (sociology), Marc Dicker (physician assistant), Helen Halstead (nursing), Timothy Hartshorne (counseling and school psychology), Carol Singleton Henkin (health, administration and gerontology), Ellen Holmes (health, administration and gerontology), Bernice Hutcherson (social work), Carla Lee (health, administration and gerontology), Nancy Snyder (public administration)

The gerontology program offers courses of study leading to the Master of Arts (MA) degree in gerontology. Because gerontology is concerned with gaining and applying knowledge about all aspects of aging in a wide range of professional settings, it is by nature, multidisciplinary. The graduate degree program in gerontology at Wichita State draws upon the biological sciences, psychology, economics, sociology, the health professions, anthropology and political science.

Master of Arts

The gerontology program offers two options leading to the MA degree, the generalist option and the specialist option. Both options require a minimum of 30 hours for the thesis track and 36 hours for the nonthesis track. The generalist option is designed for students with little or no previous training in gerontology, among them professionals in such areas as logopedics, recreation, physical or occupational therapy, the ministry, counseling, social work, adult education and mental health, where older people make up a significant and increasing proportion of the client population and where professionals with gerontological training are presently scarce.

The specialist option is designed for students who have undergraduate course work in gerontology. Since employment in the area of aging often demands the combination of knowledge and skills found in a particular discipline such as public administration, social work or mental health, the specialist option combines graduate course work in gerontology with an emphasis (12 hours) in another department or discipline.

Admission Requirements

In addition to the Graduate School admission requirements, applicants must have a grade point average in their baccalaureate major of 3.000 (on a 4.000 scale) and must submit names of three references. Students desiring to pursue the generalist option must have an undergraduate degree in an applied or professional area or have work experience with older persons. Those who wish to pursue the specialist option must have completed course work in each of the following four areas: biology or physiology of aging; psychology of aging, economics of aging and sociology of aging. They must have maintained a 3.000 average in these courses. These students must also meet the admission requirements of the department in which the area of specialization is being taken.

Degree Requirements

Students must take certain required core courses, as well as courses in the generalist or specialist option, with a minimum total of 30 hours for the thesis and 36 hours for the nonthesis track.

Core (Required) Courses. All students enrolled in the MA program in gerontology must take the following courses:

- Geron. 800, Seminar in Gerontology I: 3 hours
- Geron. 801, Field Research in Gerontology: 3 hours
- Geron. 802, Policy Making for Gerontologists: 3 hours
- Geron. 810, Advanced Gerontology Internship: 6 hours
- Thesis (if option selected): 3 hours

Written comprehensive exams are required of all students who pursue the nonthesis program option.

Generalist Option. In addition to the core courses, students pursuing the generalist option must take the following courses:

- Geron. 731, Growth and Development IV: Adults and Aging
- Geron. 663, Economic Insecurity: 6 hours
- Two of the following three courses: 18 hours
  - Geron. 513, Sociology of Aging
  - Geron. 514, Anthropological Perspectives on Aging
  - Geron. 5180, Biology of Aging

Elective gerontology courses 3-9 hours

Specialist Option. In addition to the core courses, students pursuing the specialist option are required to take a minimum of 12 hours offered by the department in the area of specialization. These courses must meet the approval of the graduate coordinator or department chairperson in the department of specialization.

The internship and thesis, if the specialist option is selected, must be related both to gerontology and to the area of specialization. The Plan of Study required by the Graduate School must also be approved by the gerontology program and the outside department.

Gerontology Emphasis

The gerontology emphasis is a 12- to 15-hour concentrated core in gerontology taken as part of a master's degree program in another department. Students who wish to pursue the gerontology emphasis must fulfill the requirements in the degree granting department as well as the designated gerontology core.

Courses for Graduate/Undergraduate Credit

- Geron. 501. Internship in Gerontology. (3-6). To provide a specially designed field experience for students who need or desire training that will enhance their professional abilities and skills in gerontology and for whom academic credit is appropriate. As part of the internship, students collectively meet one hour a week with the field placement supervisor. Repeatable for credit to a total of six hours. Prerequisite: 12 hours of gerontology credit and instructor's consent. P 15 501 2 220


- Geron. 512. Issues in Minority Aging. (3). Cross-listed as Min. Stud. 512. Prerequisites: Min. Stud. 1000, Geron. 1010, Soc. 1110, or instructor's consent. P 15 512 0 499

514. Anthropological Perspectives in Gerontology. (3). Cross-listed as Anthro. P 15 514 0 2202

518G. Biology of Aging. (3). Cross-listed as Biol. 518G. P 15 518G 0 0410

530. Concepts of Loss. (3). Cross-listed as Nurs. 533. P 15 530 0 2201

537. The Social Consequences of Disability. (3). Cross-listed as Soc. 537. P 15 537 0 2206

550. Selected Topics in Gerontology. (1-6). Study in a specialized area of gerontology with the focus upon preprofessional programs and current issues in the field of aging. Emphasis is on knowledge and skills in applied areas of gerontology as they relate to an emerging area of research and application. Repeatable up to six hours. Prerequisite: instructor's consent. P 15 650 0 2201

590. Legal Aspects of Health Care Administration. (3). Cross-listed as HAE 590. P 15 590 0 1200

610. Aging: Personal, Social and Professional Perspectives. (3). Cross-listed as SW 610. P 15 610 0 2104

663. Economic Insecurity. (3). Cross-listed as Econ. 663. P 15 663 0 2201

700. Grant Proposal Preparation. (3). Course is concerned with the process of research and project proposal development, including response to published guidelines, project planning and proposal development and submission. Grant funding, including types of funding sources and their purposes and methods and processes of proposal evaluation are also examined. Students write and evaluate proposals. P 15 700 0 2201

720. Independent Readings in Gerontology. (1-3). Directed study in a specialized topic in gerontology. Repeatable up to six hours. Prerequisites: 12 hours of gerontology credit and departmental consent. P 15 720 3 2201

731. Growth and Development IV: Adults and Aging. (3). Cross-listed as IS 731. P 15 731 0 5822

750. Workshop in Gerontology. (1-3). A course designed to provide specialized instruction, using a variable format in a gerontologically relevant subject. Repeatable for credit. P 15 750 2 2201

781. Cooperative Education. (3-6). Same as Ger 810 but offered as part of the Cooperative Education program. See Ger. 810 for description and prerequisites. P 15 781 2 2209

Courses for Graduate Students Only

798. Multidisciplinary Perspectives on Aging. (3). Introduction to the advanced study of the process of aging from a multidisciplinary point of view. Does not count for degree in gerontology. Prerequisite: admission to graduate school. Not open to students with an undergraduate major or minor in gerontology. P 15 798 0 2201

800. Seminar in Gerontology I. (3). Advanced study of the theories of aging from a multidisciplinary perspective with emphasis upon social gerontology. Prerequisite: Ger 798 or instructor's consent. P 15 800 9 2201

801. Field Research in Gerontology. (3). An examination of the methods of participant observation and interview as approaches to understanding aging and the aged. Students gain practical experience in these methods through individual fieldwork projects. Prerequisite: Ger 798. 12 hours of gerontology credit or instructor's consent. P 15 801 0 2201

802. Policymaking for Gerontologists. (3). The making of policy by gerontologists through analysis, planning and implementation. This course assumes knowledge of aging programs. Prerequisite: Ger 798. 12 hours of gerontology credit or instructor's consent. P 15 802 0 2201

810. Advanced Gerontology Internship. (3-6). The internship is designed to integrate academic gerontology and practical experience with an emphasis upon application of research to practice. Students work under the guidance of an agency or organization engaged in planning, administering or providing direct services to older people. As part of the internship, the intern is required to submit and be examined upon a comprehensive internship paper. Prerequisites: 12 hours of gerontology credit and instructor's consent prior to registration. P 15 810 2 2201

820. Thesis. (1-3). Repeatable, but total credit hours counted toward degree shall not exceed four hours. P 15 820 4 2201

Health Care Administration

Department of Health, Administration and Gerontology

Courses for Graduate/Undergraduate Credit

503. Organization and Administration of the Health Care System. (3). Analysis of the nature of health and the input to health and health care delivery. The course discusses general systems theory and systems analysis in relation to health care. It emphasizes the interrelatedness of economic, political and social aspects of the health services system. Current research, controversial issues and considerations are considered and students are exposed to guest lecturers with professional expertise in relevant areas. Prerequisite: departmental consent. H 24 603 0 1202

504. Health Economics. (3). Cross-listed as Econ. 665. An analysis of health care systems in the United States including the demand for and supply of health care services, the quantity, quality and pricing of health services, the need for insurance; and the role of the government in the health sector. Prerequisites: HAE 503 or Econ. 202. H 24 504 0 1202

505. The Politics of Health. (3). Cross-listed as Pol. Sci. 505. Designed to show how government in the United States makes decisions in the health field, to describe the political forces shaping governmental policy in health and to consider an increased governmental role in health. Prerequisite: HAE 503, Pol. Sci. 121 or departmental consent. H 24 505 0 1202

507. Health Planning. (3). Designed to discuss strategic business planning in health services management, including project planning and proposal development and the settlement of claims (insurance): doctor-patient-nursing home relationship and legal concepts, and other topics are considered. Prerequisite: junior standing or departmental consent. H 24 590 0 1202

605. Health Services Research. (3). Deals with intermediate statistical procedures and research designs that health professionals must understand in order to intelligently analyze research in the health field and to conduct research themselves. This course covers the designs of experimental, survey and ex post facto research plus statistical techniques, including analysis of variance, the t test, chi square and two-way analysis of variance. Prerequisite: departmental consent. H 24 605 0 1202

684. Health Administration Policy. (3). Cross-listed as Mgmt. 684. Course designed to give graduating seniors an understanding of the structure of health care organizations, including the various roles and responsibilities managers have within these organizations. Exposure to management, policy making and strategic planning processes is vital if students are to function in administrative positions in health care administration. Prerequisite: HAE 503 and at least one other HAE course or departmental consent. H 24 684 0 1202

685. Computer Applications in Health. (3). Data reduction, summarization, editing and analysis using technical assistance of micro and mainframe computer for operational research and administrative purposes. Health data bases from hospitals or other agencies such as state health department, PRA agency, HSA are investigated. More emphasis is placed on microcomputers than in a computer course with more statistical and graphical capacity. Prerequisite: HAE 605 or instructor's consent. H 24 685 0 1201

686. Seminar in Health Care Administration. (3). In-depth discussion and analysis of selected topics in health care administration. Topics vary from semester to semester and include examination of specific financial, managerial and operational problems and
720. Community Health Organization and Administration. (3). Introduction to the organization and activities of health systems relative to roles and problems. Introduction to administrative problem-solving as a structured process. Prerequisite: instructor's consent. H 24 720 0 1202

725. Health Care Marketing. (3). This course in marketing management for health services examines the problem of organizational response to consumer desires and needs. Consumer behavior and development of marketing mix, product policy and market strategy appropriate to the specific situations of individual health care institutions are covered. Prerequisite: MKI 600 or equivalent or departmental consent. H 24 725 0 1202

808. Epidemiology of Chronic Disease. (3). The study of the distribution and determinants of chronic diseases and injuries in human populations. The frequencies and types of illnesses and injuries in groups of people and the factors that influence their distribution. Prerequisites: graduate school enrollment. HAE 605 or instructor's consent. H 24 808 0 1201

810. Health Care Financial Management. (3). Designed to give state-of-the-art techniques in health care accounting and to provide a comprehensive coverage of financial theory and applications in health care. Prerequisite: instructor's consent. H 21 810 0 1202

Health Science

Department of Health, Administration, and Gerontology

Courses for Graduate/Undergraduate Credit

501. Health Education Instructional Design. (3). A course designed to assist health professionals in constructing health science curricula. Emphasis is given to the study of various curriculum models and applying educational principles, writing behavioral objectives and the acquisition of supplementary skills. Special emphasis is given to program development of community and patient education settings. Prerequisite: junior, senior or graduate standing in one of the professional programs or instructor's consent. H 18 501 0 1201

510. Clinical Departmental Management. (3). Concepts and methods of clinical department management are presented through lectures, discussion, group interaction and individual problem solving and situational analysis. Course provides information pertinent to management majors, department directors, shift supervisors and staff personnel who need an understanding of departmental management of clinical revenue generating departments. Prerequisites: senior standing or greater in health professions and Mgmt 350 or instructor's consent. H 13 510 0 1203

511. Neuroanatomy and Neurophysiology. (3). Study of the structure, physiology, and function of the central and peripheral nervous systems. Prerequisite: HSC 310 or CDS 214. H 18 511 0 0425

521. Independent Study. (1-6). Offers reading and conference experience to complete a course requirement or provide enrichment in a specific area. Prerequisite: upper division or graduate standing, or department chairperson's consent. H 18 521 3 1201

531. Applied Principles of Nutritional Support and Therapy. (3). A study of the principles of nutrition, nutrition support and therapy. The dietary concerns of a variety of clinical disorders will be investigated. These include: gastrointestinal disorders, diabetes mellitus, cancer, burns, obesity and overfeeding, kidney and cardiovascular disease, parental and enteral nutrition, and surgical conditions. Nutritional assessment, data interpretation, use of parenteral and enteral nutrition, records, and client communications will be discussed. Prerequisites: HSC 331Q or instructor consent. H 18 531 0 0424

550. Advanced Perinatal Cardiorespiratory Care. (3). Cross-listed as RT 550. Focuses on diagnostic and therapeutic modalities used in the care of high risk mothers and infants. Topics include equipment and techniques used in tertiary care perinatal centers: high frequency ventilation, ECMO, air transport, and so on. Emphasis on the responsibilities of care and medical management of critically ill and difficult-to-treat patient. Prerequisites: RT 450 or 203 or instructor's consent. H 13 550 0 1209

570. Interpretations of Sexuality for Health Professions. (3). Cross-listed as Nurs 570. Elective: Strategies to assist clients and families to cope with sexual problems and disorders. Emphasis on relating varying interpretations of the biological, psychological and cultural aspects of sexuality to the health professions. Open to nonmajors. Repeatable up to six credit hours with departmental consent. H 18 570 0 1203

575. Special Topics or Selected Topics. (1-4). A lecture/discussion course focused on a discrete area content relevant to the health disciplines. Course organized as in-depth study of a particular topic, including didactic and current research findings and technological advances relevant to the topic. Open to nonmajors. Repeatable up to six credit hours with departmental consent. H 18 575 0 1201

701. Issues in Health Care. (3). An in-depth look at current issues facing health professionals. Topics may be presented in lecture, small groups, simulation and with guest speakers. Topics include health care delivery, consumerism and current research findings will be presented and will include disease prevention and health promotion, ethics, consumerism and current research findings as they relate to current trends in the health professions. Prerequisite: graduate standing. H 18 701 0 1201

703. Evaluation in the Health Professions. (3). This course presents the background and methods for evaluating the performance of health professions. The planning, development, and use of evaluation tools in the clinical setting are emphasized as well as the planning and use of evaluation tools in educational and professional settings. H 18 703 0 1201

704. Continuing Education in the Health Professions. (3). Planning, implementation, and evaluation of continuing education programs for the health professions. Review of existing continuing education models and considerations of alternative systems. H 18 704 0 1201

705. Health Services Research. (3). An examination of statistical research methods used by health care professionals and organizations. Topics include presentation of information, measures of location and variation, probability, expectation, sampling distributions, hypothesis testing, analysis of variance and simple research designs. Prerequisite: upper division statistics course or consent of MS-Health graduate coordinator. H 18 705 0 1201

706. Characteristics of the Adult in Professional Education (3). This course is designed to help students understand the process of accomplishing professional development as an individual. Students will explore the concept of "professionalization" and will study the processes of health education, the demands of practitioners and the learning situations which will be opportunities to apply knowledge, skills and abilities to real life situations through discussion, readings and reports in class. Prerequisites: HS 501 and 708. H 18 706 0 1201

708. Teaching and Learning Strategies in Health Science. (3). A course examining the various ways of presenting health knowledge and coupling these teaching strategies with the audiences and types of student bodies that will receive this knowledge. The nature of health care curriculum is examined in depth, as are procedures for developing and improving them. Health education curricula are explored. Prerequisites: H 18 708 0 1202

710. Research Methods in Health Professions. (3). Examination of research methodology as related to the health professions. Included in the course will be identification of significant health care research problems, development of research questions, research design, data collection and critical evaluation of literature, and identification of methodology pertinent to the hypotheses developed. This methodology will address the selection of sample, research instrument and research design. H 18 710 0 1201

712. Administration of Hospital-Based Education. (3). Historical perspective of hospital health education, resources and requirements for providing institution-wide educational services. Identification and analysis of educational needs, hospital's role in community health program and planning evaluation. H 18 712 1 1203

714. Quality Assurance and Accreditation for Health Care Institutions. (3). Introduction to the concepts of quality assurance and accreditation for health care institutions. Prerequisite: instructor's consent. H 18 714 0 1201

766. Research in Health Related Professions. (1-4). An examination of relevant topics directly and/or indirectly related to the delivery of health care service. H 18 766 2 1201

800A. Seminar in Health Science. (1). Recent developments and issues affecting the financing, organization and management of health services, the development and application of alternative health services, identification and analysis of educational needs, hospital's role in the overall health care system. Prerequisite: HS 701 or departmental consent. H 21 800A 9 1201

800B. Seminar in Health Education. (1). Current trends and directions in allied health education in both patient care and administrative settings. Prerequisites: instructor's consent. H 21 800B 9 1201

810. Practicum/Project. (3). The course is designed to enhance and complement the academic experience of students pursuing the Master of Health Science degree. This
learning experience provides an opportunity to link the student's academic studies with actual practice in direct observation and supervised participation of the administrative/educational process in a selected health care organization. Students participating in this experience will carry out their assigned tasks under the guidance and direction of a field instructor/mentor from the host agency. H 18 810 2 1201

885. Thesis. (1-3). Repeatable to a maximum of six hours. Prerequisite: consent of thesis advisor. H 18 885 4 1201

**Medical Technology**

**Department of Clinical Sciences**

**Courses for Graduate/Undergraduate Credit**

550. Clinical Endocrinology. (3). This course will describe the endocrine hormone functions and the practical application of modern clinical laboratory methods for the diagnosis of functional hormonal disorders. Open only to persons majoring in medical technology. Prerequisites: Biol. 296 or equivalent and Chem. 103Q or 111Q or equivalent or instructor's consent. An understanding of biochemistry is recommended. H 14 550 0 1223

752. Method Evaluation and Selection. (3). This course will present an objective, practical approach to the evaluation of laboratory methodologies. This approach incorporates the use of statistical analysis, evaluation of technology and clinical application. Prerequisites: MMT 490, MMT 491, MMT 492, or equivalent, HS 705, or instructor's consent. H 14 752 0 1223

760. Hematologic Neoplasms. (3). This course deals with the etiology, pathophysiology and morphology of hematologic neoplasms and the health care practitioners' interactions with persons of those disorders. H 14 760 0 1223

765. Advanced Clinical Hemostasis. (3). Advanced studies in the mechanisms of hemostasis, pathological changes that can occur in the hemostatic mechanism, and the laboratory evaluation of these changes. Prerequisites: MMT 462 or instructor's consent. H 14 765 0 1223

770. Therapeutic Dimensions of Clinical Laboratory Science. (3). A study of the expanding role of the clinical laboratory in the monitoring of therapy and the patients' response to therapy. Areas to be addressed include hemoengineering and hemotherapy, imagery, resection phenomena and chemotherapy including therapeutic drugs, electrolytes, vitamins, trace minerals and antimicrobials. H 14 770 0 1223

775. Advanced Clinical Pathophysiology. (3). Advanced studies in the mechanisms of the disease process and pathological changes that can occur in various pathophysiological states: H 14 775 0 1223

780. Issues in Immunohematology. (3). An in-depth analysis of current issues in a modern transfusion service with emphasis on responding to changes in patient care through application in technology, research and supervision. Prerequisites: MMT 479 and HS 701 or instructor's consent. H 14 780 0 1223

790. Epidemiology and Infection Control. (3). A study of the expanding role of hospital personnel in the performance of hospital epidemiology and infection control. Areas to be addressed include basic epidemiological principles, functions of the infection control nurse, hospital infections including investigations and surveillance, potential problem areas within the hospital environment, the role of the nursing service and possible communicable and non-communicable infections. Prerequisite: course in medical microbiology or instructor's consent. Taught in the fall semester. H 14 790 0 1223

800. Seminar in Laboratory Sciences. (1). Recent issues and advances in the field of clinical laboratory science including the areas of microbiology, chemistry, hematology, immunology and immunohematology will be discussed. The students will be responsible for assigned topics; using current journal articles as resource material. Prerequisite: departmental consent. H 14 800 0 1223

890. Thesis. (1-3). Repeatable to a maximum of 6 hours. Prerequisite: consent of thesis advisor. H 14 890 2 1223

**Physical Therapy**

**Department of Physical Therapy**

**Courses for Graduate/Undergraduate Credit**

505. Pathophysiology I. (4). The body's defenses and responses to disease, illness and injury will be studied. The common disorders, disease and injuries to the body systems will be analyzed as to cause, effect and treatment. Prerequisite: departmental consent. H 17 505 0 1201

605. Pathophysiology II. (4). The in-depth analysis of diseases, disorders and injuries to the musculoskeletal system and to the nervous system will be presented. Pathology, assessment and treatment will be discussed. Prerequisite: departmental consent. H 17 605 0 1201

890. Thesis. (1-4). Repeatable to a maximum of six hours. Prerequisites: enrollment in graduate studies and consent of thesis advisor. H 17 890 4 1212

**Master of Nursing**

**Department of Nursing**

**Graduate Faculty**

Professor: Elizabeth See (chairperson)
Associate Professors: Donna D. Hawley (director of graduate program), Alicia Huckstadt, Francine Nichols
Assistant Professors: Helen Haistead, Jeannette Jeffers, Susan Kruger, Martha Shawver, Betty Sullivan

The graduate program in nursing leads to the Master of Nursing (MN) degree. This program is individualized to meet the needs and professional goals of each student. The curriculum has been developed especially for part-time (six credit hours) study, although opportunity for full-time (9-12 credit hours) is available. The purpose of the graduate program in nursing is to prepare advanced nursing practitioners who function as clinicians, administrators and educators.

**Admission Requirements**

In addition to the general University requirements for admission to graduate studies, the Department of Nursing requires:

1. A baccalaureate degree with a major in nursing from an NLN-accredited school. Applicants with degrees in other disciplines will be considered and counseled on an individual basis.
2. Admission to the Graduate School at The Wichita State University
3. Department of Nursing approval
4. Evidence of Registered Nurse licensure
5. Coverage by professional liability insurance, to be renewed annually
6. One year of nursing practice following professional licensure is recommended.

Students will be admitted conditionally until all requirements for admission are completed. Items 4 and 5 must be completed before a student begins any clinical course and prior to filing the plan of study. Approval of the plan of study will clear the admission status from conditional to full standing.

Prerequisites. A course in statistics accepted by the Department of Nursing and an undergraduate research course are required. Prerequisite courses are not credited to the degree.

**Degree Requirements**

Satisfactory completion of the following courses is the minimum requirement for the MN degree:

**A. Phase I (Core)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 703, Foundations of Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 706, Nursing Research</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 711, Issues in Nursing</td>
<td>3</td>
</tr>
</tbody>
</table>

**B. Phase II**

1. **Clinical Concentrations:** Student selects one (12 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurs. 833, Adult Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 834, Adult Nursing Practicum</td>
<td>(may be divided into two 3-hour courses)</td>
</tr>
<tr>
<td>Nurs. 839, Adult Nursing II</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 839, Adult Nursing II</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 839, Adult Nursing III</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 839, Adult Nursing Practicum</td>
<td>(may be divided into two 3-hour courses)</td>
</tr>
<tr>
<td>Nurs. 841, Community Health Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 843, Adult Nursing</td>
<td>(may be divided into two 3-hour courses)</td>
</tr>
<tr>
<td>Nurs. 837, Perspectives in Geronotological Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 829, Foundations of Maternal-Child Nursing</td>
<td>3</td>
</tr>
<tr>
<td>Nurs. 832, Maternal-Child Nursing Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>
Nurs. 835, Perspectives in Maternal-Child Nursing 3
Nurs. 836, Maternal-Child Nursing: Practicum II 3
or
Nurs. 819, Foundations of Psychiatric/Mental Health Nursing 3
Nurs. 822, Psychiatric/Mental Health Nursing: Practicum I 3
Nurs. 843, Perspectives in Psychiatric/Mental Health Nursing 3
Nurs. 844, Psychiatric/Mental Health Nursing: Practicum II 3
Nurs. 811, Foundations of Administration 3
Nurs. 827, Resource Management in Nursing 3
Nurs. 812, Nursing Administration: Practicum 3
or
Nurs. 813, Foundations of Nursing Education 3
Nurs. 814, Nursing Education: Practicum 3-6
or
Nurs. 745K, Problems in Education 1
Nurs. 750A, Alternative Strategies for Clinical Educator 2
Nurs. 813, Foundations of Nursing Education 3
or
Nurs. 807, Clinical Nurse Specialist: Role 3
Nurs. 808, Clinical Nurse Specialist: Practicum 3

2. Functional Role: Student selects one
Nurs. 845, Seminar in Nursing Administration 3
Nurs. 812, Nursing Administration: Practicum 3
or
Nurs. 813, Foundations of Nursing Education 3
Nurs. 814, Nursing Education: Practicum 3-6

3. Electives or selected courses

4. Options
Nurs. 821, Thesis 6
or
Nurs. 823, Project 3

Supporting hours option: These hours must support the student's clinical concentration or functional role. Students electing not to do a thesis or project complete 42 hours rather than 36 hours.

Courses for Graduate/Undergraduate Credit

505. Directed Study in Nursing (1-4). Elective. Individual study of the various aspects and problems of professional nursing. Repeatable. Prerequisite: departmental consent. H 11 505 3 1203

530. Concepts of Loss (3). Cross-listed as Gerion. 530. Elective. Strategies for helping clients and families cope with broad aspects of loss, from temporary transient illness to death. Includes human response, through the life span, to changed body image, disability and disfigurement, chronic illness, dying and death. Includes grief and mourning. Open to non-nursing majors. H 11 530 0 1203

543. Women and Health Care (3). This course examines the historical development of the women's health movement, focuses on current issues relevant to women and health care and explores the roles of women in the health care system and as consumers of health care. Self-care practices of women are examined and ways to promote positive health practices are developed. Open to non-nursing majors. H 11 543 0 1203

570. Interpretations of Sexuality for Health Professions (3). Cross-listed as HS 570. Elective. Strategies to assist clients and families to cope with sexual problems and disorders. Emphasis on relating varying interpretations of biological, psychological and cultural aspects of sexuality to the helping professions. Open to non-nursing majors. H 11 570 0 1203

704. Health Maintenance of the School-Age Child (3). 2R; 3L. An intensive clinical experience in which the student works with an assigned clinical specialist in a selected clinical setting. Emphasis is on assisting the student in understanding the psychological and social factors which influence the school-health delivery system. Open to RN and graduate students. H 11 704 1 1203

706. Organization and Management of the School-Health Program (3). 2R; 3L. This course examines and applies major theories, concepts and research and studies related to school-health nursing. Open to RN and graduate students. H 11 706 1 1203

707. Nursing Research (3). Building on an initial research experience, this course is designed to assist the student in understanding premises which govern research design, implementation and evaluation. Consideration is given to current issues in nursing research and their impact on the investigation of nursing problems, the researcher, the problems studied and the consumer of research. Prerequisites: statistics course accepted by the Department of Nursing, undergraduate research course and admission to the Graduate School. H 11 707 0 1203

708. School Nurse Practicum (2). 6L. An intensive clinical experience in which student nurses analyze, design, implement and evaluate nursing systems to promote the health of individuals in the school-health delivery system and the broader community system. Open to RN and graduate students. H 11 708 2 1203

711. Issues in Nursing (2). Various issues in professional nursing are analyzed. Course focuses on issues ranging from concerns within the local practice setting to national policy issues. Theories uniquely suited to policy formation in health care systems are examined. Prerequisite: admission to Graduate School. H 11 711 0 1203

734. Diabetes Mellitus Nursing Practicum (3). An intensive, comprehensive clinical experience in which the student is expected to study, design and implement nursing systems for individuals or groups in the area of diabetes mellitus. Open to RN and graduate students. H 11 734 2 1203

779. Directed Readings in Nursing (1-2). An opportunity for the student to engage in critical study of the literature in areas related to the profession and practice of nursing. Prerequisites: admission to Graduate School and departmental consent. H 11 779 0 1203

Courses for Graduate Students Only

807. Clinical Nurse Specialist: Role (3). The first of a two-course series designed for the student preparing for the clinical specialist role. Discussed will be the historical development of the clinical nurse specialist role; the ethical, legal, political and economic issues affecting such a role; and the current trends and future directions for the role. Components of the clinical nurse specialist role will be identified and approaches for implementation will be examined. Prerequisite: completion of at least 6 hours of a clinical concentration. H 11 807 0 1203

808. Clinical Nurse Specialist: Practicum (3). The second of a two-course series designed for the student preparing for the clinical specialist role. It is an intensive, comprehensive clinical experience in which the student works with a clinical nurse specialist in a selected clinical setting. Emphasis is on role development and analysis of strategies to improve nursing practice. Prerequisites: completion of at least 6 hours of a clinical concentration and Nurs. 807 (or concurrent enrollment). H 11 808 2 1203

811. Foundations of Nursing Administration (3). This course is designed to assist the student in acquiring theoretical knowl-
edge of organizations. Consideration is given to current issues and research in nursing administration and impact on nursing practice. Prerequisites or corequisites: NURS 703, 705 and 711. H 11 811 0 1203

812. Nursing Administration Practicum. (3 or 6). A practicum in a nursing administration setting in which the student, under professional guidance, can become directly involved. A seminar accompanies the field experience. Types of experience may include roles in nursing education or service, midlevel nursing administration, staff development or community health. Prerequisite or corequisite: NURS 811 or 827. H 11 812 2 1203

813. Foundations of Nursing Education. (3). Designed to assist the student to explore theoretical and practical aspects to curricular development and teaching of nursing in higher education and continuing education. Prerequisites: departmental consent. Prerequisite or corequisite: NURS 703, 705 and 711. H 11 813 0 1203

814. Nursing Education Practicum. (3 or 6). An experience of nursing education in which the student, under professional guidance, becomes directly involved in clinical and classroom teaching, curriculum development and participation in other faculty functions in higher education and continuing education. A seminar accompanies the field experience. Prerequisites: department consent and NURS 813. H 11 814 2 1203

819. Foundations of Psychiatric Mental Health Nursing. (3). Major theories, clinical concepts and current research in psychiatric/mental health are evaluated in relation to formulating a conceptual model for nursing practice. Prerequisites: NURS 703, 705, 711. H 11 819 0 1203

821. Thesis. (1-6). Graded S/U only. An opportunity for the student, in conjunction with the academic advisor and a three-member thesis committee, to design and conduct a formal study in nursing science. Prerequisite: Admission to Graduate School and departmental consent prior to registration. H 11 821 4 1201

822. Psychiatric/Mental Health Nursing: Practicum I. (3). An intensive clinical experience in which the student plans, implements and evaluates nurse-therapist strategies with individual clients/patients. A seminar accompanies the practicum. Prerequisite or corequisite: NURS 819. H 11 822 2 1203

823. Graduate Project: Alternative to Thesis. (1-3). Graded S/U only. An opportunity to develop and pursue a scholarly project other than a thesis. This may take the form of a position paper, historical study, philosophical paper or other type project developed in conjunction with the student's faculty adviser. Prerequisites: admission to Graduate School and departmental consent. H 11 823 3 1201

825. Independent Study. (1-6). Independent study provides opportunity for the student to develop, in collaboration with a departmental faculty member, objectives and protocol for independent work related to the practice of nursing. Prerequisites: admission to Graduate School and departmental consent. H 11 825 3 1201

827. Resource Management in Nursing. (3). Course focuses on the assessment of human and material resources and informational systems connected to clinical care delivery. Nursing Personnel Management, patient classification systems, costing out of nursing services, strategic planning and marketing are emphasized. Prerequisites: NURS 703, 705 and 711. H 11 827 0 1203

829. Foundations of Maternal-Child Nursing. (3). This course provides the foundation for all courses in the maternal-child clinical concentration. Seminars enable students to investigate major theories, clinical concepts and research studies related to maternal-child nursing. Prerequisites: NURS 703, 705 and 711. H 11 829 0 1203

832. Maternal-Child Nursing: Practicum I. (3). An intensive clinical experience in which the student focuses on the process of systematic assessment of individuals and groups within a family system. A seminar accompanies the practicum. Prerequisite or corequisite: NURS 820. H 11 832 2 1203

833. Adult Nursing I. (3). The course will examine clinical concepts and issues related to the maintenance of optimal health status of adults. Emphasis is placed on assessment, measurement and interventions related to these concepts. Prerequisites: NURS 703, 705 and 711. H 11 833 0 1203

834. Adult Nursing Practicum. (3 or 6). An intensive clinical experience in which the student is expected to design, implement and evaluate nursing care for adults. Specialized areas of study are selected and may include health maintenance or illness care of acutely or chronically ill adults. Practicum sites may include hospitals, extended care facilities, rehabilitation centers, community health agencies. A seminar is included as part of the practicum. Prerequisites: NURS 703, 705, 711 or instructor's consent. NURS 833 or 839 may be concurrent. H 11 834 2 1203

835. Perspectives in Maternal-Child Nursing. (3). This course critically examines health care delivery systems for maternal and child health. The effects of political, economic and social factors on maternal and child health are analyzed. Nursing roles in the delivery of maternal and child health care are examined. Prerequisites: NURS 820. H 11 835 0 1203

836. Maternal-Child Nursing: Practicum II. (3). An intensive clinical experience in which the student analyzes designs, implements and evaluates nursing systems for individuals and groups within a family system. Prerequisites: NURS 829 and 832. NURS 836 may be concurrent. H 11 836 2 1203

837. Perspectives in Gerontological Nursing. (3). Emphasis is on the synthesis of concepts and theories into a functional theoretical framework of gerontological nursing. This basis is utilized to identify health problems of older adults and to plan appropriate preventive, rehabilitative or restorative approaches to those problems. Attention upon social, economic, political, ethical and legal aspects as they impinge upon the well-being of older adults. Prerequisites: NURS 833 and 834 or instructor's consent. H 11 837 0 1203

841. Foundation of Community Health Nursing. (3). As the health care system broadens its base to community settings, an appraisal of historical development, trends and issues related to community health nursing will be investigated. Conceptual models and theories are analyzed as related to nursing practice and research in the community. Prerequisite: instructor's consent. H 11 841 0 1203

843. Perspectives in Psychiatric/Mental Health Nursing. (3). A critical examination of the delivery of mental health nursing. Emphasis is given to practitioner roles and therapeutic nursing modalities. The effect of historical, social, political, economic and ethical issues is analyzed. Prerequisite: NURS 819. H 11 843 0 1203


845. Seminar in Nursing Administration. (3). An in-depth study and analysis of the roles of nurse managers in various health care settings. Special problems, current topics and issues in nursing administration will be discussed. Prerequisites: NURS 811 or 827 and at least 3 hours of NURS 812. H 11 845 9 1203
Fairmount College of Liberal Arts and Sciences

N. Armstrong, graduate coordinator

Administration of Justice

Graduate Faculty

Associate Professor: Ronald G. Isacovets
Assistant Professors: Fred W. Benson, Donald L. Blazicek (chairperson), Stephen E. Doeren, Wayne Dunning, James A. Fagin, Galan M. Janeksela (graduate coordinator)

Master of Administration of Justice

The Master of Administration of Justice (MAJ) degree requires a minimum of 36 semester hours with specializations offered in (1) criminalistics investigation and forensic science, (2) criminal justice administration, (3) corrections, (4) criminal justice education, (5) environmental protection and (6) investigative reporting/journalism.

Admission Requirements

It is recommended that applications for admission be filed with the dean of the Graduate School by March 1 for consideration for admission in the fall semester. Evaluation for admission is based upon the applicant's undergraduate record, and nature of academic background. A minimum of 15 hours of work in administration of justice or approved equivalent is required (otherwise, deficiency requirements will be assessed). Limitations on the number of students admitted to the MAJ degree program each academic year may be established because of constraints imposed by the department's graduate teaching/advising capacity.

Degree Requirements

The MAJ degree requires a minimum of 36 hours, including 21 hours taken in courses numbered 800 or above. All students are required to take AJ 800, 801, 811 and 812 and to complete a thesis, practicum or internship requirement or a 36-hour course work option and a comprehensive exam. At their option, students specializing in criminalistics investigation may substitute an 800-level research methods course in chemistry, biological sciences, geology, physics or engineering for AJ 811, providing they have the approval of the administration of justice department's Graduate Faculty Committee.

Six established areas of specialization are contained in the MAJ program. The six specialized areas and courses needed to meet requirements in each are summarized below.

1. Criminalistics investigation and forensic science
   Required—AJ 804, 805, 821, 823
   Electives—8 to 12 additional hours in appropriate graduate-level course work from chemistry, biological sciences, geology, geography, physics and/or engineering, as determined by the department's Graduate Faculty Committee

2. Criminal justice administration
   Required—AJ 806, 822, 832 and three hours from AJ 633 or 639, unless taken at the undergraduate level, in which case an 800-level administration of justice elective may be taken
   Electives—9 to 12 hours of electives in administration of justice or allied fields (with the approval of the department's Graduate Faculty Committee), with six hours at the 800 level and three hours from AJ 802, 803, 814, 823 or 824

3. Corrections services
   Required—AJ 802, 803, 833 and three hours from AJ 653, 656 or 660, unless taken at the undergraduate level, in which case an administration of justice 800-level elective may be taken
   Electives—9 to 12 hours of electives in administration of justice or allied fields (with the approval of the department's Graduate Faculty Committee), with six hours at the 800 level and three hours from AJ 806, 814, 822, 824 or 832

4. Education
   Required—AJ 814, 824 and nine hours of graduate-level course work in the College of Education, as approved by the department's Graduate Faculty Committee
   Electives—6 to 9 hours of administration of justice graduate-level course work, with three hours from AJ 802, 803, 806, 822, 832 or 833

5. Environmental protection
   Required—AJ 805, 827 and two courses from AJ 804, 805, 821, 822 or 832
   Electives—12 hours at the graduate level in biological sciences, chemistry or geology, with the approval of the department's Graduate Faculty Committee

6. Investigative reporting/journalism
   Required—AJ 804, 805 and Journ. 502, 560, 720
   Electives—six hours of graduate-level course work in the Department of Journalism selected from Journ. 510, 570, 645 or 690.
A flexible program can also be outlined for students seeking the MAJ degree who do not want to specialize in any of the established areas of concentration if qualified academically. Such a program must include the department core, AJ 800, 801, 811, 812 and additional course work in substantive areas of administration of justice approved by the department's Graduate Faculty Committee.

Examinations

The department offers two tracks for completing the MAJ degree. Thesis, practicum or internship candidates are required to defend orally both their prospectus and their final project. Students electing the 36-hour straight course work track are required to pass a written comprehensive examination.

Facilities

Students in the Wichita State MAJ degree program have access to excellent computer and research facilities, as well as a criminalistics laboratory. Students may also use local, state and federal criminal justice facilities, including state and federal penitentiaries for field research or internships.

The Milton Helpern International Center for the Forensic Sciences serves as a vital resource of the Department of Administration of Justice and as an important depository of information relating to major forensic cases in the United States and abroad. The center provides an important resource for forensic scientists and law enforcement agencies working to solve major criminal cases. In addition, it serves the need of students majoring in the department.

Located in the Liberal Arts and Sciences Building, the center contains extensive library material, tapes and other documents pertaining to major forensic cases.

Courses for Graduate/Undergraduate Credit

501. Agency Administration II. (3). An intensive examination of a variety of emerging administrative and management innovative concepts. The processes related to the determination and implementation of management philosophy for the administration of justice agency and its individual practitioners are explored. Prerequisite: AJ 201 or departmental consent.

510. Computers in Administration of Justice. (3). A survey of computer use and potential in police, courts and correctional agencies. The ethical and legal problems confronting society and agencies of the justice system occasioned by the use of computers as information-gathering and storage instruments are examined, as well as the advantages of using computers in basic and applied research in the administration of justice.

512. Research Methods. (3). An introduction to statistical methods, including experimental design, the analysis of data and procedures. A study is made of the general methodology of research as it pertains to the administration of justice. A 29 512 0 2105

520. Criminal Evidence. (3). Concepts of criminal evidence rules as they pertain to kinds and degrees of evidence—probative and prejudicial. Emphasis is placed on the rules of evidence that govern the administration of justice. A 29 520 0 2105

521. Law and the Administration of Justice Processes. (3). Examination of recent judicial interpretations affecting legal process, rules of evidence, substantive law and administrative law. An in-depth study of statutory provisions is made with emphasis on the conflict of laws and legal trends affecting administration of justice personnel. A 29 521 0 2105

526. Public and Community Relations. (3). Analysis of techniques utilized by administration of justice agencies and community relations programs that are designed to optimize the agency's communication capability. Special emphasis is placed on the unique characteristics of both public and community relations. A 29 633 0 2105

530. Techniques of Agency Staff Supervision. (3). Analysis of personnel supervision, training and evaluation techniques utilized by administration of justice agencies with emphasis on techniques that optimize the supervision of junior personnel. Prerequisite: AJ 201 or departmental consent.

533. Juvenile Justice. (3). An analysis of definitions of juvenile justice, the content of juvenile law and Supreme Court decisions affecting juvenile justice, as well as specific select problems in the administration of juvenile justice. A 29 533 0 2105


570. Security Staff Supervision. (3). Examination of administrative, technical and human resources of personnel in governmental and private agencies. Emphasis is placed on the development of community-based crime prevention programs. Prerequisite: AJ 370 or departmental consent.

572. Security Technology. (3). Physical security hazards, threats, sabotage, theft and pilferage problems as they affect the governmental and private agencies, as well as potential invasion of privacy by security officers. Emphasis is placed on the development of community-based crime prevention programs. Prerequisite: AJ 201 or departmental consent.

600. Forensic Anthropology. (3). Cross-listed as Anthro 600. This course encompasses the area of criminal investigation involving biological and medical sciences: biology, chemistry, physics, dentistry and medical psychology. Emphasis is placed on the development of community-based crime prevention programs. Prerequisite: instructor's consent.


610Q. The Victim and the Administration of Justice. (3). An analysis of the impact of victimization on the administration of justice. Emphasis is placed on the development of community-based crime prevention programs. Prerequisite: instructor's consent.

633. Planning in the Administration of Justice. (3). Analysis of planning techniques related to the administration of justice agencies, public and community relations programs, including governmental and nongovernmental and private agencies. Special emphasis is placed on the development of community-based crime prevention programs. Emphasis is placed on the development of community-based crime prevention programs. Prerequisite: AJ 201 or departmental consent.

636. Public and Community Relations. (3). Analysis of techniques utilized by administration of justice agencies and community relations programs that are designed to optimize the agency's communication capability. Special emphasis is placed on the unique characteristics of both public and community relations. A 29 633 0 2105

639. Techniques of Agency Staff Supervision. (3). Analysis of personnel supervision, training and evaluation techniques utilized by administration of justice agencies with emphasis on techniques that optimize the supervision of junior personnel. Prerequisite: AJ 201 or departmental consent.

641. Forensic Psychiatry. (3). Analysis of the role of psychiatry in the administration of juvenile justice. Emphasis is placed on the development of community-based crime prevention programs. A 29 641 0 2105

643. Forensic Science. (3). Analysis of the medical role of prevention, detection and treatment as related to the administration of justice. Emphasis is placed on the development of community-based crime prevention programs. Emphasis is placed on the development of community-based crime prevention programs. Special emphasis is placed on the development of community-based crime prevention programs. Prerequisite: AJ 201 or departmental consent.

645. Seminar on Investigation. (3). An advanced seminar that emphasizes the integration of theory and practice with special emphasis on the application of scientific principles to criminal investigation. Special emphasis is placed on the development of community-based crime prevention programs. Prerequisite: AJ 201 or departmental consent.

653. Community-Based Corrections. (3). An analysis of the techniques of probation, parole, after-care supervision and related services. Special emphasis is placed on the development of community-based crime prevention programs. Special emphasis is placed on the development of community-based crime prevention programs. Prerequisite: instructor's consent.

656. Institutional Corrections Techniques. (3). An analysis of the techniques of institutional corrections practice, including diagnostic centers, halfway houses and other related treatment models. Special emphasis is placed on the development of community-based crime prevention programs. Special emphasis is placed on the development of community-based crime prevention programs. Emphasis is placed on the development of community-based crime prevention programs. Prerequisite: instructor's consent.

660. Techniques of Prevention Program Development. (3). An analysis of the techniques utilized to organize and develop tracial and projected crime prevention and rehabilitation programs. Special emphasis is placed on the development of community-based crime prevention programs.
tion of instructor's theory that supports innovation. Prerequisite: AJ 370 or departmental consent. A 29 670 0 2105

680Q. Administration of Justice: Transnational and Comparative Perspectives. (3). Primarily designed to acquaint students with structural and functional aspects of law enforcement agencies, court systems, correctional facilities, juvenile treatment and crime prevention strategies employed by different agencies. Included in the examination are the standards of evidence, records, documents, and procedures utilized in the apprehension of the criminal. A 29 804 9 2105

805. Seminar on Principles of Evidence and Proof. (3). An in-depth examination of different types of legal proof that are presented in various legal proceedings. Included in the examination are the standards of evidence, records, documents, and procedures utilized in the apprehension of the criminal. A 29 805 9 2105

806. Seminar on Agency Administration. (3). A comparative survey and analysis of administrative philosophy, programs, procedures, and functions of effective agency organization. Administrative tools related to operations and personnel both within and outside the agencies are considered. A 29 806 0 2105

811. Advanced Research Methods in Criminal Justice. (3). The advanced study and exploration of research methods utilized in evaluative processes; the methods of design in the research project, including hypothesis and scale construction and sampling procedures, and a review of methods and the nature of the research process, analysis and interpretation. Prerequisite: AJ 512 or equivalent. A 29 811 0 2106

812. Seminar on the Application of Criminological Theory. (3). A critical analysis of the major theories of criminology and their contribution to the administration of justice processes. Emphasis is placed on the integration of a consistent, valid and individual frame of reference being developed by the student. A 29 812 9 2105

814. Seminar on Critical Issues in Criminal Justice. (3). Emergent phenomena in the overall system of criminal justice are investigated to demonstrate the pertinence of theory to practice. Examples of issues include role conflicts in law enforcement and corrections, police professionalism, its place and function; the offender as a client for services, and corrections as a setting for research. A 29 814 9 2105

815. Seminar on Decision Making in Criminal Justice. (3). A critical analysis of the decision making process in the administration of justice. A 29 815 9 2105

821. Seminar in Forensic Science. (3). An overview of the role of the forensic scientist in the administration of justice. A 29 821 0 2105

822. Advanced Computer Usage in the Administration of Justice. (3). An advanced study of the methods of computers in the administration of justice as they apply to the administration of justice process. A 29 822 9 2105

823. Seminar in Farmer Science. (3). The extensive examination of the wide field of issues in which medicine comes into relation with the criminal justice system. A 29 823 9 2105

824. Seminar on Administration of Justice Education and Training. (3). Analysis of the specialized methods and techniques and technological innovations utilized in the administration of justice training process. A 29 824 9 2105

827. Seminar on Environmental Protection. (3). An in-depth analysis of emerging federal, state and local legislation; judicial decisions, and administrative policy as related to environmental protection. The roles of the administration of justice agency and a variety of governmental and nongovernmental agencies, including law enforcement agencies, court system, correctional facilities, juvenile treatment and crime prevention strategies employed by different agencies. Included in the examination are the standards of evidence, records, documents, and procedures utilized in the apprehension of the criminal. A 29 804 9 2105

832. Seminar on Agency-Community Relations. (3). An in-depth analysis of the role of agency administrators in community relations and related public officials in existing community programs. Special emphasis is placed upon a multiplicity of approaches for developing new and redefining existing lines of communications between the agency and its community. A 29 832 9 2105

851. Individual Directed Study in the Administration of Justice. (3-6). Individually directed advanced research and/or research in special areas of interest in the field of administration of justice. Prerequisite: departmental consent. A 29 851 3 2105

852. Practicum. (3-6). Prerequisite: consent of departmental graduate committee. A 29 852 3 2105

853. Internship. (3-6). Prerequisite: consent of departmental graduate committee. A 29 853 3 2105

854. Thesis. (3-6). Prerequisite: consent of departmental graduate committee. A 29 854 3 2105

American Studies

Graduate Faculty
Professor: Jimmy M. Skaggs
Associate Professor: James H. Thomas (chairperson)
Assistant Professor: Jacqueline J. Snyder

Although a complete graduate program is not currently available in American Studies, the following courses may apply toward a master's degree, if approved in advance of enrollment by the student's advisor, the chairperson of the American Studies department and the dean of the Graduate School. Students working toward the Master of Arts in Liberal Studies (MALS) degree may use American Studies as one of their three fields of study.

Courses for Graduate/Undergraduate Credit

512. Twentieth Century Problems in American Studies. (3). An analysis and study of problems in various disciplines that influence American development. A 11 512 0 0313
520. American Studies Through the Media. (1-3). Courses created or coordinated by the Department of American Studies which are offered through various media—radio, television, newspapers and telecon. Areas of American studies emphasis vary from course to course. A 11 520 0 0313

601. Directed Readings in American Studies. (1-3). Prerequisites: six hours of American studies course work or its equivalent and instructor's consent. A 11 601 0 0313

602. Directed Readings in American Studies. (1-3). Prerequisites: six hours of American studies course work or its equivalent and instructor's consent. A 11 602 0 0313

698. Introduction to Research. (3). Bibliography, methodology and the philosophy of research. Repeatable for a total of six hours of credit. Prerequisites: six hours of American studies course work or its equivalent and instructor's consent. A 11 698 0 0313

750. Workshop in American Studies. (1). A course designed to provide specialized instruction using a variable format in a subject relevant to American studies. Repeatable for credit. A 11 750 0 0313

Anthropology

Graduate Faculty

Professors: Lowell D. Holmes, Arthur H. Rohn (chairperson and graduate coordinator), Karl Schlesier

Associate Professor: Donald Blakeslee
Assistant Professors: Dorothy Billings, Clay Robarchek, Kim Schneider

The anthropology department offers a course of study leading to the Master of Arts (MA) degree.

Admission Requirements

Admission to the MA program in anthropology requires the completion of 15 semester hours of work in anthropology, a grade point average of 2.750 (on a 4.000 scale) in the last 60 hours of credit and a 3.000 grade point average in anthropology.

Degree Requirements

The MA degree in anthropology requires the completion of 30 semester hours, including the presentation of a thesis. At least 12 of these hours must be in courses numbered 500 or above. The 30 hours must include the core courses in archaeology (501), cultural anthropology (503), physical anthropology (505) and anthropological history and theory (647). Students may substitute other appropriate courses if they can show proof of having taken one or more of them as undergraduates.

Examinations

All students must pass a written proficiency examination in the fundamentals of anthropology. Students must complete a minimum of 15 semester hours of work in graduate anthropology before taking the examination. Before a degree is granted, candidates must pass an oral defense of their thesis. A foreign language examination is contingent upon the nature of the thesis topic.

Courses for Graduate/Undergraduate Credit

501. Approach to Archaeology. (3). Laboratory. An introduction to the problems of studying past cultures. Special attention is focused on methodology and techniques available to archaeologists and the theoretical rationale leading to sound interpretations of the structure of extinct cultures. Prerequisite: Anthro. 1240 or 3050. A 28 501 0 2203

502. Introduction to Archaeological Laboratory Techniques. (1-3). Maximum of three hours. An introduction to the laboratory processing of archaeological materials. Students obtain hands-on experience in preparing excavated materials for analysis, including cleaning, restoring, preserving, numbering and cataloging of ceramic and lithic artifacts and other remains. Prerequisite: Anthro. 1240 or 3050. A 28 502 1 2203

503. Approach to Cultural Anthropology. (3). Offered every fall semester, the course is an overview of major current directions in the study of culture and of cultures: symbol systems and social, political, economic and religious institutions, personality, the arts and bodies of knowledge. Controversies that presently animate discussions of the role, methods and context of modern anthropology will be explored. Prerequisites: Anthro. 1020, 1240 or equivalent. A 28 503 0 2202

504. Approach to Biological Anthropology. (3). Offered every spring semester, the course is an overview of major current directions in the study of culture and of cultures: symbol systems and social, political, economic and religious institutions, personality, the arts and bodies of knowledge. Controversies that presently animate discussions of the role, methods and context of modern anthropology will be explored. Prerequisites: Anthro. 1010 or equivalent. A 28 504 0 2202

505. Approach to Biological Anthropology. (3). Offered every spring semester, the course is an overview of major current directions in the study of culture and of cultures: symbol systems and social, political, economic and religious institutions, personality, the arts and bodies of knowledge. Controversies that presently animate discussions of the role, methods and context of modern anthropology will be explored. Prerequisites: Anthro. 1010 or equivalent. A 28 505 0 2202

506. Peoples of the Pacific. (3). A survey of the races, languages and cultures of nonliterate peoples of Polynesia, Micronesia and Indonesia. A 28 506 0 2202

5080. Ancient Civilizations of the Americas. (3). A cultural survey of the Aztec, Maya and Inca. Prerequisite: Anthro. 1020 or instructor's consent. A 28 5080 0 2212

511. The Indians of North America. (3). A survey of tribal societies and native confederations north of Mexico from the prehistoric through the historic period. Prerequisite: Anthro. 1020 or 1240. A 28 511 0 2212

514. Anthropological Perspectives in Geomorphology. (3). Cross-listed as Geol. 514. An anthropological analysis of the modern landscape in terms of the various phases of the developmental processes of landscapes in the modern world. A 28 514 0 2202

5150. Chinese People and Culture. (3). An introduction to the peoples of China and aspects of their culture: economy, government, society, religion and the arts. Historical attention will focus on the many adjustments the Chinese have made during the twentieth century following political revolutions, industrialization and expanding trade relations. A 28 5150 0 2202

5160. Japan: People and Culture. (3). An introduction to the culture of Japan including its history and culture, institutions of traditional culture and 20th century Japan, its economy, politics and social organization. A 28 5160 2 2202

519. Applying Anthropology. (3). The application of anthropological knowledge in the solution of social problems in industry, public health and planning. Cross-listed as Anthropology. Prerequisite: Anthro. 1020 or 1240. A 28 519 0 2202

522Q. Art and Culture. (3). A survey of the visual and performing arts of nonwestern peoples with special attention to their relationships to the cultures which produce them. Prerequisite: Anthro. 1020 or 1240. A 28 522Q 0 2202

526. Social Organization. (3). A survey of the various organizational patterns among nonindustrialized peoples throughout the world. This course deals with family systems, kinship, residence patterns and lineages, and tribal and nontribal political and economic organization. Prerequisite: Six hours of anthropology. A 28 526 0 2202

538. Early Man in the New World. (3). A critical examination of facts and theories concerning early man in the New World, from the peopling of the continent to the beginning of the American Revolution, and the organization of cultural contacts between eastern Asia and North America. Prerequisite: Anthro. 1240 or 3050. A 28 538 0 2203

540. The Indians of the United States: Conquest and Survival. (3). An anthropological inquiry into four centuries of cultural contact, conflict, resistance and reorientation. Prerequisite: Anthro. 1020 or 1240 or instructor's consent. A 28 540 0 2212

542. Women in Other Cultures. (3). Cross-listed as WS 542. A course dealing with the place of women in primitive and other non-Western societies. Issues in various aspects of culture: political, economic, religious, domestic, intellectual, psychological and aesthetic. Societies are compared and contrasted to each other. Kinds of roles for women are related to different kinds of societies. A 28 542 0 2202

555. Fossil Evidence for Human Evolution. (3). A detailed examination of human evolutionary history as evidenced by fossil remains and a survey of various interpretive explanations of the fossil record. Prerequisite: Anthro. 1010 or Biol. 2030 or equivalent. A 28 555 1 2202

556. Human Variability. (3). A critical examination of the biological aspects of contemporary human variation, stressing human adaptations. Prerequisites: Anthro. 1010 or Biol. 2030 or equivalent. A 28 556 1 2202

557. Human Osteology. (3). A course dealing with human skeletal and dental materials with applications to both physical anthropology and archaeology. Extensive laboratory sessions include bone and tooth identifications, measurement and analysis and skeletal preservation and re- construction. Individual projects are undertaken. Prerequisite: Anthro. 1010 or equivalent. A 28 557 0 2202

597. Topics in Anthropology. (3). Detailed study of topics in anthropology with particular emphasis being established according to the expertise of the various instructors. A 28 597 3 2202
600. Forensic Anthropology. (3). Cross-listed as AJ 600. The course encompasses the area of criminal investigation involving biological evidence: blood, hair, fingerprints, dental and skeletal system. It covers procedures of collection, preservation, marking, transportation, referral, laboratory analysis, classification and identification with emphasis on anthropological interpretation. A 26 651 0 2202

656. Advanced Physical Anthropology. (3). An in-depth coverage of selected topics in physical anthropology, including population dynamics, primatology, growth and development and current research methods. Prerequisite: Anthro. 101Q or instructor's consent. A 26 656 0 2202

657. English Syntax. (3). Cross-listed as Eng. 667 and Ling. 667. Examination of aspects of the structure of English and their relation to linguistic theory. Prerequisite: Eng. 315 or Ling. 577 or Anthro. 577 or instructor's consent. A 26 667 0 1505

690. Field Methods in Anthropology. (3-6). A maximum of six hours can be counted as anthropology hours toward either degree. A course that instructs the student in archaeological and ethnological field methods through actual participation in a field research program. The project depends upon the specific site and manner of field work to be done each year. Prerequisite: instructor's consent. A 26 690 2 2202

749. Educational Anthropology. (3). A course dealing with the basic concepts of anthropology and their application to social science in elementary and secondary schools. The course explores the nature of subcultures in American society and the problems they pose for the classroom teacher. A course for education majors and graduate students. Cannot be used to meet requirements of the General Education Program for anthropology. A 28 749 0 2202

750. Workshop. (1-4). Short-term courses with special focus on anthropological problems. Prerequisite: instructor's consent. A 26 750 2 2202

Courses for Graduate Students Only

891. Seminar in Archaeology. (3). Comprehensive analysis of archaeological data with emphasis on theoretical problems of interpretation and reconstruction. Repeatable up to six hours. Prerequisite: Anthro. 501 or departmental consent. A 26 801 9 2203

802. Methods in Anthropology. (2-3). Designed to develop abilities in the conception and investigation of anthropological problems and interview and observation techniques, as well as more specialized methods such as photography, mapping and tape recording. Repeatable up to six hours. Prerequisite: departmental consent. A 26 802 9 2202

820. Seminar in Physical Anthropology. (3). Analysis of fossil, skeletal and modern biological differences among people. Emphasis is placed on methods and techniques of analysis with a consideration of current international materials. Prerequisite: Anthro. 556 or 557 or departmental consent. A 26 830 9 2202

837. Seminar in Cultural Anthropology. (3). Intensive study of advanced theoretical questions in cultural anthropology. Repeatable up to six hours. Prerequisite: five hours of anthropology. A 26 837 9 2202

847. Colloquium in Anthropology. (1-2). 6 SU grades only. Repeatable for a maximum of three hours. To provide graduate students with seminar-style experience in recent research in any of the subfields of anthropology. Course also allows those students preparing their first papers for presentation at professional conferences to present them before a critical but friendly audience. Students presenting colloquium papers receive two credits. Prerequisite: graduate standing in anthropology. A 28 847 9 2202

648. Recent Developments in Anthropology. (3). A review of the latest discoveries and interpretations in the science of man. Repeatable up to six hours. Prerequisite: five hours of anthropology. A 28 848 9 2202

670. Independent Reading. (2-3). Repeatable up to six hours. Prerequisite: departmental consent. A 26 870 3 2202

755-776. Thesis. (2-2). A 26 875 4 2202; A 26 876 4 2202

Biological Sciences

Graduate Faculty

Distinguished Professor: Avin Sarachek (Distinguished Professor of Natural Sciences)

Professors: L. Raymond Fox, George H. Sweet

Associate Professors: Karen L. Brown, Donald A. Dietler, Victor B. Eichler, Ralph I. Peters (interim chairperson and graduate coordinator)

Assistant Professors: John T. Bish, Brett Larson, Arthur L. Youngman

Master of Science and Areas of Specialization

The Master of Science (MS) degree offered by the Department of Biological Sciences allows for specialization in a variety of subdisciplines within the broad areas of cellular, organismic, populational and environmental biology.

Admission Requirements

Admission as a full standing student to the MS degree program in biological sciences requires: (1) the completion of 24 undergraduate semester hours in biological sciences and 15 semester hours of course work in chemistry; (2) an overall grade point average of at least 2.750 (4.0 scale) for the most recent 60 semester hours completed; (3) a grade point average of at least 3.00 (4.0 scale) for all undergraduate biological sciences course work; (4) three letters of reference from science faculty; (5) receipt of GRE general aptitude and advanced test in biology scores; and (6) conditional acceptance by a member of the graduate faculty, based on the availability of research space and the student's academic background. Students who do not meet these requirements but who wish to begin graduate coursework may qualify for probationary acceptance into a nondegree category.

Degree Requirements

Students may pursue a Master of Science degree in biology under either a research thesis option or nonthesis option. The more traditional thesis option, which includes a minimum of 30 semester hours in graduate course work, re-
quires the successful completion and defense of a research project. Each student pursuing this option works individually with a graduate faculty member who directs the research activity of the student. The nonthesis option requires a minimum of 30 semester hours in graduate course work and successful completion of written comprehensive examinations in two areas of biology. The nonthesis option is primarily designed for but not limited to, students employed in professional areas, such as the medical community and secondary education, who wish to expand or update their knowledge of biological principles.

Nonmajor Courses

(May not be used to satisfy the requirements for the major)

Courses for Graduate/Undergraduate Credit

509G. Foundations of Human Heredity. (4). Introduction to the mechanisms and significance of developmental, transmission, and population genetics of humans. Attention given to inborn errors of metabolism and development and the roles of genetic counseling and genetic engineering in their management. Course is intended for students majoring outside the natural sciences and does not carry credit toward a biological sciences major or minor. A small number of current problems in biochemistry are discussed in depth. Reading published research papers in the field is required. Students working on their thesis are required to prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: junior standing. A 12 509G 0 0417

518O. Biology of Aging. (3). Cross-listed as Geron. 518O. (Offered as staffing permits.) An introduction to the phenomenon of aging, including a survey of age-related processes and mechanisms of senescence with emphasis on humans. Students earning graduate credit are expected to produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Students earning graduate credit are expected to produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Biol. 204 or Chem. 531. A 12 0416 0 0414

659. Research in Biochemistry. (2). Cross-listed as Chem. 659. S/U grade only. A course designed primarily for students who choose to major in biochemistry. Participation in a biochemistry research project under the direction of a faculty member and a written report summarizing the results is required. May be repeated once for credit. Prerequisites: Biol. 416 or 500, Chem. 662 or 663, and Chem. 694. A 12 0416 0 0414

750. Biology Workshop. (1-3). A 12 750 0 0401

780. Molecular Genetics. (3). (Offered on irregular basis as demand warrants.) Contact department for information.) A study of the physicochemical nature of genetic material and the mechanisms of genetic regulation of metabolism. Students earning graduate credit are expected to produce a term paper and deliver a class seminar based on the technical literature on a topic chosen in consultation with the instructor. Prerequisite: Biol. 584 or instructor's consent. A 12 780 0 0422

798. Biology Seminar. (2). Reviews of current research in biological sciences. Repeatable once for credit. A 12 798 0 0401

Courses for Graduate Students Only

890. Research. (2-5). S/U grade only. Students performing research on their thesis projects should enroll for an appropriate number of hours. An oral presentation or paper on the research results must be presented to the student's thesis committee before a grade is assigned. A 12 890 4 0499

891. Thesis. (2). S/U grade only. Students must be enrolled in this course during the semester in which the thesis is defended. A 12 891 4 0499

Microbiology

Courses for Graduate/Undergraduate Credit

531. Food Microbiology. (4). 2R; 4L. (Offered on irregular basis as demand warrants.) Contact department for information.) The course examines the role and significance of microorganisms in foods. Included are factors that affect microbial growth, detection of microbes and their products, food spoilage, food preservation by use of chemicals, radiation, high and low temperatures, drying and fermentation, food-borne microbial infections and intoxications, and the roles of food sanitation, control and inspection. Students earning graduate credit are expected to prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. In addition, graduate students, upon instructor approval, may substitute a comprehensive examination for the oral presentation. Prerequisites: Biol. 330 and Chem. 531. A 12 531 0 0422

552. Mycology. (4). 2R; 4L. (Offered on irregular basis as demand warrants.) The nature of antigens and antibodies and their interactions. Cellular and humoral aspects of immunologic phenomena are included. Students earning graduate credit are expected to prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Biol. 204 and Chem. 531. A 12 552 0 0411

590. Immunobiology Laboratory. (3). 6L. (Offered fall semester in odd-numbered years.) The structure, development and reproduction of fungi with emphasis on the cytophogy and physiochemical forms of scientific and economic importance. Students earning graduate credit are expected to produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Biol. 204 and Chem. 531. A 12 590 0 0416

654. Pathogenic Microbiology. (4). 2R; 4L. (Offered spring semester in odd-numbered years.) An introduction to the important pathogenic microorganisms and their relationships to health and disease in man. Students earning graduate credit are expected to prepare a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Biol. 330 and Chem. 531 or instructor's consent. A 12 654 0 0416

658. Microbial Physiology. (3). (Offered fall semester in odd-numbered years.) The physiology and metabolism of microorganisms. All students are required to prepare a paper based on the technical literature on a topic chosen in consultation with the instructor, and those earning graduate credit are expected to make an oral presentation on this topic to the class. Prerequisites: Biol. 330 and Chem. 531. A 12 658 0 0411

659. Microbiologic Physiology Laboratory. (3). 6L. (Offered fall semester in odd-numbered years.) An introduction to the basic techniques involved in the study of microbial physiology. Students earning graduate credit are expected to design and perform an addi
Organismal Biology and Ecology

Courses for Graduate/Undergraduate Credit

502. Vascular Plants. (4). 2R; 6L. (Offered fall semester in odd-numbered years.) An introduction to the structure, reproduction and evolution of the major groups of living vascular plants. Emphasis is on their distribution, natural history and special characters of vertebrate animals. Students earning graduate credit are expected to produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Bio. 330 and Chem. 531. A 12 659 1 0411

507. Field Ecology. (3). 9L. (Offered fall semester only.) Techniques for analysis of systems consisting of living organisms and their environments. Field trips are required. Students earning graduate credit are expected to perform an individual project on a competitive community structure and report the results as a technical paper. Prerequisites: Bio. 204. Biol. 527 also is recommended. A 12 524 1 0407

527. Comparative Anatomy. (5). 3R; 4L. (Offered fall semester only.) An intensive study of representative chordates with emphasis on vertebrate anatomy. Students earning graduate credit are expected to complete additional assignments chosen in consultation with the instructor, such as a term paper based on technical literature, discussion of experimental data, et cetera. Prerequisites: Biol. 204. A 12 527 1 0412

528. Parasitology. (3). 2R; 4L. (Offered fall semester only.) The parasites of man and other vertebrate hosts. Students earning graduate credit are expected to produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Biol. 204. A 12 528 1 0407

532. Entomology. (5). 3R; 4L. (Offered spring semester in even-numbered years.) A comparative study of the morphological, physiological, life cycles, natural history and economic significance of insects. Students earning graduate credit are expected to submit a technical paper based on laboratory research on a topic in mammalian physiology chosen in consultation with the instructor. Prerequisites: Bio. 204 and Chem. 531 or instructor's consent. A 12 532 1 0421

533. Mammalian Physiology. (3). (Offered spring semester.) An organs systems approach to mammalian—primarily human—physiology emphasizing nervous and endocrine controls and the coordination of body functions. Students earning graduate credit are expected to submit an additional laboratory report relating the results of a laboratory experiment to the findings in the technical literature. Prerequisites: concurrent or prior enrollment in Bio. 534. A 12 533 1 0410

540. Comparative Embryology. (4). 2R; 4L. (Offered fall semester in odd-numbered years.) Gametogenesis, fertilization and developmental processes in animals with emphasis on vertebrates. Students earning graduate credit are expected to complete additional assignments chosen in consultation with the instructor. Prerequisites: Bio. 204. Biol. 527 is also recommended. A 12 540 1 0427

544. Histology. (4). 2R; 4L. (Offered spring semester in even-numbered years.) The microscopic anatomy of vertebrate tissues with emphasis on mammals. Students earning graduate credit are expected to complete additional assignments chosen in consultation with the instructor. Prerequisites: Bio. 204. A 12 544 1 0413

560. Plant Ecology. (4). 2R; 6L. (Offered spring semester in even-numbered years.) Principles and patterns of plant distribution and adaptation of plants to particular habitats. Emphasis is put on the experimental approach to plant ecology. Field trips are an integral part of the laboratory. Prerequisites: Bio. 204. A 12 560 1 0420

575. Limnology. (5). 2R; 6L. (Offered spring semester in even-numbered years.) An introduction to the biological and physical processes that operate in lakes, streams and associated wetlands. Assignments, experiments and field trips are required. Students earning graduate credit are expected to investigate the limnological properties of ponds, comparing their characteristics, or involved with a specific environment, such as a lake. The results of this investigation are reported as a technical paper. Prerequisites: Bio. 204 and instructor's consent. A 12 575 1 0420

580. Topics in Botany. (2-4). No more than a total of six credit hours earned from among Bio. 610, 640 and 660 may be applied toward major and graduation requirements. Students must complete a Directed Independent Study Abstract form and obtain departmental approval prior to enrollment. Prerequisites: Bio. 204. A 12 610 4 0402

582. Parasitology. (3). 2R; 4L. (Offered fall semester only.) The parasites of man and other vertebrate hosts. Students earning graduate credit are expected to produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Bio. 204. A 12 640 1 0402

583. Mammalian Physiology. (3). (Offered spring semester.) An organs systems approach to mammalian—primarily human—physiology emphasizing nervous and endocrine controls and the coordination of body functions. Students earning graduate credit are expected to submit a technical paper based on laboratory research on a topic in mammalian physiology chosen in consultation with the instructor. Prerequisites: Bio. 204 and Chem. 531 or instructor's consent. A 12 650 1 0407

584. Topics in Zoology. (2-4). No more than a total of six credit hours earned from among Bio. 610, 640 and 660 may be applied toward major and graduation requirements. Students must complete a Directed Independent Study Abstract form and obtain departmental approval prior to enrollment. Prerequisites: Bio. 204. A 12 640 4 0407

597. Evolutionary Ecology. (4). 3R; 2L. (Offered fall semester in even-numbered years.) A systematic study of the biological basis of social behavior. The course focuses on animal societies, their population, structure, castes and communities and the underlying processes. Students earning graduate credit are expected to produce a term paper based on the technical literature on a topic chosen in consultation with the instructor. Prerequisites: Bio. 204 or departmental consent. A 12 671 1 0407
Chemistry

Graduate Faculty


Associate Professors: Annette S. Allen, John W. Johnson, Jr., William T.K. Stevenson, Melvin E. Zandler.

Assistant Professors: R. Cameron Dorey, Richard D. Ludescher, John B. McCarten, William M. Shirley

The Department of Chemistry at Wichita State offers courses of study leading to the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.) degrees.

Admission Requirements

To enroll in the graduate program in chemistry, students must meet admission requirements of the Graduate School and hold an undergraduate degree with a major in chemistry. Students whose preparation is equivalent to the B.S. program recommended by the American Chemical Society Committee on Professional Training are considered well prepared for graduate study.

When admitted to the graduate program in chemistry, students are required to take orientation examinations. The results are used by an advising committee of the department to counsel graduate students about which courses are appropriate.

Students must select a faculty member to be their research adviser by the beginning of their second semester in the graduate program. The research adviser guides the students in their research.

Degree Requirements (Master's)

The M.S. degree in chemistry requires the completion of 30 credit hours, including the presentation of a thesis. The program requires at least six credit hours in research, Chem. 790. Also, at least 15 credit hours in chemistry courses numbered above 701 must be taken, including at least one 700-level course from four of the following five areas: analytical chemistry, inorganic chemistry, organic chemistry, physical chemistry and biochemistry. Students must successfully complete Chem. 700 at least twice, and full-time students must register each semester in Chem. 701. Additional courses, which may be outside the major field, are selected by students in consultation with their adviser and the department's advising committee.

Chemical Physics Option

Students who have a particular interest in chemical physics may follow a special option. They must take at least one 700-level course from one of four areas, including physics as the sixth area. Physics courses that may be taken include Phys. 631, 712, 714, 811, 881 or other approved courses. It is recommended that students in this option take Chem. 642. Additional information is available in the chemistry department office.

Examinations

Master's students must pass qualifying examinations, which are the same as orientation examinations, in four areas of chemistry. An examination must also be passed in one research skill, including the areas of German, French, Russian (or the equivalent of one year of language with a grade of B or better), computer science, or electronic techniques.

Thesis

The thesis is reviewed by a committee from the department, and an oral examination given by a faculty committee appointed by the Graduate School must be passed.

Degree Requirements (Doctorate)

Students should consult with the department regarding these requirements.

Courses for Graduate/Undergraduate Credit

501. Acids, Bases and pH. (1). The study of properties characteristic of acids and bases, typical acid-base reactions, indicators, pH solution concentration, titration and buffers. The course begins with a study of Lewis structures of atoms, molecules and ions. Prerequisite: inservice elementary teacher or departmental consent. A 13 501 0 1905

505. Chemical Literature. (1). A survey of chemical publications and the publication process. The course is designed to give the student the ability to conduct a proper search of the literature for chemical information. Aspects of technical writing are also covered. Prerequisite: Chem. 531 A 13 505 1 1905

514. Inorganic Chemistry. (3). Basic inorganic chemistry with emphasis on molecular symmetry and structure, fundamental bonding concepts, ionic interactions, periodicity of the elements, systemsatics of the chemistry of the transition elements, acid-base chemistry and non-aqueous solvents, classical coordination chemistry and introductory bioinorganic chemistry. Prerequisite: Chem. 1120 with a grade of C or better. A 13 514 0 1906

523. Analytical Chemistry. (4). 2R; SL. Lab fee. Evaluation of data, theory and application of gravimetric analysis and precipitation, neutralization and oxidation-reduction volumetric analysis. Prerequisite: Chem. 1120 with a grade of C or better. A 13 523 1 1908

524. Instrumental Methods of Chemical Analysis. (4). 2R; SL. Lab fee. Introduction to colorimetric analysis, optical methods of analysis and separation of complex mixtures, both inorganic and organic. In addition, basic computer programming is discussed as it applies to analytical chemistry. Prerequisite: Chem. 523 or 1240. A 13 524 1 1909

531. Organic Chemistry. (5). 3R; 6L. Lab fee. An introduction to the study of carbon compounds with emphasis upon reaction mechanisms, stereochemistry and spectrographic analysis. Prerequisite: Chem. 1120 or 1240 with a grade of C or better. A 13 531 1 1907

532. Organic Chemistry. (5). 3R; 6L. Lab fee. A continuation of Chem. 531 with emphasis upon the structures and reactions of principal functional groups and compounds of biological importance. Prerequisite: Chem. 531. A 13 532 1 1907

533. Elementary Organic Chemistry. (3). Basic organic chemistry with a special emphasis on topics of importance to health professions and education majors. Special emphasis is given to carbohydrates, proteins, drugs, pesticides and energy production. Students should also enroll in Chem. 534 simultaneously. Credit is not allowed for both Chem. 533-534 and 531. This course does not meet the general education core requirements. Prerequisite: Chem. 1120 or equivalent. A 13 533 0 1907

534. Elementary Organic Chemistry Laboratory. (2). Lab fee. A basic laboratory course to provide pertinent experiences in the laboratory to accompany the survey lecture course Chem. 533. Prerequisite: Chem. 533. A 13 534 1 1907

540. Elementary Physical Chemistry. (5). An introductory treatment of thermodynamics, kinetics, quantum chemistry, spectroscopy and statistical thermodynamics for students not intending to become professional chemists. In contrast to the more formal, theoretically oriented, traditional physical chemistry courses (545-546), this more practically oriented course attempts to survey most of the important areas of physical chemistry in a heuristic and applied manner. The concentrated one semester treatment serves students majoring in preprofessional programs, students majoring in zoology, biology, or psychology, premed students. Prerequisite: Chem. 1120 or equivalent. Math. 2420 or equivalent and one semester of physics. A 13 540 0 1908

545. Physical Chemistry. (3). Thermodynamics. Gases, first law, thermochemistry, second and third laws, phase equilibria, solutions, chemical equilibria, electrochemistry and surface chemistry are studied. Prerequisites: Chem. 1120 or equivalent and one semester of college physics. A 13 545 0 1908

546. Physical Chemistry. (3). Kinetic theory, kinetics, transport phenomena, quantum mechanics, spectroscopy and statistical thermodynamics for students not intending to become professional chemists. In contrast to the more formal, theoretically oriented, traditional physical chemistry courses (545-546), this more practically oriented course attempts to survey most of the important areas of physical chemistry in a heuristic and applied manner. The concentrated one semester treatment serves students majoring in preprofessional programs, students majoring in zoology, biology, or psychology, premed students. Prerequisite: Chem. 1120 or equivalent and one semester of college physics. A 13 546 0 1908

547. Physical Chemistry Laboratory. (2). 6L. Lab fee. Physical chemistry experiments that illustrate principles learned in Chem. 545 and 546. Prerequisite: Chem. 545 or 546. A 13 547 1 1908

561. Introduction to Biochemistry. (3). A brief history of biochemistry, emphasizing the development of molecular biology; chemistry of biomolecules—proteins, carbohydrates, lipids, nucleic acids and vitamins; molecular biology of the cell and energy storage and transfer and control of genetic information. This course meets the needs of majors from health-related programs and science education curricula. Prerequisite: Chem. 531 or 533 or one semester of organic chemistry. A 13 561 0 0414
602. Numerical Methods. (2), 1R; 3L. Applications of numerical methods to problems in chemistry and physics. Root of equations; curve fitting; interpolation, extrapolation and smoothing of experimental data; numerical differentiation and integration and computer programming. Prerequisite: departmental consent. A 13 622 1 1905.

603. Industrial and Polymer Chemistry. (3). Course is designed to bridge the industrial-academic gap. Topics covered include petroleum chemistry and major processes in industrial inorganic chemistry. Some aspects of environmental chemistry such as hard water and pollution control will be included. Special emphasis will be placed on the relation of modern inorganic chemistry to pollution. Air pollution will also be discussed. Topics in polymer chemistry include major synthetic routes to high polymers and resins, techniques of polymer characterization, structure-property correlations and methodology in plastics and composites processing. Prerequisite: Chem. 532 or concurrent enrollment. A 13 603 0 1905.

605. Medicinal Chemistry. (3). For students interested in chemistry related to the design, development, and testing of drugs. The primary purpose of the course is to describe those organic substances that are used as medicinal agents and to explain the mode of action of most drugs in the body; to illustrate the importance and relevance of chemical reactions as a basis of pharmacological activity; drug toxicity; and to bring about a better understanding of drugs. Topics include transport, basic receptor theory, metabolite transformation of drugs, drug-drug interactions, drug interactions in the body, to illustrate the importance and relevance of chemical reactions as a basis of pharmacological activity. A 13 605 1 1905.

613. Inorganic Chemistry Laboratory. (2). Lab fee. Experimental methods of inorganic chemistry. Prerequisite: Chem. 514 or concurrent enrollment. A 13 613 1 1906.

615. Advanced Inorganic Chemistry. (3). Topics that will be covered include modern bonding theoreics, structure and spectra of inorganic compounds, coordination and organometallic chemistry, boranes, inorganic rlg systems and polymers, inorganic environmental chemistry, mechanisms of inorganic reactions and solid state chemistry. Prerequisite: Chem. 514 and 546. A 13 615 0 1906.


625. Electronics. (2), 1R; 4L. Lab fee. Provides a working knowledge of electronic devices and circuits for the student or research worker who has little or no background in electronics. Prerequisite: instructor's consent. A 13 625 1 1909.

641. Advanced Physical Chemistry. (3). Introduction to quantum chemistry, atomic and molecular spectra, statistical thermodynamics, and quantum mechanics. Prerequisite: Chem. 546. A 13 641 0 1908.

642. Chemical Physics. (3). Topics in areas of overlapping interest for students of chemistry and physics, such as thermodynamics, kinetics, quantum mechanics, solids and various types of spectroscopy. Standard experimental and theoretical techniques used in research in related areas will be covered by a team of chemists and physicists. Prerequisite: Chem. 641 or instructor's consent. A 13 642 0 1905.


664. Biochemistry Laboratory. (3) 1R; 5L. Lab fee. Practical training in biochemical procedures and literature searching. Experiments include isolation, characterization and assay of biomolecules and use of centrifugation chomatography, electrophoresis, spectroscopy, enzyme kinetics and radioactive labeling techniques. Should be taken concurrently with Chem. 662 or 663. Prerequisite: Chem. 532 or equivalent. A 13 664 0 0414.

666. Special Topics in Biochemistry. (3). (Offered spring semester in odd-numbered years.) A small number of current problems in biochemistry are discussed in depth. Reading of published research in the field is required. Prerequisites: Biol. 114 and Chem. 662 and 663. A 13 666 9 9414.

669. Research in Biochemistry. (2). Cross-listed as Bio. 669. S/U grade only. Students in the biochemistry major participate in a biochemistry research project under the direction of a faculty member. A written report summarizing the results is required. May be repeated once for credit. Prerequisites: Biol. 410 or 660 and Chem. 662 or 663 and 664. A 13 669 4 9414.

680. Independent Study and Research. (2-9). Studies performed must be directed by a Faculty member and approved by the Department of Chemistry. Repeatable for credit. A maximum of three credit hours may be counted toward graduation. Prerequisite: consent of the Department. A 13 690 4 1905.

700. Chemistry Seminar. (1). S/U grade only. Seminars are given by students on a topic of their choosing. The seminar is published in the literature or on their own research. Repeatable for credit. A 13 700 9 1906.

701. Chemistry Colloquium. (1). S/U grade only. Speakers for the colloquium consist of outstanding chemists from other institutions and faculty. Repeatable for credit. A 13 701 9 1905.


709. Special Topics in Chemistry. (2-3). A discussion of topics of a special significance and interest to faculty and students. Offerings are announced in advance. Repeatable for credit. A 13 709 0 1905.

712. Coordination Chemistry. (3). The study of the synthesis, characterization and properties of coordination compounds. Topics include nomenclature, fundamental bonding concepts, principles of synthesis, mechanisms of substitution and electron transfer reactions, catalysis and coordination phenomena. Prerequisite: Chem. 615 or equivalent. A 13 712 9 1906.

713. Physical Methods in Inorganic Chemistry. (3). An introduction to electronic and vibrational spectroscopy, magnetic susceptibility, EPR, NMR, Mossbauer spectroscopy and X-ray crystallography. Emphasis is placed on understanding the electronic and molecular structure of coordination compounds. Prerequisite: Chem. 705 or equivalent. A 13 713 0 1906.

725. Digital Computers in Chemical Instrumentation. (3). Discussion of the use of small digital computer in the laboratory. Lectures deal with digital logic, data acquisition techniques and the on-line digital computer in instrumentation. Experience covers the design of digital logic circuits, interfacing chemical instruments to the digital computer and programming the small digital computer. A 13 725 1 1906.


741. Quantum Chemistry. (3). Theoretical basis of atomic and molecular structure. Topics include the postulates of quantum mechanics, exact solutions for the particle-in-a-box and the hydrogen atom, variation and perturbation methods, Dirac equation, Hartree-Fock and configuration-interaction methods, molecular-orbital and valence-bond wave functions and virial and Hellmann-Feynman theorems and approximate. Corequisite: Chem. 705 or equivalent. A 13 741 0 1908.

751. Introduction to Polymer Synthesis. (3). A study of the major synthetic routes to high polymers, including step growth, free radical, anionic, cationic and Zeigler-Natta.
752. Polymers and Composites. (3). A study of the physical states of polymeric systems (crystalline, liquid crystalline, amorphous), polymer failure processes, polymer behavior and reinforcement and resin chemistry. Prerequisites: Chem. 531, 532, 545 and 546. A 13 752 0 1999

763. Structure-Function Analysis of Bio- molecules. (3). An examination of the physical, chemical and biological tools used for studying biomolecules. Topics include applications of X-ray diffraction, crystallography, primary, secondary and tertiary structural analyses; equilibrium dialysis and reaction kinetics, high performance liquid chromatography, mass spectrometry, immunological and ligand binding methods. Prerequisites: one semester of undergraduate biochemistry and Chem. 546. A 13 763 0 0414

764. Physical Biochemistry I: Principles. (3). An examination of the physical principles that form the basis for the structure and activity of biological macromolecules. Topics covered include the conformational analysis of molecular building blocks and its relation to the higher order structures of proteins, nucleic acids, lipids and carbohydrates, energetics and bonding interactions, solution thermodynamics, elementary treatment of classical statistical mechanics, folding and flexibility, transport processes and multiple binding equilibria. Prerequisites: Chem. 545, 546 and 662 or equivalent. A 13 764 0 0414

Courses for Graduate Students Only

809. Special Studies in Chemistry. (2-3). Systematic study in selected areas of chemistry. Repeatable for credit. Course content differs from one offering to the next. A 13 809 0 1905

814. Organometallic Chemistry. (3). A study of the synthesis, structure, bonding, reactivity and applications of organometallic and organotransition and nontransition metal compounds. Prerequisite: Chem. 615 or equivalent. A 13 814 0 1906

815. Bioinorganic Chemistry. (3). The study of the role of inorganic chemistry in biological systems. Topics include electron transport, biological catalysis mediated by metal ions, metal storage and transport, ion transport and the role of transition metals in metabolism. Prerequisites: Chem. 615 and 663 or equivalent. A 13 815 0 1908

821. Equilibrium and Statistics in Analytical Chemistry. (3). The course will cover homogeneous and heterogeneous solution equilibrium calculations and statistical methods used in experiment design and data analysis. Prerequisite: Chem. 524 or equivalent. A 13 821 0 1905

822. Analytical Separations. (3). The theory and practice of analytical separation methods including gas and liquid chromatography, ion exchange and electrophoresis. Prerequisite: Chem. 524 or equivalent. A 13 822 0 1906

823. Analytical Spectroscopy. (3). Absorption (UV, visible, IR and atomic); emission: flame, atomic absorption, plasma, luminescence, X-ray fluorescence, atomic emission, inductively coupled plasma; magnetic resonance spectroscopy; X-ray methods. Lectures and discussions on applications are given. Particular emphasis is placed upon instrumentation and the acquisition of artifact-free data. Prerequisite: Chem. 524 or equivalent. A 13 823 0 1909

824. Electroanalytical Chemistry. (3). Topics include voltammetry, polarography, square wave voltammetry, cyclic voltammetry, reversible and irreversible diffusion controlled processes: CE (chemical reaction before electrode reaction), ECE (electrochemical reaction before chemical reaction), EC (electrochemical reaction before chemical reaction), and organic polarography and voltammetry. Prerequisite: Chem. 542 or equivalent. A 13 824 0 1909

831. Advanced Physical Organic Chemistry. (3). Topics include molecular orbital theory, sigma topic rearrangements, electrocyclic reactions, cycloadditions, reactive intermediates and photochemistry. Prerequisite: Chem. 731. A 13 831 0 1907

832. Modern Synthetic Methods. (3). Discussion of retrosynthetic analysis, applications, asymmetric syntheses and stereochemistry. Prerequisite: Chem. 737. A 13 832 0 1907

833. Natural Products Chemistry. (3). Discussion of the structure, chemistry and biosynthesis of the alkaloids, steroids, terpenoids, carbohydrates and aromatic and aliphatic natural products. Chem. 732. A 13 833 0 1907

834. Heterocyclic Chemistry. (3). An account of the physical and chemical properties of the fundamental heterocyclic compounds. Prerequisite: Chem. 732. A 13 834 0 1907

835. Biorganic Chemistry. (3). Topics covered include the chemistry of amino acids and peptides, enzyme structure and function, and inhibitor design. Prerequisites: Chem. 662, 663, and 732 or 662 and concurrent enrollment in 663 and 732. A 13 835 0 1907

841. Advanced Quantum Chemistry. (3). Advanced applications of quantum mechanics to atomic and molecular problems will be considered. Topics include determinant and non-determinant methods, time-dependent perturbation theory, relativistic considerations, tensor operators and molecular orbital calculations. Prerequisites: Chem. 705 and 741 or equivalents. A 13 841 0 1906

842. Chemical Kinetics. (3). A description of reaction systems, including the mathematical and experimental characteristics of simple and complex kinetic systems. The theories of chemical kinetics are discussed, as well as the kinetics of homogeneous reactions in the gas phase, the kinetic aspects of solution reactions, heterogeneous reactions and selected topics of current interest. Prerequisite: Chem. 546 or equivalent. A 13 842 0 1908

843. Statistical Thermodynamics. (3). Boltzmann, Fermi-Dirac and Bose-Einstein statistical mechanics will be developed with applications made to gases-state and solid-state chemical problems. The relationship of statistical mechanics and thermodynamics will be emphasized. Applications of statistical thermodynamics to polymers will be considered. Prerequisites: Chem. 546. A 13 843 0 1908

845. Chemical Thermodynamics. (3). A presentation of the basic three laws of thermodynamics in a classical framework designed to increase one's understanding of real physical systems. Course is designed to emphasize mechanism and its applications to chemical systems. Prerequisites: Chem. 545, 546 and Math 344 or equivalents. A 13 845 0 1908

846. Molecular Spectroscopy. (3). The theoretical basis for spectroscopy and spectroscopic determinations of molecular structure and bond energy. Theory of time-dependent perturbation theory, vibration and rotation of diatomic molecules, vibration and rotation of polyatomic molecules, electronic spectra of diatomic molecules, angular momentum, and electronic absorption and emission spectroscopy. Prerequisites: Chem. 741 or its equivalent and Chem. 705 or its equivalent. A 13 846 0 1908

847. Chemistry of Condensed Matter. (3). Topics will include thermodynamics, statistical mechanics, quantum chemistry and structural determinations of condensed phase matters. Emphasizes on metals, alloys, intermetallic compounds, composite materials and advanced materials will occur. Prerequisites: Chem. 741 and 745 or equivalents. A 13 847 0 1908

852. Techniques of Polymer Characterization. (3). A study of physical, spectroscopic and diffraction techniques to determine the size, structure and morphology of polymers. A 13 852 0 1909

861. Enzyme Mechanisms. (3). An introduction to the study of enzyme mechanisms. Modern approaches include steady-state, relaxation and chemical modification methods. Prerequisite: Chem. 662 or 663 or equivalent. A 13 861 0 0414

862. Biotechnology: Principles and Applications. (3). Course presents a broad, in-depth view of contemporary biotechnology, including its role in the production of premium products from biological raw materials. Biotechnology involvement for the production of products include energy, food, drink, flavors, chemicals, biopolymers, medicines and agricultural materials. Prerequisites: Biol. 203 and 204 and Chem. 662 or 663 or equivalents. A 13 862 0 0414

863. Analytical Biochemistry. (3). A review of modern analytical methods used in biochemistry and molecular biology including absorption and fluorescence spectroscopy, chromatography (affinity, gel-filtration, HPLC, ion-exchange, ion-pair), gel electrophoresis, radioactive tracer methods; cloning and sequencing and recombinant DNA procedures. Prerequisites: Biol. 203 and 204 and Chem. 662 or 663 or equivalents. A 13 863 0 0414

864. Physical Biochemistry II: Techniques. (3). An examination of the techniques that are used to study the structure, properties and reactions of biological molecules and macromolecules. Topics covered include vibrational and electronic molecular spectroscopy, scattering of radiation, nuclear and electron magnetic resonance, sedimentation and electric field techniques. Examples from the research literature will be used throughout to illustrate specific applications. A 13 864 0 0414

890. Research in Chemistry. (2-12). S/U grade only. Research for the student planning to receive a MS. Research is directed by a faculty member. Repeatable for credit. A 13 890 0 1905

890. Research in Chemistry. (2-16). S/U grade only. Research for the student planning to receive the PhD. Research is directed by a faculty member. Repeatable for credit. A 13 890 0 1905
Communication, Elliott
School of
Graduate Faculty
Associate Professor: Charles Pearson
Assistant Professors: Les Anderson, Richard Armstrong (graduate coordinator), Suzanne Frenz, James Hallmark, Robert Iltidge, Francis L. Kelly, Judith Pier, Keith Williamson (chairpersons)

Journalism
Although a graduate program is not currently available in journalism, the following courses may apply toward a master's degree, if approved in advance of enrollment by the student's advisor, the chairperson of the major department, and the dean of the Graduate School. These courses may be taken as part of the requirements in the mass communication division of the Master of Arts in communications program.

Courses for Graduate/Undergraduate Credit
500. Advanced Reporting I. (3) 1R; 4L. A course for seniors and juniors on the techniques of reporting and writing the more complex and important types of news stories. Covers police beat stories, sports and economic reporting and includes the study and practice of journalistic interviewing. Prerequisites: junior standing, Comm. 250 and either 300 or 322. A 32 500 1 0602

501. Investigative Reporting. (3) 1R; 4L. Study and application of the techniques of reporting and writing complex news stories involving the less obvious aspects of local and state government, education and various court proceedings. The lab is by arrangement to permit independent investigation into the news of government or public affairs that is not easily obtainable. Prerequisite: Comm. 500 for majors, departmental consent for graduate students. A 32 501 1 0602

502. Public Information Writing. (3) Basic journalistic skills of clear, precise writing are used to communicate effectively with various audiences. Students write press releases, speeches and other communications of complex documents. Techniques learned in this course are valuable in writing grant proposals, committee reports, pamphlets and journal articles. Prerequisite: junior standing or departmental consent. A 32 502 0 0602

510. Editing. (3) 1R; 4L. Selection, evaluation and preparation of copy and pictures for publication. Covers copy editing, rewriting, headline and caption writing and page layout. Prerequisites: junior standing and Comm. 230. A 32 510 1 0602

520. Seminar in Journalism. (3) Exploration of problems and controversies involving the press, the nature of news, sources of news and consumers of news. Prerequisite: departmental consent. A 32 520 9 0601

522. Advanced Broadcast News. (3) 3R; 3L. A course in advanced techniques of preparing news for radio and television presentation with emphasis on actual work in radio and television newsrooms. Lab work arranged with instructor. Prerequisite: Comm. 322. A 32 522 2 0603

525. Advertising Copywriting. (3) Detailed practice in writing various kinds of advertising copy, including print and broadcast forms. Emphasis is on terse, precise writing that evokes response sought by advertiser. Prerequisite: Comm. 324 or departmental consent. A 32 525 0 0604

550. Editorial Writing. (3) A study of editorial judgment, including practice in preparing editorial pages, design of features and a study of research materials available to editorial writers. Prerequisites: junior standing and Comm. 230. A 32 550 0 0602

570. Magazine Journalism. (3) A course on magazine production, including the choosing of subjects, approaches and operations: the shooting and editing of photographic stories; layout; the handling of production and management concerns. Prerequisite: Comm. 230 or departmental consent. A 32 570 1 0602

571. Magazine Writing. (3) A course on writing for magazines with emphasis on analyzing the market and pattern articles to fit the needs of specific magazines. Prerequisite: Comm. 230 or departmental consent. A 32 571 0 0602

661. Media Management. (3) A study of the business and management operations of the mass media with emphasis on giving journalism students an understanding of the relationship in mass media enterprises. Prerequisite: junior standing or departmental consent. A 32 661 1 0602

662. Practicum in Broadcast Journalism. (3) Reporting and writing about events in the University and community. Story assignment and preparation will occur under the instructor's guidance and will be broadcast over WSU Cable Channel 13. May be repeated for credit with advisor's consent. Prerequisite: Comm. 522 or instructor's consent. A 32 662 2 0603

652. Advertising and PR Campaigns. (3) Instruction and practice in constructing total advertising and public relations campaigns from market analysis and media selection to creation of the completed package. Prerequisite: Comm. 502, 525 or departmental consent. A 32 652 0 0604

690. Journalism Internship. (3-6) On-the-job experience and training in news, advertising, public relations or radio or television broadcasting. Prerequisite: departmental consent. A 32 690 2 0601

715. World Press. (3) A comparative study of press and broadcast systems around the world with emphasis on press freedoms and cross-cultural communication. Prerequisite: senior standing. A 32 715 0 0601

720Q. Dimensions of Mass Communications. (3) A detailed study of mass media, their role as social institutions, their control, support, content and audience and their effects. A 32 720Q 0 0601

745. Special Topics in Journalism. (1-3) A course in advanced study in various aspects of journalism and mass communication or related topics; communications theory, news, editorials, advertising and broadcasting. Repeatable for credit when topics differ sufficiently. Prerequisite: senior standing and departmental consent. A 32 745 3 0601

750A. Journalism Workshop. (1-3) A course designed to provide specialized instruction, using a variable format, in a Journalismally relevant subject. A 32 750 2 0609

Speech Communication
Master of Arts in Communications
The speech communication department participates extensively with other departments in the multidisciplinary Master of Arts in communications (MAC) program. The graduate coordinator in the department is also the program coordinator of the MAC program. (See requirements for the MAC program in General Programs, Communications section of the Graduate Bulletin.)

Master of Education
The following courses may also apply toward a Master of Education (MEd) degree with intensive study in secondary education and content specialization in speech and drama, offered by the Department of Instructional Services, College of Education. Prospective candidates are advised jointly by representatives of the Department of Instructional Services and the Department of Speech Communication.

Courses for Graduate/Undergraduate Credit
650. Instructional Communication. (3) The study and practice of communication concepts, processes, technologies and strategies related to formal instruction and learning outcomes. By means of structured experiences, students develop competencies in (1) determining instructional goals; (2) designing instructional strategies to achieve learning outcomes; (3) utilizing visual, vocal and verbal communication skills to implement instructional strategies; and (4) assessing the proficiency of communication skills used for instruction. Course flexibility in planning and emphasis provides for the utilization of instructional communication across disciplines and educational levels as well as in most professional and training settings. A 32 650 0 1599

660. Seminar in Communication. (2-3) Special seminars designed to treat current areas of interest or problems in: (a) speech commuricating, (b) public relations, (c) speech education. Repeatable for credit in different topics only. A 32 660 9 1599

661. Directing the Forensics Program. (3) A study of the methods and procedures in coaching and directing the high school and collegiate forensics programs (debate and individual events). The future teacher is made aware of the literature and professional organizations in the field. A 32 661 0 1599

665. Communicative Disorders. (3) Cross-listed as CDS 705. A survey of speech, language and hearing disorders; their identi-
Planning, developing and scheduling production techniques for educational and instructional broadcasting, with emphasis on television.

Speech Communication

Courses for Graduate/Undergraduate Credit

615. Language and Symbolic Processes. (3). Application of the theoretical framework of general semantics, linguistics and psycholinguistics to the analysis of oral language behavior. Analysis of language usage that leads to conflict, confusion and misdirection and development of methods of accuracy and precision in language usage. A 32 615 0 1506

630. Communication Law and Responsibility. (3). Both oral and written aspects of communication law and responsibility are emphasized. General functions of the law will be addressed including the right to communicate, broadcast law and the press. More specific topics include discussion of the first amendment rights, libel, privacy, copyright, advertising, obscenity, pornography and corporate communication concerns. Prerequisites: junior standing, communication and departmental consent. A 32 603 0 1501

635. Leadership Techniques for Women. (3). Cross-listed as WS 635. A course designed to provide the woman student experience in decision making and to improve skills in leadership through role playing and exercise in group dynamics. A 32 935 0 1506

702. Contemporary Theories of Oral Communication. (3). Conceptual models useful in the scientific study of speech and application from selected areas of psychology, sociology, anthropology and other related fields. A 32 702 0 1506

712. Advanced Interpersonal Communication. (3). An exploration of concepts and variables in interpersonal communication through the study of different theories as well as practical experiences in dyadic and small-group communication. Prerequisites: Comm. 111 or instructor's consent. A 32 712 0 1506

722. The Art of Conversation. (3). Conversation is the form of communication people engage in most naturally and frequently, but about which they seldom think seriously. This course is designed to help participants enhance their understanding and appreciation of, as well as their skill in, the art of conversation. Possible topics include the nature of conversation and how it relates to counterforce, communication, types of conversation, conversation in the media and conversation analysis. Prerequisites: Comm. 112 or junior standing or departmental consent. A 32 722 0 1506

737. Processes and Effects of Mass Communication. (3). An exploration into the effects of mass communication at the individual, social and cultural levels. A 32 737 0 1506

770. The Audience. (3). Application of research techniques to the measurement of audience behavior with particular emphasis on mass media audiences. Topics include focus group interviews, survey research and radio and television ratings. A 32 770 0 1506

Courses for Graduate Students Only

826. Investigation and Conference. (2-3). Directed research and experimentation for graduate students in some phase of (a) speech communication, (b) electronic media, or (c) speech education. Repeatable for credit up to a total of six hours. A 32 820 3 1509

830. Theories of Rhetoric: Classical. (3). Cross-listed as Eng. 830. An intensive study of the rhetorical theories of classical writers from 466 B.C.E. to the decline of Roman oratory. Principal emphasis is on Isocrates, Plato, Aristotle, Quintilian, Cicero and Longinus. A 32 830 0 1506

831. Theories of Rhetoric: Renaissance to Early Modern. (3). Cross-listed as Eng. 831. A study of the emerging patterns of rhetoric from the Second Sophistic to modern times. Analysis is made of the rhetorical systems associated with such figures as Augustine, Felimucius, Bulwer, Sheridan, Steele, Rush, John Quincy Adams, Blair, Campbell and Whately. A 32 831 0 1506

860. Seminars in Communication. (2-3). Special seminars designed to treat problems in (a) speech communication, (b) electronic media, or (c) speech education. Repeatable for credit. A 32 860 0 1509

865. Organizational Communication. (3). Cross-listed as Mgmt. 865. An analysis of communication models with emphasis on their applications to communication problems in organizations. Social psychological processes underlying persuasion in interpersonal relations and through the mass media are explored. Communication systems and techniques within formal organizations are analyzed critically. A 32 865 0 1506

Computer Science

Graduate Faculty

Professors: John Hutchinson (interim chairperson), Jan Zylik, Associate Professors: Mary Edgington, Marek Suchenek, James Tomayko, Zbigniew Wojtik

Assistant Professors: Zhi-Xi Fang, Donald Gotterbarn, Robert Neufeld, Mahesh Rathi, Rajeshkumar Sudhenderam

The Department of Computer Science offers two graduate degree programs, the Master of Computer Science (MCS) and the Master of Science (MS).

Master of Computer Science (MCS)

The MCS is a professionally oriented degree aimed at candidates with substantial background in the computing profession but not necessarily a degree in computer science. Through a wide range of electives outside the computer science department and a sizable grad-
ute project called Practicum, the MCS program seeks to emphasize the impact of computers in application areas.

### Master of Science (MS)

This program offers the more traditional admission requirements for candidates with a graduate degree in computer science. Through a combination of coherent electives and a research/thesis segment, the MS program seeks to provide a level of concentration suitable for advanced professional work and/or further graduate study in computer science.

#### Admission Requirements

Candidates seeking to pursue graduate study in computer science are expected to meet the usual requirements for admission to the Graduate School, including the completion of a baccalaureate degree with a minimum GPA of 2.750 in the last 60 hours of course work. All candidates must earn a satisfactory score on both the GRE aptitude test and the GRE subject test in computer science. English language competency must be established by earning a minimum score of 550 on the TOEFL (Test of English as a Foreign Language) Examination. Although neither the MCS nor the MS program requires that the prior bachelor's degree be in computer science, both programs require the following minimum background in the computer science area.

#### Background Course Work

The equivalent WSU course work is given in parentheses.

(a) Mathematics

1. Two semesters of calculus (Math. 242-243)
2. Introductory knowledge of linear algebra and discrete mathematics (statistics) (Math. 211 and Math. 331)

(b) Programming

- Introductory knowledge of computer programming including documentation practices (CS 2000) and the knowledge of a programming language, such as Pascal (CS 212), Ada (CS 215), or Modula 2

(c) Assembly Language Programming

- One semester of programming in an assembly language (CS 216)

(d) Basic Data Structures

- Introductory knowledge of computer algorithms and elementary data structures (CS 300)

(e) Computer Organization

- Introductory knowledge of the functions and interplay of the components of a digital computer (CS 340)

(f) Basic File Structures

- Introductory knowledge of computer file organization and processing techniques (CS 405)

Requirements (b)-(f) are prerequisites to graduate-level course work in computer science. They may be met by (1) completing the equivalent WSU courses, (2) equivalent course work from another accredited institution, (3) passing proficiency tests administered by the department or (4) satisfactory score on the GRE advanced test in computer science.

(g) Foundation Courses

- In addition to the prerequisite course work, all master's candidates must complete four foundation courses:
  - Programming Languages (CS 510)
  - Operating Systems and Architecture I (CS 540)
  - Data Structures (CS 560)
  - Software Engineering (CS 580)

For admission to candidacy, MCS candidates must have completed two of these courses and MS candidates must have completed all four.

If taken for graduate credit, MCS candidates may count two of these courses toward the graduate degree. MS candidates cannot apply any credit from these courses toward the graduate degree.

Full or part waiver is given to those students earning above-median scores in the GRE subject test.

#### Requirements by Category

- **I. Degree Category**

  All candidates seeking the MCS or MS degree must be admitted to this category. The extent of deficiency in the basic requirements determines the initial status, as follows:
  - **Full-standing**
    - Must meet all the requirements with no more than six hours of deficiency in the background course work, (a)-(g), with a minimum GPA of 3.000 in all CS-related courses
  - **Conditional**
    - Must meet all the requirements with no more than 12 hours of deficiency in the background course work, (a)-(g), and with a minimum GPA of 3.000 in all CS-related courses. The conditional status normally must be removed within one year of admission
  - **Probationary**
    - Candidates fulfilling the requirements for full-standing or conditional status except for the minimum GPA requirements may be recommended for admission in this status. Each applicant's case is evaluated on the basis of other merits it may have to justify admission

- **II. Nondegree A Category**

  Applicants not seeking a graduate degree may be admitted to this category provided they meet the same requirements as set forth for the Degree Category. The admission criteria for the two statuses in this category—full-standing and probationary—are the same as those of the corresponding statuses in the Degree Category, with the exception that the GRE aptitude and the GRE subject tests are not required for the category.

- **III. Nondegree B Category**

  Applicants with substantial deficiencies for the Degree or the Nondegree A categories may be recommended for admission to this category provided they meet the Graduate School requirements for admission and there is reasonable evidence of interest and ability to pursue graduate-level course work. Students in this category are restricted from taking courses numbered 800 or above.

#### Denial of Admission

Individuals with substantial deficiencies in their background and/or a low GPA in previous course work usually can remedy their deficiencies by enrolling in the College of Liberal Arts and Sciences and satisfactorily completing required background course work. The departmental advisor in computer science will help plan a course of study toward this end.

#### Degree Requirements—MCS

Candidates for the MCS degree must complete a minimum of 30-32 credit hours of graduate-level course work, as follows:

- **A. Foundation courses (0-6 credit hours)—All foundation courses (see (g) above) must be completed. Up to six hours from this group may be applied toward the MCS degree.
  - B. Computer theory (3 credit hours)—CS 720, Theoretical Foundation of Computer and Information Sciences.
  - C. Core courses (12 credit hours)—All candidates must complete at least four 800-level courses below 890.
  - D. Electives (6-12 credit hours)—A coherent block of graduate-level electives approved by the candidate's graduate adviser must be taken from
a related field such as engineering, business, mathematics or computer science itself. Computer science electives must be selected from courses numbered 600 or above.

E. Practicum (3 credit hours)—A required part of each MCS candidate’s program is a practicum (CS 891) involving a significant project which may be job-related. This project will be supervised by a member of the computer science graduate faculty and, if applicable, by the candidate’s supervisor on the job.

F. Final examination—Each MCS candidate must pass a final examination by an ad hoc faculty committee. This examination will involve (but not necessarily be limited to) the work done on the practicum.

Degree Requirements—MS

Candidates for the MS degree must complete a minimum of 30-32 credit hours of graduate-level work as follows:

A. Foundation courses (0 credit hours)—All foundation courses (see (g) above) are required. No credit hours from this group may be applied toward the MS degree.

B. Computer theory (3 credit hours)—CS 720, Theoretical Foundation of Computer and Information Sciences. No computer science graduate students will be admitted to 800-level courses until they have completed CS 720.

C. Core courses (12 credit hours)—All candidates must complete at least four 800-level computer science courses below 890.

D. Electives (9 credit hours)—Each MS candidate must complete a coherent block of technical electives from computer science or a closely-related field, as approved by the candidate’s graduate advisor. Computer science electives must be at the 600 level or above.

E. Research/Thesis (6-8 credit hours)—All MS candidates must complete six hours of concentrated study involving research in a specialized area of computer science. This research activity must be carried out under the supervision of a computer science graduate faculty member. At the discretion of the student’s research advisor, this segment of the program may be satisfied by eight credit hours of additional graduate-level course work, including two credit hours of CS 890 (Graduate Seminar), specifically approved for this purpose.

F. Final Examination—(1) Each MS candidate writing a thesis must pass a final examination by an ad hoc faculty committee. This examination will pertain to, but is not limited to, the substance of the research project. (2) MS candidates opting for additional course work in place of thesis must pass a final comprehensive written examination. This examination will cover a variety of topics which are normally addressed in the foundation, theory and core course work or in the background course work.

Examinations

See “Admission Requirements” above for entry examinations. See the category marked “Final Examinations” under each degree for exit examinations.

Courses for Graduate/Undergraduate Credit

501. Numerical Programming Techniques. (3). 2R; 2L. A study of the programming techniques used to solve functional equations, interpolate, integrate and solve systems of linear equations. The implications of finite precision floating point arithmetic are discussed. Techniques for initial and boundary value problems in ordinary differential equations are also covered. Selected algorithms are implemented on the computer. Prerequisites: Math 243 and CS 300 with grades of C or better. A 34 501 0 0704

510. Programming Languages. (3). Formal definition of programming languages, including syntax and semantics. Also examined are underlying properties of algorithmic languages, including scope of declarations, storage allocation, grouping of statements, binding time of constituents, subroutines and tasks. Prerequisite: CS 300 with a grade of C or better. A 34 510 0 0704

512. Systems Programming (3). 2R; 2L. A study of the design and implementation of program support facilities including assemblers, disassemblers, macroprocessors, link editors, loaders, language translators and debuggers. Practical experience in building systems software through programming laboratory exercises. Prerequisite: CS 405 or equivalent with a grade of C or better. A 34 512 1 0704

515. Compiler/Interpreter Techniques. (3). 2R; 2L. Review of programming language structures, translation and implementation, compilations of simple expressions, object-code generation, diagnostic error messages and optimization techniques. Prerequisite: CS 510. A 34 515 1 0704

527. The History of Computing. (3). Cross-listed as Hist. 527. This course is a study of the development of automatic computing machinery, the conceptual origins of control and programming. Topics discussed include mechanical computers, electronic digital computers and both mechanical and electronic computers, as well as the conceptual origins of computing. A 34 527 0 0701

540-541. Operating Systems and Architecture I and II. (3-3). Design of computer systems emphasizing software and computer architecture. Batch processing systems and their operating characteristics are reviewed, including addressing techniques, memory management, file design and systems accounting. Concurrent processes are discussed for both hardware and software, including process migration, I/O devices, controllers, interrupts, queuing, resource allocation, synchronization, processes, paging, recovery and protection in multithreaded programming systems. Advanced architectural and operating system implementations are considered. Prerequisites for 540: CS 300 and 340 with grades of C or better, for 541; CS 540. A 34 540 0 0706; A 34 541 0 0702

560. Data Structures. (3). The formal specification of data structures. Linear lists and arrays, orthogonal lists and multilinked structures are studied and representation via trees and graphs and searching and sorting techniques are included. Prerequisite: CS 405 and Math. 331G with a grade of C or better. A 34 565 0 0702

565. Data Base Design. (3). Principles of data base design and management for computer information systems. Several logical organization and file design techniques are examined. Programmed and query languages are used. An understanding of the logical design of data is also discussed. Prerequisite: CS 405. A 34 565 0 0702

574. Artificial Intelligence and Philosophy. (3). Cross-listed as Phil. 574. Transfer of ideas between artificial intelligence and philosophy concepts and techniques of artificial intelligence and their application in philosophy (search, heuristic, problem solving, knowledge representation, learning, discovering); sources of insight for artificial intelligence from different fields of philosophy. The analogy between minds and computers "cognition is a computation and the mind is a computer" is contrasted with "there are mental features that are not reducible to logic and computation." The relevance of Goden's theorem and other results in the domain of computability are discussed. Prerequisites: at least one 300-level course in computer science or philosophy. Math 243; five hours toward the major in any of the physical or biological sciences or departmental consent. A grade of C or better in the prerequisite is required. A 34 574 0 0701

580. Introduction to Software Engineering. (3). 2R; 2L. An introduction to the body of knowledge, presently available tools and current theories and conjectures regarding the process of program development. These topics are studied from several different viewpoints, ranging from the individual program statement to a large programming project. Prerequisites: CS 340 and 405 and three CS courses numbered 201 through 216. A 34 580 0 0704

611. Ada and Software Engineering. (3). 2R; 2L. An in-depth study of the programming language Ada with an emphasis on understanding the software engineering principles on which its design is based. Focus is on the novel features the language has to offer such as packages, generics, separate compilation and multithreading. Laboratory sessions provide hands-on programming experience and an introduction to the knowledge base of the language. Prerequisite: CS 510. A 34 611 1 0704

640. VLSI Systems Design. (3). 2R; 2L. Topics include an introduction to VLSI systems, MOS switch, integrated system fabrication, data and data control flow in systematic structures, implementing integrated system design, overview of an LSI computer system, architecture and design of system controllers,
and system timings and highly concurrent systems. Prerequisite: CS 340 or equivalent. A 34 640 1 0702

641. Small Systems Architecture. (3). A course on minicomputers and microcomputers and on how small computers are used to construct larger ones. Includes general concepts of computer architecture, particularly the differences between large computers and small computers and the special features of small computers, such as horizontal and vertical micro-programming, use of display terminals, cassettes, tapes and discs, networks of small computers; and trends in small computer use and design. Prerequisite: CS 340 or EE 594. A 34 640 1 0702

644. On-Line Computer Systems. (3). Characteristics of dedicated, business-oriented computer systems, as contrasted with general purpose, time-sharing systems. Study focuses on hardware requirements, design methodologies for application programs and data bases and characteristics of typical operating systems. Prerequisites: CS 340 and 406 and Math 331Q or equivalent. A 34 644 0 0702

675. Numerical Methods. (3). A continuation of CS 501 emphasizing the theoretical aspects of the algorithms treated. The course includes the solution of the eigenvalue problem, approximation of functions, numerical solution of partial differential equations. Prerequisites: CS 501 and Math 511. A 34 675 0 0704

684. Applications Systems Analysis. (3). A study of the methods for analyzing business systems problems and other large scale applications of the computer. The course includes business systems design, management science and human relations, systems analysis is the keystone in the education of the well-trained computer applications analyst. Topics include systems design, cost-benefit, data base, distributed processing, project management and documentation. Prerequisite: CS 405 or substantial programming experience with departmental consent. A 34 684 0 0705

697. Selected Topics. (1-3). Selected topics of current interest. Prerequisite: credit with departmental consent. Prerequisite: departmental consent. A 34 697 0 0701

720. Theoretical Foundations of Computer and Information Sciences. (3). This course provides an advanced level introduction to the theoretical bases of computer science and information science. Computer science theory includes the various models of finite state machines, both deterministic and nondeterministic, plus the concepts of decidability, computability and formal language theory. Information science include basic coding theory, cybernetics and models of the human brain and their relevance to machine intelligence. Prerequisite: CS 420 or graduate standing. A 34 720 1 0701

742. Computer Communication Networks. (3). An introduction to computer communication networks, including topics such as network goals, data transmission, network topologies, connectivity analysis, delay analysis, traffic analysis, congestion control, network protocols, network architectures, protocol hierarchies, design issues for the layers and the ISO reference model and protocol descriptions for present computer communication networks. Prerequisite: CS 340 or equivalent. A 34 742 1 0701

750. Workshop in Computer Science. (1-5). Short-term courses with special focus on introducing computer science concepts. Repeatable for credit. Prerequisite: departmental consent. A 34 750 2 0701

771. Artificial Intelligence. (3). Heuristic versus algorithmic methods, principles of heuristic approach and cognitive processes. Also covered are objectives and methods of artificial intelligence research and simulation of cognitive behavior. A survey of appropriate examples from various areas of artificial intelligence research is included. Prerequisite: CS 300. A 34 771 0 0704

773. Pattern Recognition. (3). An introduction to pattern recognition and image processing, including clustering algorithms, classifier validation and Bayesian design, Bayes decision theory, parameter estimation, discriminant functions, syntactic pattern recognition, image enhancement, image registration, FFT, texture and application in various fields. Prerequisites: CS 212 and 300 and Math 211 or 511, 243 and 331Q with grades of C or better. Slct. 770 recommended but not required. A 34 773 0 0701

776. Expert Systems. (3). Planning, construction and application of expert systems. Major aspects of expert systems are discussed and illustrated with various examples, including data representation, knowledge bases, inference engines, user interfaces, explanation facility, and dealing with uncertainty. Basics of a production system language are introduced. Prerequisite: CS 560 or instructor’s consent. A 34 776 0 0705

798. Individual Projects. (1-3). Allows beginning graduate students and mature undergraduate students to pursue individual projects of current interest in computer science. Graded S/U only. Prerequisite: departmental consent. A 34 798 3 0701

Courses for Graduate Students Only

805. Compiler Theory. (3). Theory of compilation of programming languages. Finite state machines and lexical analysis, context-free languages and recognizers. Theoretical aspects of compiler design. Prerequisite: CS 510 or 776. A 34 805 0 0704

810. Programming Languages: Advanced Concepts. (3). Advanced study of programming language structures and design. Data and control structures and their abstraction. Concurrent programming structures. Formal specifications of syntax and semantics, including models for establishing program correctness and program image design. Prerequisites: CS 510 and 720. A 34 810 0 0704

821. Analysis of Algorithms. (3). Introduction to the techniques used to analyze both algorithmic algorithms and classes of algorithms. Popular models, including Knuth’s Mix and random access models. Typical specific techniques, such as divide-and-conquer, recurrence equations and dynamic programming, are studied. Applications to set optimization, hashing, and graph algorithms, transitive closure and partitioning are analyzed. Prerequisites: CS 580 and either 420 or graduate standing. A 34 821 0 0702

841. Advanced Computer Architecture. (3). A study of advanced topics in computer architecture and high-level parallel processing, stack architectures, computer performance evaluation and reliability of computing systems. Architectures of typical systems belonging to the IBM, CDC and Burroughs families of computers are studied. Prerequisite: CS 540. A 34 841 0 0702

842. Operating Systems Concepts. (3). A comprehensive treatment of the design of executive software for systems ranging from simple multiprogramming to multiprocessor and network environments. Concepts of concurrent and parallel processes, related problems of intra- and inter-system communication, synchronization and integrity are addressed. General principles of resource management as related single-processor and multiprocessor systems are covered. Prerequisite: CS 540 or EE 694. A 34 842 0 0702

843. Distributed Computing Systems. (3). A study of hardware and software features of on-line multiple computer systems with an emphasis on network design and telecommunications. Concepts and techniques include distributed data bases, interprocess communication and centralization versus distribution. Study of the use of microcomputers in reprogramming large computing configurations is also included. Prerequisite: CS 540 or 641 or EE 694. A 34 843 0 0702

862. Principles of Data Base Design. (3). An advanced treatment of the principles of data base design. The following issues are addressed: logical design, including relational data bases; physical design, including new technological advances in implementing very large data bases; security and integrity of data, and distributed data base networks. Prerequisite: CS 560. A 34 862 0 0702

872. Machine Learning and Discovery. (3). An advanced study of computer programs that learn, improve performance and make discoveries. Topics include objectives, methods and research paradigms for such systems, a survey of existing methods and applications, including the most recent developments; theoretical principles for learning and discovery systems; computational theories of learning processes and cognitive models of human executive systems. Prerequisites: CS 344 and Stat. 571 or IE 354. A 34 872 0 0709

873. Computer Vision. (3). An introduction to computer vision, a rapidly growing subfield of artificial intelligence. The basic topic is the understanding or description of images by a computer or robot. Two-dimensional Fourier analysis, scene matching and understanding, texture, motion, shape recognition, relational image structure and human perception are considered. Prerequisites: CS 540 or instructor’s consent. A 34 873 0 0709

874. Simulation and Modeling. (3). An up-to-date treatment of the important aspects of a simulation study, including data generation and testing, construction and verification of simulation models, simulation with high-level programming languages, simulation of real systems, and an introduction to the general purpose simulation system GPSS. Prerequisites: CS 300 or AE 327, Math 344 and Stat. 571 or IE 354. A 34 874 0 0709

881. Software Specification and Design. (3). Course is a detailed presentation of the techniques and tools available for the specification of software requirements and their translation into a design. Topics include formal specification and design methods such as structured analysis, object-oriented design and JSD. Prerequisite: CS 580. A 34 881 0 0705
Assistant Professors: Jeannine M. Hathaway, W. Stephen Hathaway, Diane Quantic, Harold Veeser

Both the Master of Arts (MA) degree in English and the Master of Fine Arts (MFA) degree in creative writing are offered by the English department at The Wichita State University.

Master of Arts

The Master of Arts (MA) program in English is designed to equip graduate students with the knowledge and skills necessary for a successful career in teaching and scholarly research. The program requires at least 30 hours of graduate work, including at least 21 hours of classroom work and an additional 9 hours of supervised practical experience. The program includes coursework in literary criticism, theory, and research, as well as opportunities for students to develop their own writing skills. Courses in literature, linguistics, and critical theory are offered, and students may choose to specialize in one or two areas of interest. The program culminates in a comprehensive examination and a thesis or project.

Graduate Faculty

Distinguished Professor: Albert Goldbarth

Professors: James Lee Burke, Frank S. Kas- tor, James D. Meniman, Helen J. Thorn- comb

Associate Professors: Tina Bennett-Kastor, Sarah B. Daugherty (graduate coordinator), James P. Erickson, Anthony P. Gyt- hiel, Gerald B. Hosig, Philip H. Schreiber, Anita J. Skeen, Anthoni G. Sobin, Frances C. Stephens, Donald Wineke (director, creative writing), William F. Woods, Peter T. Zoller (chairperson)

English

Degree Requirements

English, 600 (Introduction to Graduate Study in English) must be included in the student's first semester of graduate study.

All work to be counted toward the MA degree in English must be in courses numbered above 700—with the exception of 660 (Theory and Practice in Composition)—and the following courses in linguistics and in literature: Eng. 515, 521, 522, 524, 526, 527, 610, 665, 667 and 672. English 515 may be taken to fulfill part of the major author requirement of the degree plans. Eng. 521, 522, 524, 526 and 527 may be taken to fulfill the requirement of foreign language proficiency. English 515 may be taken in lieu of foreign language proficiency in the degree plans. Candidates offering 500-, 600- or 700-level English courses for graduate credit must satisfy a higher differential of performance relative to undergraduate students in the same courses, with the nature of this differential set by professors.

Transfer of Credit

Students must complete 24 hours of credit at Wichita State within the English department. Students may transfer up to nine hours of credit on the Plan A program and up to six hours of credit on plans B and C. If the credit to be transferred comes from a program in which the student took a graduate degree, the time limits impose by the Graduate School on other transfer of credits will not apply.

Language Requirement

Master's degree candidates in English may fulfill the department's foreign language requirement in any one of the following ways:

1. By submitting a transcript showing the successful completion of at least 15 hours of undergraduate work in a single foreign language or the equivalent as defined by the English department

2. By completing the required 15 hours of undergraduate work in a single foreign language

3. By taking the Graduate School Foreign Language Test (GSFLT) in the elected foreign language, with a successful score determined by the English department

4. By submitting a transcript showing successful completion of six hours of linguistics

Master's candidates with a creative writing emphasis (Plan C) have the additional choice of successfully completing 15 semester hours of foreign literature in translation in courses approved by the department's graduate committee as a substitute for the language requirement.

Transfer of Credit

Students must complete 24 hours of credit at Wichita State within the English department. Students may transfer up to nine hours of credit on the Plan A program and up to six hours of credit on plans B and C. If the credit to be transferred comes from a program in which the student took a graduate degree, the time limits imposed by the Graduate School on other transfer of credits will not apply.

Language Requirement

Master's degree candidates in English may fulfill the department's foreign language requirement in any one of the following ways:

1. By submitting a transcript showing the successful completion of at least 15 hours of undergraduate work in a single foreign language or the equivalent as defined by the English department

2. By completing the required 15 hours of undergraduate work in a single foreign language

3. By taking the Graduate School Foreign Language Test (GSFLT) in the elected foreign language, with a successful score determined by the English department

4. By submitting a transcript showing successful completion of six hours of linguistics

Master's candidates with a creative writing emphasis (Plan C) have the additional choice of successfully completing 15 semester hours of foreign literature in translation in courses approved by the department's graduate committee as a substitute for the language requirement.

Degree Requirements

Eng. 600 (Introduction to Graduate Study in English) must be included in the student's first semester of graduate study.

All work to be counted toward the MA degree in English must be in courses numbered above 700—with the exception of 660 (Theory and Practice in Composition)—and the following courses in linguistics and in literature: Eng. 515, 521, 522, 524, 526, 527, 610, 665, 667 and 672. English 515 may be taken to fulfill part of the major author requirement of the degree plans. Eng. 521, 522, 524, 526 and 527 may be taken to fulfill the requirement of foreign language proficiency. English 515 may be taken in lieu of foreign language proficiency in the degree plans. Candidates offering 500-, 600- or 700-level English courses for graduate credit must satisfy a higher differential of performance relative to undergraduate students in the same courses, with the nature of this differential set by professors.
There are three programs leading to the degree. Plan A allows for a wider range of reading and is intended for teachers and others who are interested in extending their acquaintance with the whole body of English and American literature. Plan B, which requires the student to submit a master's essay, places more emphasis on research and independent study. It is especially recommended for those who intend to pursue the PhD degree, but teachers may also find it particularly suitable. Plan C emphasizes creative writing. Students are assumed to be following Plan A unless they declare another plan.

Plan A requires the completion of 11 courses for a total of 33 semester hours distributed as follows: Eng. 800 (Introduction to Graduate Study in English), two genre courses; two major author courses; one optional course; and five period courses in the Eng. 817-823 series and/or 521-527 series, with a minimum of two of these courses in American literature (Eng. 821, 822 or 823) and a minimum of one course in English literature before 1700 (Eng. 521 or 522). Upon petition by the student and approval by the graduate coordinator, Eng. 855 or 860 may be used to meet one genre, major author or period course requirement. Neither a separate master's essay nor a final comprehensive examination is required under Plan A, since equivalents for both of these are incorporated into the student's course work. Students must specify two seminars (Eng. 830-845 and/or 515) in which the term papers will be submitted as the equivalent of their master's essay. For this purpose, both essays must then be read and approved by a member of the department's graduate faculty in addition to the seminar professor. In like manner, the final examination in three period courses in English and American literature (Eng. 812-823 and/or 521-527), as selected by the student, also will be submitted to the review of a second member of the department's graduate faculty. Approval of a student's performance on the examination by both the course professor and the second reader constitutes the equivalent of a pass in that portion of a comprehensive examination.

Plan B requires nine courses plus a master's essay for a total of 30 semester hours distributed as follows: Eng. 800 (Introduction to Graduate Study in English), two genre courses; two major author courses; two period courses; two optional courses and Eng. 870 (Master's Essay). Plan B also requires a comprehensive examination on one period (or on linguistics), one genre and one author.

Plan C, a program with an emphasis on creative writing, requires the completion of 30 semester hours plus a comprehensive examination and a thesis, which must be original work in fiction, poetry or some other suitable literary form. A student's program, individually designed in consultation with the director of creative writing, must include nine semester hours in the graduate creative writing sequence. The final comprehensive examination will be based on a list of 40 to 50 book-length works that the student will be held accountable for; the list will be drawn up by the student in consultation with the director of creative writing and with the approval of the graduate coordinator. The number of sections of the Plan C comprehensive examination and its length will be equivalent to that given under Plan B, although the content will be based on the list of book-length works described above.

Admission to the Plan C program will be made upon the recommendation of the director of creative writing upon approval of a manuscript or other written evidence of ability to complete the degree. Such recommendation is subject to the final approval of the graduate coordinator.

Master of Fine Arts in Creative Writing

The degree program for the Master of Fine Arts (MFA) in creative writing is a terminal one in which emphasis is placed on the development of attitudes, skills and understanding in the practice of imaginative writing, along with related academic study. The WSU program is not conceived as a solely skill-oriented program. It places emphasis on the development of fine writers who are also able, as a result of additional course work in English, to demonstrate skills useful in teaching, editing and in pursuing other areas related to creative writing. The program allows for a core of activity in creative writing and for a thesis which will necessitate specialization in poetry, short fiction, the novel or work in some other appropriate form. Flexibility is provided in additional areas of required study to allow for a variety of possible emphases.

Since all MFA students participate in the English department's graduate program, they are required to take Eng. 800 (Introduction to Graduate Study). Teaching assistants are required to take the inservice training course unless specifically exempted.

Admission Requirements

Applicants must meet the general requirements of the Graduate School, with the additional requirement that they have a 3.00 grade point average in their previous work in English courses. The coordinator of graduate studies in English, in consultation with the director of creative writing, evaluates the applicant's transcript, prescribing additional undergraduate hours for those who have fewer than 24 credit hours in English and American literature and creative writing or in other work acceptable to the English department. Courses in freshman composition, grammar, teaching methods, journalism, speech, etc., may not be included in the required 24 hours. Exceptions may be made for outstanding students who have majored in related fields. Gifted writers may study in the program as special students with no specific degree intentions.

Applicants who earned their undergraduate degrees more than ten years before the time of application for admission must be interviewed by the graduate coordinator before admission to the degree program.

Applicants who have earned their degrees at institutions in countries in which English is not the native language must score at least 600 on the TOEFL (Test of English as a Foreign Language) Examination before being admitted to the MFA degree program in creative writing.

Degree Program Status

Applicants who seek to be admitted with full standing in the degree program must submit a sample of original writing in fiction (one short story or 20 pages), poetry (four to six poems) or other appropriate form to the coordinator of creative writing at the time they seek admission.

A student may be admitted into the MFA degree program in creative writing on a conditional basis pending approval of a manuscript demonstrating enough talent to suggest successful completion of the degree. Students may submit such a manuscript prior to beginning their course work or may wait until their first semester. In no case may the manuscript be submitted later than the first semester of course work. Students are notified of the dates by which manuscripts are to be submitted.

Counseling

All MFA candidates in English are advised by the coordinator of graduate studies in English, after consultation with the director of creative writing.

The graduate coordinator and the student will establish a Plan of Study that takes into account the student's interests and future vocational plans.

Transfer of Credit

A minimum of 24 of the total 48 semester hours required for the MFA degree in creative writing must be taken at Wichita State. No more than 24 hours of credit may be counted toward the degree from other graduate work taken at Wichita State. Otherwise, a student may have completed work in one area since graduation, but the credits may not be transferred. Students are advised to consult with the department's graduate coordinator before accepting credits from other institutions.
State or at another school. If the credit to be transferred comes from a program in which the student took a graduate degree, the time limits imposed by the Graduate School on other transfer of credit will not apply; 24 hours may be accepted toward the MFA.

Degree Requirements

Course Work. The 48 semester hours of course work are apportioned into two categories: required and elective courses.

A. Required Courses
1. A minimum of three hours per semester in Eng. 801 (Creative Writing: Fiction) or 805 (Creative Writing: Poetry) to a maximum of 12 semester hours.
2. Two hours in Eng. 800 (Introduction to Graduate Study in English) or the equivalent, required of all graduate students. Eng. 800 must be included in the student’s first semester of graduate study.
3. Three hours in Eng. 830 (Graduate Studies in Drama), 832 (Graduate Studies in Fiction), or 834 (Graduate Studies in Poetry). With departmental consent, each course may be repeated for a maximum of six hours credit.
4. Three hours in Eng. 860 (Graduate Seminar in Special Topics). With departmental consent, seminars may be repeated for a maximum of 12 hours credit.
5. Two to six hours in Eng. 875 (Master’s of Fine Arts Essay).
6. For purposes of enrichment, candidates emphasizing fiction and poetry must take at least three graduate hours of comparative literature, literature in translation, foreign language or an applied course in another art or discipline. The choice is contingent upon the student’s having the proper prerequisites.
7. Graduate teaching assistants are required to take the in-service training course, Eng. 780 (Advanced Theory and Practice in Composition), unless specifically exempted.

B. Elective Courses
All candidates must successfully complete a minimum of 15 elective hours in English courses numbered 500 and above, with the exception of English courses numbered 515 through 527, which may be taken for graduate credit. Candidates may take up to 26 elective hours in English courses numbered 600 and above and in the approved 500-level courses. Other exceptions may be made as approved by the director of creative writing and with the consent of the graduate coordinator. Candidates offering 500-, 600- or 700-level English courses for graduate credit must satisfy a higher differential of performance relative to undergraduate students in the same courses, with the nature of this differential performance set by professors. Elective courses may be taken to strengthen areas of weakness; to pursue historical, technical or theoretical studies that candidates find useful; or to enrich their degree program appropriately. As many as nine hours of Eng. 880 (Writer’s Tutorial: Fiction), Eng. 881 (Writer’s Tutorial: Poetry) and Eng. 885 (Directed Reading) may be offered in technical studies related to creative writing.

Comprehensive Examination. All candidates are required to pass a writing comprehensive examination in the final semester of their course work. This examination is based on a reading list of 40 books chosen by the candidate’s thesis director and the director of creative writing in consultation with the candidate. This thesis in creative writing consists of a body of original work of publishable quality. The manuscript must be of such length as is appropriate to published books in its genre and is to be written under the direction of a member of the program staff. Candidates must prepare their theses with short introductions.

Oral Examination. Once a candidate has submitted the thesis, a committee is appointed to meet with the candidate and examine the work in the manner specified by the Graduate School.

Composition

Courses for Graduate/Undergraduate Credit

510. Peer Tutoring. (2). Explores strategies for using peer tutoring and collaborative learning to teach composition. Special emphasis is given to diagnosis and evaluation of writing abilities, conducting individual and group conferences, the writing process, the basic elements of Standard Written English and theories of second language and dialect acquisition. Concurrent enrollment in Eng. 511 recommended. This course or equivalent preparation required of those intending to serve as tutors in the writing lab. Prerequisite: instructor’s consent. A 14 510 1 1507

511. Tutorial Practicum. (1). Required of all students intending to serve as tutors in the writing lab; this course provides supervised tutoring experience. Prerequisite: previous or concurrent enrollment in Eng. 510. A 14 511 2 1507

680. Theory and Practice in Composition. (3). Introduction to theories of rhetoric, research in composition and writing programs and practices in schools and colleges. Students investigate the process of writing, analyze varieties and samples of school writing and develop their own writing skills by writing, revising and discussing one another’s work. The course is designed especially for prospective and practicing teachers and may not be taken for credit by students with credit in Eng. 780. A 14 680 1 1501

685Q. Advanced Composition. (3). This course explores the relationships among contemporary issues, problem-solving and communication. The first objective of the course is to engage students in interdisci-
Linguistics

Courses for Graduate/Undergraduate Credit

665. History of the English Language. (3). Cross-listed as Ling. 665. Linguistic and cultural investigation of the development of English. Prerequisite: Eng. 315 or departmental consent. A 14 665 0 1502

667. English Syntax. (3). Cross-listed as Ling. 667 and Anthro 661. A study of the basic principles of English syntax including the major facts of English sentence structure and relating them to linguistic theory. Prerequisite: Eng. 315 or departmental consent. A 14 667 0 1502

672. Studies in Language Variety. (3). Cross-listed as Ling. 672. An introduction to the study of language variety with special attention to regional and social dialect in America and methods of studying it. May be repeated for credit when content varies. Prerequisite: Eng. 315 or Ling. 577 or departmental consent. A 14 672 0 1502

727. Teaching English as a Second Language. (2-3). Cross-listed as Ling. 727 and CDS 727. Current methods of teaching English to nonnative speakers are discussed. Students learn to analyze interlanguage patterns and to design appropriate teaching units for class and language laboratory use. D 12 727 0 1220

740. Graduate Studies in Linguistics. (3). Cross-listed as Ling. 740. Selected topics in theories of language and methods of linguistic study. With departmental consent the course is repeatable for credit. A 14 740C 0 1505

Literature

Courses for Graduate/Undergraduate Credit

503. Studies in American Literature I. (3). A course in the major fiction, poetry and nonfiction prose of the classic American period. Discussions may include such topics as the historical evolution of American letters, the development of the novel and romance, the transcendental period and the rise of western and regional literatures. A 14 503C 0 1502

504. Studies in American Literature II. (3). Fiction, poetry and drama from the late 19th century to after World War II. Readings may also include literary criticism and other types of nonfiction prose. Discussions cover themes, topics and literary forms inspired by the social and cultural movements and events of the first half of the 20th century. A 14 504C 0 1502

512. Studies in Fiction. (3). Subjects to be announced each semester. Repeatable for credit. A 14 512C 0 1502

513. Studies in Poetry. (3). Subjects to be announced each semester. Repeatable for credit. A 14 513C 0 1502

514. Studies in Drama. (3). Subjects to be announced each semester. Repeatable for credit. A 14 514C 0 1502

515. Studies in Shakespeare. (3). Subjects to be announced each semester. Repeatable for credit. English students who take Eng. 3400C. Prerequisites: junior standing and one college literature course or instructor's consent. A 14 515C 0 1502

521. Readings in Medieval Literature (3). English and Continental literature, 12th to 15th century. Chaucer, Malory, the Pearl Poet, medieval lyric, drama, epic, romance and saga. Prerequisites: junior standing and one college literature course or instructor's consent. A 14 521C 0 1502

522. Readings in Renaissance Literature. (3). Selected works of Shakespeare and other poets. Prerequisites: junior standing and one college literature course or instructor's consent. A 14 522C 0 1502

523. Readings in Restoration and 18th Century Literature. (3). Swift, Pope, Johnson and their contemporaries. Prerequisites: junior standing and one college literature course or instructor's consent. A 14 523C 0 1502

524. Readings in Romantic Literature. (3). Blake, Wordsworth, Coleridge, Byron, Shelley, Keats and their contemporaries. Prerequisites: junior standing and one college literature course or instructor's consent. A 14 524C 0 1502

526. Readings in Victorian Literature. (3). Writers from Carlyle to Yeats studied in relation to political events and the social, scientific and religious thought of the age. Prerequisites: junior standing and one college literature course or instructor's consent. A 14 526C 0 1502

532. Studies in Modern British Literature (to 1950). (3). English and Irish literature of the first half of the 20th century. Subjects to be announced each semester. Repeatable for credit. A 14 532C 0 1502

533. Studies in Contemporary Literature. (3). Modern literature, primarily British and American, since 1950. Subjects to be announced each semester. Repeatable for credit. A 14 533C 0 1502

535. Images of Women in Literature. (3). Cross-listed as WS 535. Women characters and their stereotyped, archetypal and fully developed human beings in the works of various authors. A 14 535C 0 1502

536. Writing by Women. (3). Cross-listed as WS 536Q. The work of major women writers, both British and American, in poetry and prose. A 14 536C 0 1502

580. Special Studies. (1-3). Topic selected and announced by the individual instructor. Repeatable for credit. Prerequisite: departmental consent. A 14 580C 0 1502

610. Old English. (3). Cross-listed as Ling. 610. A 14 610C 0 1502

750. Workshop. (2-4). Repeatable for credit. A 14 750C 2 1502

Courses for Graduate Students Only

800. Introduction to Graduate Study in English. (3). Especially designed to prepare students to perform effectively in graduate classes in English. The course is concerned with (1) basic bibliographical tools; (2) terminology, both technical and historical; (3) various approaches to the study of literature, such as experimental analysis of a literary work, the relationships of biography to literary study and the relevance of other disciplines, such as psychology, to literature; and (4) the writing of interpretive and research essays. Throughout the semester a balance between criticism and research is maintained. A 14 800C 0 1502

817. Graduate Readings in 20th Century British Literature. (3). Yeats, Joyce, Lawrence, Auden, Spender and their contemporaries. A 14 817C 9 1502

821. Graduate Readings in American Literature I. (3). From the beginnings to 1870 with emphasis on Emerson, Thoreau, Hawthorne, Melville, Whitman and Dickinson. A 14 821C 9 1502

822. Graduate Readings in American Literature II. (3). From 1870 to 1920 with emphasis on James, Twain, Crane, Dreiser, Robinson and Frost. A 14 822C 9 1502

825. Theories of Rhetoric: Classical. (3). Cross-listed as Comm. 825. An intensive study of the rhetorical theories of classical writers from 456 B.C. to the decline of Roman oratory. Prerequisite: English 102 or equivalent. A 14 825C 9 1502

826. Theories of Rhetoric: Renaissance to Early Modern. (3). Cross-listed as Comm. 826. A study of the emerging patterns of rhetoric from the Second Sophistic to modern times. Analysis is made of the rhetorical systems associated with such figures as Augustine, Fenelon, Bulwer, Sheridan, Steele, Rush, John Quincy Adams, Blair, Campbell and Whately. A 14 826C 9 1502

830. Graduate Studies in Drama. (3). Selected topics in the history and nature of dramatic literature. A 14 830C 9 1502

832. Graduate Studies in Fiction. (3). Selected topics in the development of the form and content of prose fiction. A 14 832C 9 1502

834. Graduate Studies in Poetry. (3). Selected topics in forms, techniques and history of poetry. A 14 834C 9 1502

840. Graduate Studies in Criticism. (3). Selected topics in the theory and practice for literary criticism. A 14 840C 9 1502

845. Graduate Studies in a Major Author. (3). Careful study of the works of major authors, with readings in secondary sources, reports, discussions and papers. Repeatable for credit with change of content. A 14 845C 9 1502

855. Directed Reading. (2-3). Designed for graduate students who want to pursue special research in areas not normally covered in course work. Repeatable for credit with departmental consent. Prerequisite: departmental consent. A 14 855C 3 1502

860. Graduate Seminar in Special Topics. (3). Intensive study of selected texts, writers or literary problems. Seminar discussions, reports and research projects. Repeatable for credit with departmental consent. A 14 860C 9 1502
The Department of Geology offers courses of study leading to the Master of Science (MS) degree.

**Admission Requirements**

Admission to the MS program in geology requires the completion of an undergraduate major in geology, normally including the achievement of the skills of geologic field mapping of igneous, metamorphic and sedimentary rocks, their petrology, and report writing on their geological evolution.

In general, students entering the program must have the same background required for a WSU Bachelor of Science degree, including science courses in chemistry, physics and biology, mathematics and statistics; language (English, speech and a modern foreign language), and computer science abilities.

Students with undergraduate majors in the sciences, mathematics or engineering are encouraged to apply because their training is appropriate for certain fields in modern geology. Most deficiencies can be removed by appropriate course work but prior consultation and evaluation are encouraged.

**Degree Requirements**

Although the department emphasizes field and laboratory skills of sedimentary geology, graduates may elect advanced courses and guided research to meet professional needs in a wide variety of geologic fields. Particular attention is directed to solving problems of mineral fuel and mineral resources depletion and to improving the environment. The practical aspects of geology are stressed and modern approaches of computer applications are employed in solving problems.

The student must be accepted by the Graduate School and by the Department of Geology; this assures all prerequisites have been fulfilled. In general, 30 credit hours are required. One to six of these may be thesis credit and at least 18 must be at the 700 and 800 level. The department encourages students to take courses relevant to their program outside geology.

**Tool Requirement**

Although the department does not have a tool requirement, students are encouraged to obtain proficiency in modern languages (especially French, German and/or Russian), particularly if continuing for a PhD. Also it is important to have a certain level of proficiency in statistics and computer programming (FORTRAN, BASIC and/or PASCAL are recommended.)

Examinations. The student is required to present the thesis proposal—Geol. 850—oral before the faculty to obtain approval before initiating work on the project. The proposal must be presented in enough detail to assure the faculty of the research promise of the topic and that the candidate can complete satisfactory work in the allotted time. Upon passing the oral examination, the written proposal is approved. After completing the thesis, the student must give a public oral defense. All graduate students are required to enroll in Geol. 701, a one-hour credit seminar, as an introduction to experimental skills in research.

**Courses for Graduate/Undergraduate Credit**

- **501. Raw Materials of Antiquity.** (3). 2R; 3L. Lab fee. Nature of rocks, minerals and metallic ores used in prehistory and ancient times. Also included are weathering, sedimentation and soil-forming processes; elements of stratigraphy; geologic history of the Pleistocene and Recent Epochs; relative and absolute age dating; mineralogy of clays and ceramics; and mining and metallurgical processes of antiquity. Prerequisite: Anthro. 501 or equivalent or instructor's consent. A 16 501 1 1914
- **511. Physical Stratigraphy.** (3). 2R; 3L. Lab fee. Description, classification, correlation and relation of stratigraphic rock units and the origin of primary structures of clastic sedimentary rocks. Laboratory emphasis is on binocular microscopic examination and physical properties of associated sediments and clastic sedimentary rocks. Field instruction in stratigraphic mapping methods is required. Prerequisites: Geol. 312, 320 and 540 or equivalent. A 16 511 1 1914
- **524. Petrography.** (3). 1R; 6L. Lab fee. Description, classification and analysis of plutonic and volcanic igneous rocks; granite and related metamorphic rocks; fossiliferous, clastic and chemical sedimentary rocks; and well cuttings with the petrographic microscope. Prerequisite: Geol. 520. A 16 524 1 1914
- **526. Sedimentary Geology.** (3). 2R; 3L. Lab fee. Origin, classification, primary structures and physicochemical processes controlling sediments in the sedimentary rocks, especially carbonates. An analysis of modern and ancient sedimentary depositional environments is included, as is a systematic petrographic study of sedimentary rocks section, insoluble residues and heavy-mineral analysis. Field trips may be required. Prerequisite: Geol. 324. A 16 526 1 1914
- **540. Field Mapping Methods.** (3). 9L. Lab fee. Field mapping methods with special reference to use of level, compass, barometer, alidade and airphoto. Field trips are required. Prerequisite: Geog. 201 or Geol. 111Q. A 16 540 1 1914
- **552. Physical Stratigraphy.** (3). 2R; 3L. Lab fee. Description, classification, correlation and relation of stratigraphic rock units and the origin of primary structures of clastic sedimentary rocks. Laboratory emphasis is on binocular microscopic examination and physical properties of associated sediments and clastic sedimentary rocks. Field instruction in stratigraphic mapping methods is required. Prerequisites: Geol. 312, 320 and 540 or equivalent. A 16 552 1 1914
- **559. Geologic Field Methods.** (3). 2R; 3L. Lab fee. Elements of stratigraphic geology and its relation to geology in three dimensions and time. Prerequisite: Math. 112 or 123 and Geol. 552 (or taken concurrently). A 16 559 1 1914
- **560. Geomorphology.** (3). 2R; 3L. Lab fee. Identification and interpretation of the genesis of landforms and a critical examination of processes producing the landforms, including elements of quantitative geomorphology. Field trips are required, at the option of the instructor. Prerequisite: Geol. 111Q. A 16 560 1 1914
- **562. Regional Geology of the United States.** (3). A detailed regional survey of the general geology, geomorphology, stratigraphy and structural geology and their interrelationship in the United States. Field trips are required at the option of the instructor. Prerequisite: Geol. 560 or instructor's consent. A 16 562 1 1914
- **564. Map and Air PHOTO Interpretation.** (3). 2R; 3L. Lab fee. Elements of map and aerial photography: interpretation and application of maps and photos in geology, geography, urban planning, land-use inventory and engineering works. Remote-sensing methods are introduced. Field trips are required. Prerequisite: Geol. 111Q, Geol. 201 or equivalent. A 16 564 1 1914
- **570. Biogeology.** (3). 2R; 3L. Lab fee. Systematic survey of major fossil biogeographical areas and an analysis of life and paleoecological interpretation of ancient environments and climates. Hands-on and binocular microscopic examination is made of major fossil biogeographical materials. Application of analyzed fossil data to the solution of problems in biogeochronology, paleoecology, palaeomagnetism and paleogeography is included. Examples are cited from fields of interest, with emphasis on carbonate and organic paleontology. Museum and field trips may be required. Prerequisite: Geol. 312 or 552. A 16 570 1 1918
- **574. Special Studies in Biogeology.** (3). 2R; 3L. Lab fee. A systematic study in selected areas of biogeoclimatology and paleoecology. Course content differs, upon demand, to pro

870. Master's Essay. (2-3). A 14 870 4 1502
875. MFA Essay. (3-6). A 14 875 4 1502
581. Numerical Geology. (3). 2R; 3L. Treatment of numerical data in geology, including the use of computer and statistical and elementary programming in FORTRAN. A study of geological data and computer techniques used to analyze them as well as case histories of applications are emphasized. Prerequisites: Geol. 1110. Stat. 370. CS 200Q and 201 or permission of instructor. A 16 581 1 1914

580. Field Studies in Geology. (2-6). 3L. Earth Science Instructional Methods. (3). 2R; 3L. Field studies in a selected area of geological significance. The course is given upon demand and may be repeated for credit when course locality and content differ. Where appropriate, travel, lodging and board costs are charged. A 16 630 2 1914

560. Field Geology. (6). Field investigation of sedimentary, igneous and metamorphic rock units and their structures. The application of mapping methods in solving geological problems is included. This course is held at an off-campus field camp for five weeks (including weekends). Preparation of geologic column sections, maps and an accompanying professionally written report are due on campus during the sixth week. Prerequisite: 12 credits of advanced geology, preferably including a field mapping methods course or instructor's consent. Offered jointly with Kansas State University. A 16 660 2 1914

560. Geohydrology. (3). 2R; 3L. Lab fee. The hydrologic cycle, physical and chemical properties of water; fluid flow through permeable media, exploration for and evaluation of groundwater; water quality and pollution; and water law. Prerequisites: Geol. 552 and Math 243 or instructor's consent. A 16 650 1 1914

577. Earth Science Instructional Methods. (3). Practice in teaching an introductory course in geological sciences. Developing and presenting appropriate teaching techniques and evaluating their effectiveness. May be taken more than once if content and objectives differ. Prerequisite: senior standing and permission of the department chairperson. A 16 657 0 1914


660. Economic Geology. (3). 2R; 3L. Lab fee. Occurrence of metallic and nonmetallic economic mineral deposits and the physicochemical principles governing their origin. Included are a laboratory examination of ores and industrial minerals and elements of mineral beneficiation. Field trips may be required. Prerequisite: Geol. 324. A 16 660 1 1914

682. Petroleum Geology. (3). 2R; 3L. Lab fee. The origin, migration and accumulation of oil and gas, as well as the distribution and significant features of modern fields, and energy alternatives and impacts. Field trips may be required. Prerequisite: Geol. 544. A 16 662 1 1914

682. Subsurface Geology. (3). 2R; 3L. Lab fee. All subsurface methods, including laboratory, logging, testing and treatment, valuation and mapping methods. Field trips are required at the option of the instructor. Prerequisites: Geol. 682 and Phys. 214Q or equivalent. A 16 682 1 1914

680. Special Studies in Geology, (1-3). Systematic study in selected areas of geology. Course content differs and is repeatable for credit. Laboratory work or field trips may be required at the option of instructor. Offered on demand. Prerequisite: instructor's consent. A 16 680 2 1914

698. Independent Study in Geology, (1-5). Independent study on special problems in the field of geology: (a) general, (b) mineralogy, (c) petrology, (d) structural, (e) paleontology, (f) economic geology, (g) sedimentation, (h) stratigraphy, (i) geophysics and (k) petroleum. Independent study in selected areas of geology with a written final report required. Prerequisite: consent of sponsoring faculty. A 16 698 3 1914

701. Seminar. (1). Current topics in geology. Reports on current student and faculty research. Required of all new degree-seeking graduate students. A 16 701 9 1914

720. Geochronology. (3). Geology. The chemistry of earth materials and the important geochronological processes controlling it, with emphasis on the earth through time. Prerequisites: Geol. 324 and Chem. 1120. A 16 720 0 1914

750. Workshop in Geology. (1-3). Short-term courses with special focus on geological problems. Prerequisites: graduate standing and instructor's consent. A 16 750 2 1914

Courses for Graduate Students Only

800. Research in Geology. (3). 5L. Lab fee. Research in special areas of geology: (a) general, (b) mineralogy, (c) petrology, (d) structural, (e) paleontology, (f) economic geology, (g) sedimentation, (h) stratigraphy, (i) geophysics and (k) petroleum. A written final report is required. Prerequisite: consent of sponsoring faculty. A 16 800 4 1914

808. History of Geology. (1-3). Selected events and personalities in geology that have led to our present understanding of geology's place in the scientific community. Prerequisite: permission of instructor. A 16 808 9 1914

810. Advanced Graduate Studies in Geology. (1-6). Systematic study in a selected topic of professional or applied geology. The course is given upon demand and may be repeated for credit when course content differs. Field trips may be required. Prerequisites: graduate standing, consent of instructor and two years of professional postgraduate practice in geology. A 16 810 9 1914

820. Geochronology. (3). 2R; 3L. Lab fee. Theory of age-dating techniques for geological and archeological materials. Stratigraphic chronology, radiometric, geologic, chemical and biological-rite processes; evolutionary processes; and phenomenological dating techniques. Prerequisite: graduate standing in geology or anthropology (by permission). A 16 820 1 1914

823. Igneous and Metamorphic Petrology. (3). 11F; 6L. Lab fee. Mineral paragenesis, bulk chemical compositions, physical-chemical relationships, textures, structures, origins and classification of igneous and metamorphic rocks. Thin-section studies to facilitate rock identifications and the determination of petrogenetic relationships. Field trips may be required. Prerequisite: Geol. 520. A 16 823 1 1914

826. Sedimentary Petrology. (3). 2R; 3L. Lab fee. Detailed study of sedimentary rocks and their origins. Determinations of mineral compositions, textures, structures, fabrics and classification of sediments. Thin-section techniques are facilitated by the use of thin sections, peels and petrographic analyses. Field trips may be required. Prerequisite: Geol. 526. A 16 826 1 1914

830. Field Studies in Geology, (2-6). Off­ campus, systematic field study in a selected area or region of geologic significance. The course is given upon demand and may be repeated for credit when course locality and content differ. Where appropriate, travel, lodging and board costs are charged. Prerequisite: instructor's consent for summer field geology (equivalent) and instructor's consent. A 16 830 2 1914

840. Geotectonics. (3). Physical and geologic principles of crustal deformation and tectonic interpretation. The relationship of interior earth processes to crustal deformation is studied with special reference to global tectonics. Field trips may be required. Prerequisite: instructor's consent. A 16 840 0 1914

952. Field Stratigraphy. (3). 2R; 3L. Lab fee. Advanced concepts and principles of stratigraphic analysis and interpretation with emphasis on original sources and current research investigations. Field problem and field trips are required. Prerequisite: Geol. 544 and 552 or instructor's consent. A 16 852 1 1914

870. Advanced Biogeology. (3). 2R; 3L. Lab fee. Field study of ancient plant/animal communities and environments with emphasis on community structure, biostratigraphy, synthesis of total raw data and problem solving. Field trips may be required. Prerequisite: a course in biogeology or equivalent. A 16 870 1 1918

880. Mineral Deposits. (3). 2R; 3L. Lab fee. An advanced treatment of the occurrence, classification and origin of metallic ore deposits, applied petrography of selected ore and host-rock minerals, and the analysis of opaque ore minerals and their textures. Field trips may be required. Prerequisite: Geol. 660. A 16 880 1 1914


Geography

Courses for Graduate/Undergraduate Credit

510. World Geography. (3). A general survey of world geography, including an analysis of the physical, political, economic, historical and human geography of the major world regions. A 16 510 0 2206

520. Geography of the United States and Canada. (3). Physical, political, economic, historical and human geography of the United States and Canada. A 16 520 0 2206

530. Geography of Latin America. (3). Physical, political, economic, historical and human geography of Latin America. A 16 530 0 2206

542. Geography of Europe. (3). Physical, political, economic, historical and human geography of Europe. A 16 542 0 2206

550. Geography of Africa. (3). Physical, political, economic, historical and human geography of Africa. A 16 550 0 2206
Admission Requirements

Admission to the MA program in history requires the completion of an undergraduate major in history, or the equivalent; a grade point average of 2.75 or better, including all undergraduate hours; and a 3.00 grade point average in history. Under unusual circumstances, applicants with less than a 3.00 average in history may be granted a conditional admission.

Degree Requirements

One of two plans may be followed for a graduate degree in history. Plan 1 is a thesis program and Plan 2 is a non-thesis program.

Plan 1, Thesis Program. In Plan 1 students must complete a minimum of 30 hours, including Hist. 725, which must be taken during the first year of enrollment. Thesis students must take 18 semester hours numbered 700 or above. Students following the American history emphasis must take the following:

- American history seminars (including ancient, medieval and modern European history) 6 hours
- Special topics in history 6 hours

Students must take 12 hours in history courses numbered 700 or above. The majority, but not all, of the remaining hours must be in American history courses for a total of 36 hours. Students also must satisfy the foreign language requirement and pass written examinations in three comprehensive fields. One of these fields must be in European history.

Students following the European history emphasis must take the following:

- European history seminars (including ancient, medieval and modern European history) 6 hours
- American history seminar 6 hours
- Special topics in history 6 hours

Students must take 12 hours in history courses numbered 700 or above. The majority, but not all, of the remaining hours must be in European history courses for a total of 36 hours. Students must satisfy the foreign language requirement and pass written examinations in three comprehensive fields. One of these fields must be in European history.

Comprehensive Fields

Fields of study included in the comprehensive examinations for the MA are:

- Ancient Greece and Rome
- Early and Late Middle Ages
- American Colonial and Revolutionary Period
- Modern Europe and United States to 1865
- Modern Europe and United States since 1865

Courses for Graduate/Undergraduate Credit

501. The American Colonies. (3). Colonization of the New World with emphasis on the British colonists and their development. A 18 501 0 2205

502. The American Revolution and the Early Republic. (3). Examination of selected phases of the revolution and the confederation. A 18 502 0 2205

503. The Age of Jefferson and Jackson. (3). Political, economic, and cultural development of the United States from the election of Thomas Jefferson to the end of the Mexican War with emphasis on the growth of American nationalism. A 18 503 0 2205

504. Civil War and Reconstruction. (3). A 18 504 0 2205
505. America's Gilded Age, 1877 to 1900. (3). Emphasis on roots of urban problems, from poverty, slum housing, and racial discrimination, to policy toward minority groups and evaluation of imperial expansion. A 18 505 0 2205

506. The United States: the 20th Century, 1900-1929. (3). The Progressive Era, World War I, the postwar period and the twenties. A 18 506 0 2205

507. The United States: the 20th Century, 1929-1945. (3). The Great Depression, the New Deal and World War II. A 18 507 0 2205

508. The United States: the 20th Century, Since 1945. (3). The history of the United States during the Truman through the Nixon administrations. A 18 508 0 2205

515. Economic History of the United States. (3). Cross-listed as Econ. 627. A 18 515 0 2205

517 & 518. Constitutional History of the United States. (3 & 3). 517: the evolution of the American constitutional system from English and colonial origins through the Civil War. A 18 517 0 2205 & A 18 518 0 2205

519. Social History of the U.S. to 1865. (3). Survey of American thought and society to the end of the Civil War. A 18 519 0 2205

521 & 522. Diplomatic History of the United States. (3 & 3). 521: from independence through World War I. 522: continues to present. A 18 521 0 2205 & A 18 522 0 2205

525. American Military History. (3). A history of the military in America, from the colonial period to the present. Emphasis on wars, war culture, and the political and military institutions and their impact on American social, economic and political traditions. A 18 525 0 2205

529. Indians of Kansas. (3). History of Indian occupation of the Kansas region from initial white contact to the present. Emphasis is given to the five major tribes of the 19th and 20th centuries, including how the tribes were forced to move from their lands. A 18 529 0 2205

530. The American Woman in History. (3). A survey of the role of women in American history from the colonial period to the present, with special emphasis on the status and changing role of women in American society. A 18 530 0 2205

533. The American City: from Village to Metropolis. (3). A study of urbanization and urban life from colonial times to the present—changing life-styles and thought patterns, urban architecture, ethnic assimilation, emergence of the suburbs, political and economic control, and the influence of new techniques in housing and transportation. A 18 533 0 2205

534. History of the Old South. (3). An examination of Southern civilization prior to the American Civil War, A 18 534 0 2205

5350. History of Kansas. (3). History of the Kansas region from Spanish exploration to the present, with principal emphasis on the period after 1854. A 18 535Q 0 2205

537. The Trans-Mississippi West. (3). Spanish, French and Anglo-American penetration and settlement west of the Mississippi River from the 16th century to about 1850. A 18 537 0 2205

539. Indian-White Relations in North America. (3). Indian life, culture and history from the early 16th century to the present with emphasis upon the impact of federal Indian policy since 1800. A 18 539 0 2205

540. Recent Indian Policy in the United States. (3). History of the American Indian since the General Allotment Act. Emphasis is given to the Indian Wars, Indian Office reviews of the 1930s, the politics of reform, the termination controversy, Native American protest and contemporary legal problems. A 18 540 0 2205

541. Modern France. (3). History of the major trends in French history from Napoleon to deGaulle with emphasis upon French attitudes toward military conflicts. A 18 541 0 2205

545Q. Neither War Nor Peace: The World Since 1945. (3). A 18 545Q 0 2205

553. History of Mexico. (3). Pre-Columbian Mesoamerica; the Spanish conquest and the colonial period, the independence movement; Juarez, the Reform and the French intervention; the Porfiriato; the Mexican Revolution; Mexico in recent years. A 18 553 0 2205

555Q & 560. Greek History. (3 & 3). 555: the Hellenic world from prehistoric times to the end of the Peloponnesian War. 560: the 4th century and the Hellenistic period. A 18 555Q 0 2205 & A 18 560 0 2205

558. The Ancient Near East. (3). A 18 558 0 2205

566 & 567. Medieval History. (3 & 3). 566: the history of Europe from the fall of the Roman Empire through the Crusades, 500 to 1200. 567: history of Europe, 1200 to 1500. A 18 566Q 0 2205 & A 18 567Q 0 2205

575Q. The Italian Renaissance. (3). Italian history from the 14th through the 16th centuries with emphasis on cultural achievements. A 18 575Q 0 2205

576. The Reformation. (3). Cross-listed as Rel. 475. The great religious changes in the 16th century in the political, social, and intellectual contexts. A 18 576 0 2205

581. Europe, 1815-1870. (3). A 18 581 0 2205

582. Europe, 1870-1914. (3). A 18 582 0 2205

583. Europe, 1914-1945. (3). A 18 583 0 2205

590. History of Russia. (3). Political and cultural history of Kievan, Muscovite and Imperial Russia. A 18 590 0 2205

591. History of the Soviet Union. (3). A survey of Soviet history from the Bolshevik Revolution to the present. A 18 591 0 2205

592. The Soviet Union Today. (3). An examination of contemporary life in the USSR; historical background, Marxist-Leninist ideology, industrial and agricultural economics, roles played by the national minorities and dissidents in Soviet society, the press, literature and art, health care and prospects for the country's future. A 18 592 0 2205

595. History of Eastern Europe. (3). The development of the Bulgarian, Czech, Magyar, Polish, Romanian and Yugoslav peoples. A 18 595 0 2205

612 & 613. European Diplomatic History. (3 & 3). 612: European international politics and diplomatic history from 1600 to the present; emphasis on the actions of the great powers and their statesmen. 613: Versailles settlement, totalitarianism, appeasement, World War II, the cold war and decolonization of Southeast Asia and the Middle East. A 18 612 0 2205 & A 18 613 0 2205

615. Hitler and the Third Reich. (3). The establishment and collapse of the Weimar Republic, the rise and fall of Hitler's Third Reich, the origins and development of the concentration camps, and the role of each in world affairs, 1914 to the present. A 18 615 0 2205

616. Germans and Jews. (3). The history of antisemitism in central Europe, 19th and 20th centuries. A 18 616 0 2205

617Q. The Holocaust. (3). The origins and development of the concentration camp system in Nazi Germany and its transition into a death camp system. A 18 617Q 0 2205

620. Media Courses in History. (2-3). Courses created or coordinated by the Department of History which are offered through various media, radio, television and newspaper. Areas of historical emphasis vary from course to course. Repeatable with instructor's approval; however, three hours maximum credit will apply towards MA degree in history. A 18 620 0 2205

629. A History of Tudor and Stuart England. (3). Examination of the fundamental political, social, economic, intellectual and religious developments in English history from 1485 to 1714. A 18 629 0 2205

685. History of Military Thought. (3). Historical review and appraisal of the military thought of such theorists as Machiavelli, Clausewitz, Mahan, Liddell Hart and Mao Tse Tung. A 18 685 0 2205

698. Historiography. (3). Review of the major schools of historical thought, philosophies of history and eminent historians from the ancient world to the present. This course is required of history majors. A 18 698 0 2205

701. Introduction to Public History. (3). This course will introduce students to the various areas of public history including historic preservation, museum studies, mediation, history museums, education and corporate history. Students will learn the philosophies, techniques and practices that comprise the field and how these areas interact with their academic training. Prerequisite: graduate standing or instructor's consent. A 18 701 0 2205

725. Advanced Historical Method. (3). Review of basic historical research methods, the general character of field bibliographies and recent changes in the discipline. Recommended for professional narrative development. Required of graduate degree students during their first year of enrollment. Prerequisite: departmental consent. A 18 725 0 2205

727. Readings in History. (3). Readings in ancient, medieval, modern and Eastern European and American field bibliographies. Techniques of professional narrative development. Required of all graduate degree students in history. Repeatable for credit. Prerequisite: departmental consent. A 18 727 3 2205

729. Seminar in American History. (3). Repeatable for credit. Prerequisite: departmental consent. A 18 729 3 2205

730. Seminar in American History. (3). Repeatable for credit. Prerequisite: departmental consent. A 18 730 3 2205
733. Seminar in European History. (3). Repeatable for credit. Prerequisite: departmental consent. A 18 733 9 2205

734. Seminar in European History. (3). Repeatable for credit. Prerequisite: departmental consent. A 18 734 9 2205

750. Workshop in History. (1-3). Repeatable for credit but does not satisfy requirements for history majors. A 18 750 2 2205

Courses for Graduate Students Only

801. Thesis Research. (2). A 18 801 4 2205

802. Thesis. (2). A 18 802 4 2205

803. Internship in Public History. (1-2). Public history students will have the opportunity to practice their skills in a summer- or semester-long, full-time internship. The type and level of responsibility will vary depending on the student's interests and work setting. The internship should be in an area related to the student's MA thesis. Prerequisites: Hist. 703 and consent of public history faculty. A 18 803 2 2205

810. Special Topics in History. (1-3). Open only to graduate students. Repeatable for credit upon consultation with graduate coordinator in history. A 18 810 3 2205

Linguistics

Graduate Faculty
Assistant Professor: Tina L. Bennett-Kastor

Although there is no graduate program in linguistics, the following courses are available for graduate credit.

Group A—Basic Linguistic Theory

Courses for Graduate/Undergraduate Credit


680. Linguistics. Comparative Linguistics. (3). Methods of establishing genetic relationships between languages and reconstructing proto-languages. The course includes a survey of the major language families of the world and typological comparisons of languages and the problem of language universal. Prerequisite: Ling. 315. A 10 680 0 1505

682. Linguistics. Structure of a Selected Non-Indo-European Language. (3). The language offered depends on student demand and availability of staff. The course may sometimes be conducted as a field methods course and is repeatable for credit when different languages are offered. Prerequisite: Ling. 315. A 10 682 0 1505

Group B—Linguistic Study of Specific Languages or Language Groups

Courses for Graduate/Undergraduate Credit

505. French. Advanced Phonetics and Diction. (2). Cross-listed as Fr. 505. A 10 505 0 1102

508. Spanish. Spanish Phonetics. (2). Cross-listed as Span. 505. A 10 505 0 1102


635. French and Spanish. Introduction to Romance Linguistics. (3). Cross-listed as Fr. 635 and Span. 635. A 10 635 0 1105


Group C—Areas of Contact Between Linguistics and Other Disciplines

Courses for Graduate/Undergraduate Credit

545. Psychology. Psycholinguistics. (3). Cross-listed as Psych. 532. A 10 545 0 2087

651. Anthropology. Language and Culture. (3). Cross-listed as Anthro. 651. A 10 651 0 2202

727. CDS. Teaching English as a Second Language. (2-3). Cross-listed as CDS 727 and Eng. 727. A 10 727 0 1220


Others

Courses for Graduate/Undergraduate Credit

590. Linguistics. Special Studies. (2-3). Topic selected and announced by individual instructor. Credit is assigned to Group A, B or C depending on content. Repeatable for credit when content varies. A 10 590 2 1505

595. Linguistics. Directed Readings. (2-3). Credit assigned to Group A, B or C depending on content. Repeatable for credit. A 10 595 3 1505

Mathematics and Statistics

Graduate Faculty

Professors: Dham V. Chopra, Alan R. Elcrat, Buma L. Friedman (chairperson), John J. Hutchinson, Victor Isakov, William A. Perel

Associate Professors: Andrew Acker, Prem N. Bajaj, Stephen W. Brady, Jeneva J. Brewer, Gary D. Crown, Kirk E. Lancaster, Kenneth G. Miller (graduate coordinator), Hari Mukerjee, Phillip E. Parker, William H. Richardson, Robert C. Wherrett

Assistant Professors: Douglas G. Burkholder, Thomas Delillo, Helen-Ming James Hung, Gonzalo Mendietta, Abdullah Tamraz, Han-Kun Wang

The Department of Mathematics and Statistics offers courses of study leading to the Master of Science (MS) degree in mathematics and the Doctor of Philosophy (PhD) degree in applied mathematics.

Master of Science

Admission Requirements

Students will be admitted to full graduate standing if they have the equivalent of an undergraduate major in mathematics, have a grade point average of at least 3.00 in mathematics courses and meet Graduate School admission requirements.

Degree Requirements

To complete the MS degree, students must earn 33 semester hours of graduate credit*, with a minimum of 24 semester hours in courses in mathematics or statistics offered by the department (exclusive of thesis) numbered 700 or above. The student must satisfy one of the following options:

Option 1: The 33 hours must include the completion of three two-semester sequences in mathematics and/or statistics numbered 700 and above.

Option 2: The 33 hours must include the completion of a two-semester sequence in statistics (711-712), a two-semester sequence in numerical analysis (751-851) and six hours to be chosen from among courses in ordinary differential equations (753), partial differential equations (755, 856), complex variables (745, 845), real variables (743, 843) and applied stochastic processes (Stat. 782). In addition, it is recommended that the student complete a directed project in mathematical modeling supervised by a departmental graduate faculty member who is approved by the chairperson and graduate coordinator. Students not choosing the thesis option should enroll in Math. 861 for three hours credit for their directed project.

Generally not more than six hours of approved course work may be transferred from another university. Students may take either a thesis or a nonthesis option. Students electing to write a thesis should enroll in Math. 685 for up to six hours credit. A student's program must be approved by the department. A comprehensive examination is required of all degree candidates.

* Probabilistic Models and Statistical Methods (671), Engineering Mathematics I and II (757-758) and mathematics or statistics courses numbered below 600 do not count toward the 33 hours needed for the MS in mathematics.

Doctor of Philosophy

The primary emphasis in the doctoral program in applied mathematics are partial differential equations, probability and statistics and computational mathematics.
Admission Requirements

Admission to the doctoral program will be through the Admissions and Exceptions Committee of the department. Students may enter the doctoral program in mathematics and statistics if they have the prerequisites for the initial required courses, have taken the advanced GRE and have a 3.00 overall grade point average and a 3.25 grade point average in mathematics and statistics.

Students may satisfy the prerequisites for the initial required if they have taken three hours of course work in each of the following: advanced calculus, modern algebra, linear algebra and numerical methods.

Degree Requirements

To complete the PhD program in applied mathematics the student must satisfy the course, language and residency requirements given below, pass the qualifying and preliminary examinations, and write a dissertation containing original research in applied mathematics.

Course Requirements: A total of at least 64 hours of graduate credit is required. Engineering Mathematics I and II and mathematics or statistics courses numbered below 700 may not be included. At least 36 hours must be in mathematics and statistics courses numbered above 800 (exclusive of PhD Dissertation). Courses used toward a master's degree may be included. A maximum of 36 hours may be transferred from another university at the discretion of the student's committee.

Real Analysis I and II and Numerical Analysis I and II are required of all students. In addition a student must complete all courses in one of the following two groups:


Language Requirements: The student must demonstrate proficiency either in two foreign languages or in one foreign language and one high level computer language. The foreign languages are French, German and Russian. The language proficiency will be demonstrated by achieving a score at the 50th percentile or higher on the ETS examination in that language.

Residency Requirement: The student must complete at least one academic year in residence as a full time student at WSU.

Qualifying Exam: The qualifying exam is a written exam administered near the middle of both the fall and spring semesters. The exam is a 6-hour exam given on two different days within a one week period. The topics covered by the exam are real analysis, numerical analysis, advanced calculus and linear algebra. The exam should be taken at the first opportunity after completing the sequences in Real Analysis and Numerical Analysis.

A student who does not pass on the first attempt may be permitted to take the exam a second time. A person who retakes the exam must retake the entire exam. The exam may be retaken only once.

PhD Committee: Upon the student passing the qualifying exam, the graduate coordinator, in consultation with the student, will recommend to the departmental PhD Advisory Committee a PhD Committee for the student. The student's PhD Committee will consist of the student's dissertation advisor as chair and four other members. At least one, but no more than two, of the committee members shall be from departments outside the Department of Mathematics and Statistics. Within one semester after passing the qualifying exam the student should submit a Plan of Study to the committee for approval. This committee will serve as examining committee for the student's dissertation. A student who fails the preliminary exam may retake the entire exam a second time. A person who retakes the exam must retake the entire exam a second time.

First Exam: The first exam covers specific topics relevant to the student's research area as determined by his or her PhD committee. The student will meet as soon as possible with the committee to set the topics to be covered. For full-time students, the exam should normally be taken about one year after passing the qualifying exam. Before the preliminary exam is taken all language requirements must be met. The preliminary exam should be passed before beginning work on the dissertation. A student who fails the preliminary exam may be permitted to retake the exam if the committee so determines.

Dissertation and Final Exam: Upon passing the preliminary exam the student becomes a candidate for the PhD degree. Soon thereafter the student must submit a written dissertation proposal to his or her committee for approval. While working on the dissertation the student should enroll for a total of at least 18 hours of PhD Dissertation. The student must be enrolled at the University during each semester after admission to candidacy until completion of the dissertation. After the dissertation is completed the student must present and defend it before the committee. This defense constitutes the final exam. The dissertation defense is open to the public.

Courses for Graduate/Undergraduate Credit

Credit in courses numbered below 600 is not applicable toward the MS degree in mathematics.

501. Elementary Mathematics. (5). A study of topics necessary to an understanding of the elementary school curriculum, such as set theory, real numbers and geometry. Not for major or minor credit. Prerequisites: elementary education major and Math. 111 or equivalent or departmental consent. A 20 501 0 1701

503-504. Topics in Modern Mathematics I and II. (3-3). An investigation of the newer topics in the secondary school curriculum. Repeatable for credit. Prerequisite: departmental consent. A 20 503 0 1701; A 20 504 0 1701

511. Linear Algebra. (3). An elementary study of linear algebra including a consideration of linear transformations and matrices over finite dimensional spaces. Prerequisite or corequisite: Math. 344. A 20 511 0 1701

513. Fundamental Concepts of Algebra. (3). Groups, rings and fields. Prerequisite: Math. 511 or departmental consent. A 20 513 0 1701

530. Applied Combinatorics. (3). Basic counting principles, occupancy problems, generating functions, recurrence relations, principles of inclusion and exclusion, the pigeonhole principle, Fibonacci sequences and elements of graph theory. Prerequisite: Math. 344 with a grade of C or better. A 20 530 0 1703

531. Introduction to the History of Mathematics. (3). A study of mathematics and mathematicians from antiquity to the present, emphasizing how various areas of mathematics evolved. Problems are solved using the methods of the historical period in which they arose. Requires mathematical skills. Prerequisites: Math. 511 and at least six additional hours of mathematics and/or statistics courses numbered 500 or above. A 20 531 0 1701

545. Integration Techniques and Applications. (3). A study of the basic integration techniques used in applied mathematics. Included are the standard integral calculus, treatment of line and surface integrals, Green's Theorem, Stokes' Theorem and The Divergence Theorem. In addition, the study of improper integrals with application to special functions is included. Prerequisite: Math. 344 with grade of C or better. A 20 545 0 1701

547. Advanced Calculus I. (3). A detailed study of limits, continuity and integration. Prerequisite: Math. 344 with a grade of C or better. A 20 547 0 1701

550. Ordinary Differential Equations. (3). An investigation of integrating factors, separation of variables, critical points, linear differential equations with constant coefficients, variation of parameters and existence and uniqueness for nonlinear systems. Prerequisite: Math. 344 with a grade of C or better. A 20 550 0 1703

551. Numerical Methods. (3). Approximating roots of equations, interpolation and approximation, numerical differentiation and integration and the numerical solution of first order ordinary differential equations. Some use of the computer. Prerequisites: Math. 344 with a grade of C or better and a knowledge of one or more high level computer languages.
743. Complex Analysis I. (3). An investigation of the theory of analytic functions. Prerequisite: Math. 545, 547, or departmental consent. A 20745 0 1701

750. Workshop. (1-3). Topics appropriate for mathematics workshops that are not in current mathematics courses. May be repeated to a total of six hours credit with departmental consent. Prerequisite: departmental consent. A 20750 2 1701

751. Numerical Analysis I. (3). Numerical linear algebra, interpolation of functions and data, approximation of functions, numerical integration and solutions of one algebraic equation. Prerequisite: Math. 511, 547 and 551 or departmental consent. A 20751 0 1703

753. Ordinary Differential Equations. (3). Existence, uniqueness, stability and other qualitative theories of ordinary differential equations. Prerequisite: Math. 545 or departmental consent. A 20753 0 1703

755. Partial Differential Equations I. (3). Existence and uniqueness theory for bounded and unbounded initial and boundary value problems of partial differential equations of all types. Prerequisite: Math. 547 or departmental consent. A 20755 0 1703

757-758. Engineering Mathematics I and II. (3-3). A survey of some of the mathematical techniques most often needed in engineering. Math 757 includes vector analysis, linear algebra, Legendre functions and Bessel functions. Math 758 includes Fourier series solution techniques for the partial differential equations of mathematical physics, and an introduction to complex analysis. No credit given toward a graduate degree in mathematics (formerly Math 651 and 752). Prerequisite: Math. 550. A 20757 0 1703; A 20758 0 1703

Courses for Graduate Students Only

801-802. Topics for Mathematics Teachers I and II. (3-3). Topics for secondary school mathematics teachers that relate to the secondary school mathematics curriculum. Topics are chosen according to the needs and interests of individual students. Repeatable for credit with departmental consent. Not applicable toward the MS in mathematics. A 20801 0 1701; A 20802 0 1701

813. Abstract Algebra II. (3). A continuation of Math. 713. Prerequisite: Math. 713 or equivalent. A 20813 0 1701

818. Selected Topics in Number Theory. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent. A 20818 0 1701

825. Topology II. (3). A continuation of Math. 725. Prerequisite: Math. 725 or equivalent. A 20825 0 1701

828. Topology. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent. A 20828 0 1701

829. Selected Topics in Foundations of Mathematics. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent. A 20829 0 1701

834. Real Analysis II. (3). A continuation of Math. 743. Prerequisite: Math. 743 or equivalent. A 20843 0 1701

845. Complex Analysis II. (3). A continuation of Math. 745. Prerequisite: Math. 745 or equivalent. A 20845 0 1701

849. Selected Topics in Analysis. (2-3). Repeatable with departmental consent. Prerequisite: departmental consent. A 20849 0 1701

851. Numerical Analysis II. (3). Numerical solution of ordinary and partial differential equations; unconstrained minimization of functions of n variables, and solutions of systems of equations. Prerequisite: Math. 751 or equivalent. A 20851 0 1703


857-858. Selected Topics in Engineering Mathematics I and II. (3-3). Advanced topics in mathematics of interest to engineering students, including such topics as tensor analysis, calculus of variations and partial differential equations. Not applicable toward the MS in mathematics. A 20857 0 1703; A 20858 0 1703

859. Selected Topics in Applied Mathematics. (2-3). Repeatable with departmental consent. A 20859 0 1703

881. Individual Reading. (1-5). Prerequisite: departmental consent. Repeatable up to a maximum of six hours credit with departmental consent. A 20881 3 1701

885. Thesis. (1-6). May be repeated to a maximum of six hours credit. Prerequisite: departmental consent. A 20885 4 1701

941-942. Applied Functional Analysis I and II. (3-3). An introduction to functional analysis and its applications. Prerequisites: Math. 843 and (Math. 758 or Math. 750). A 20941 0 1703; A 20942 0 1703

947-948. Mathematical Theory of Fluid Dynamics I and II (3-3). Mechanics of fluid flow, momentum and energy principles, Navier-Stokes and Euler equations, potential flows, vortex dynamics, stability analysis and numerical methods applied to fluid dynamics. Prerequisite: Math. 745. A 20947 0 1703; A 20948 0 1703


952. Advanced Topics in Numerical Analysis. (3). Advanced topics of current research interest in numerical analysis. Topics will be chosen at the discretion of the instructor. Possible areas of concentration are numerical methods in ordinary differential equations, partial differential equations and partial differential equations and partial differential equations. Prerequisites: Math. 751, 851 and instructor's consent. A 20952 0 1703

958 & 959. Selected Advanced Topics in Applied Mathematics. (3-3). Topics of current research interest in applied mathematics.
Repeatably for credit with departmental consent. Prerequisite: instructor's consent. A 20 958 0 1703 & A 20 959 0 1703

981. Advanced Independent Study in Applied Mathematics. (1-3). Arranged individual directed study in an area of applied mathematics. Repeatable to a maximum of 6 hours. Prerequisite: must have passed the PhD qualifying exam and instructor's consent. A 20 981 0 1703

985. PhD Dissertation. (1-9). Repeatable to a maximum of 24 hours. Prerequisite: must have passed the PhD preliminary exam. A 20 985 0 1703

Statistics

Courses for Graduate/Undergraduate Credit

Credit in courses numbered below 600 is not applicable toward the MS degree in mathematics.

570. Special Topics in Statistics. (3). Topics of interest not otherwise available. Prerequisite: departmental consent. A 20 570 1 1702

571-572. Statistical Methods I and II. (3-3). Probability models, points and interval estimation, significance testing, correlation and regression analysis, introduction to nonparametric statistical techniques, least squares, analysis of variance and topics in design of experiments. Prerequisite: Math. 144 or 243 or departmental consent. A 20 571 1 1702, A 20 572 1 1702

574. Elementary Survey Sampling. (3). A brief review of basic statistical concepts and simple random, stratified, cluster and systematic sampling; selection of sample size, ratio and estimation costs. Prerequisite: any elementary course in statistics, such as Math. 370, Soc. 501 or Psych. 401. A 20 574 1 1702


579. Advanced Independent Study in Statistics. (1-5). Arranged individual directed study in an area of applied statistics. Repeatable for credit with departmental consent. Prerequisite: instructor's consent. A 20 579 0 1703

591 & 972. Selected Advanced Topics in Probability and Statistics. (3-3). Topics of current research interest in probability and statistics. Repeatably for credit with departmental consent. Prerequisite: Math 545 or Math 547 with a grade of C or better. A 20 971 0 1702 & A 20 972 0 1702

973. Advanced Independent Study in Probability and Statistics. (1-3). Arranged individual directed study in an area of probability or statistics. Repeatable to a maximum of 6 hours. Prerequisite: must have passed the PhD qualifying exam and instructor's consent. A 20 973 0 1702

986. PhD Dissertation. (1-9). Repeatable to a maximum of 24 hours. Prerequisite: must have passed the PhD preliminary exam. A 20 986 0 1702

Minority Studies

Graduate Faculty

Associate Professor: John C. Gaston
Assistant Professor: Patricia Washington (chairperson)

Although a graduate program is not currently available in minority studies, the Department of Minority Studies participates extensively with other departments in the multidisciplinary Master of Arts in communications (MA) program. See requirements for the MA program in the Communications section of the Graduate Bulletin.

Courses for Graduate/Undergraduate Credit

512. Issues in Minority Aging. (3). Cross-listed as Ger. 512. Addresses the needs and interests of students who are interested in (1) providing services to the minority elderly; (2) exploring the "issues" of concern to minority elderly; (3) becoming familiar with the rights of minority Americans; (4) learning the legal procedures for resolving many of the specific problems of the minority elderly; and (5) offering tried and tested solutions to the problems encountered by minority elderly. Prerequisites: Min. Stud. 100G, Ger. 100, Soc. 111 or instructor's consent. P 15 512 0 4999

540. Advanced Cross-Cultural Communications. (3). An advanced study on topics in human relations. Prerequisite: Min. Stud. 380 or concurrent enrollment. A 30 540 0 4999

580. Individual Projects. (3). This course allows the student to conduct independent research related to a specific minority group. Prerequisite: 50 hours of Wichita State credit or departmental consent. Repeatable for a total of six hours. A 30 580 3 2399

725. Concepts of Cross-Cultural Communications. (3). A critical survey of the concepts of cross-cultural communications. An in-depth examination of the many factors needed to evaluate different ethnic groups, language, and behavior. This course provides a conceptual understanding of significant implications and necessary modifications of communications to, between and among diverse ethnic groups in our society. A 30 725 2 4999

750. Workshop. (1-4). Workshops are focused on the nature and scope of minority studies. Emphasis is given to the unique nature of the experiences of minority groups in this country. A 30 750 2 4999
Modern and Classical Languages and Literatures

Graduate Faculty

Professors: Pedro Bravo-Elizondo, Alan Cray, Lynn W. Winget

Associate Professor: Ginette Adamson

Assistant Professors: Carl Adamson, Wilson Baldridge, Patrick E. Kohoe, John Koppenhever, E. Miguel Munez

French

Although a complete graduate program is not currently available in French, the following courses may apply toward a master's degree if approved in advance of enrollment by the student's advisor, the chairperson of the Department of Modern and Classical Languages and Literatures and the dean of the Graduate School.

Courses for Graduate/Undergraduate Credit

Upper-division courses are given on a rotating basis. Fr. 300 is a prerequisite for all upper-division literature and civilization courses, unless otherwise indicated. All literature courses, including Fr. 223 and 300, may fulfill the general education literature requirement.

515. Major Topics. (1-4). Special studies in (a) language; (b) literature; (c) commercial French; (d) the language laboratory; (e) music; (f) composition; (g) problems in teaching French; (h) civilization; (i) translation; (k) conversation and (m) phonetics. Repeatable for credit. Prerequisite: departmental consent. A 26 515 0 1102

525. Advanced Conversation. (3). A course designed to increase fluency in speaking French. Assignments include oral reports, dialogues and work in the language laboratory. Prerequisite: Fr. 325 or equivalent. A 26 525 0 1102

526. Advanced Composition and Grammar. (3). Emphasis on theme writing, original compositions and detailed study of modern French grammar. Prerequisite: Fr. 220 or departmental consent. A 26 526 0 1102

540Q. French Literature in English Translation. (3). Topic varies. May be used to satisfy the general education literature requirement and may count toward a French major or minor if readings and papers are done in French. A 26 540Q 0 0312

541Q. French Literature of Africa and the Caribbean in English Translation. (3). A study of the concept of Negritude through the works of major contemporary African and Caribbean writers. No knowledge of a foreign language is necessary. This course may count toward a French major or minor if readings and papers are done in French. A 26 541Q 0 0312

551. French Civilization: The Middle Ages to the Restoration. (3). Emphasizes key aspects of the civilization of France as seen in its art, architecture, political structure and history. Special attention is paid to the development of intellectual traditions. The course is interdisciplinary in nature and is designed to complement studies in French language and literature. Includes slide demonstrations, guest speakers on special topics and films. Most classes and required readings are in French. Prerequisite/corequisite: Fr. 300. A 26 551 0 1103

552. Contemporary French Civilization. (3). Emphasizes the major events, themes, ideas, trends and movements in French civilization since the Revolution. The course is interdisciplinary in nature and is designed to complement French language and literature courses. Classwork and readings are in French. Prerequisite/corequisite: Fr. 300. A 26 552 0 1105

623. Seminar in French. (3). Seminar in literature, language or civilization. Two literature courses in French numbered above 500. Repeatable for credit. A 26 623 9 1102

630. Medieval and Renaissance French Literature. (3). Prerequisite: Fr. 300. A 26 630 0 1102

631. 17th Century French Literature. (3). Prerequisite: Fr. 300. A 26 631 0 1102

632. 18th Century French Literature. (3). Prerequisite: Fr. 300. A 26 632 0 1102

633. 19th Century French Literature. (3). Prerequisite: Fr. 300. A 26 633 0 1102

634. Contemporary French Literature. (3). Prerequisite: Fr. 300. A 26 634 0 1102

635. Introduction to Romance Language Linguistics. Cross-listed as Span. 635 and Ling. 635. An introduction to the historical, phonological and morphological characteristics of the Romance languages with particular emphasis on French and Spanish. Prerequisite: departmental consent. A 26 635 0 1102

750. Workshop in French. (2-4). Repeatable for credit. A 26 750 2 1104

815. Special Studies in French. (3). Prerequisites: departmental consent. Repeatable for credit. A 26 815 0 1102

Latin

Although a complete graduate program is not currently available in Latin, the following courses may apply toward a master's degree.

Courses for Graduate/Undergraduate Credit

515. Major Topics. (1-4). Special studies in Latin language, literature and civilization. Repeatable for credit. Prerequisite: departmental consent. A 26 515 0 1104

Italian

Although a complete graduate program is not currently available in Italian, the following courses may apply toward a master's degree.

Courses for Graduate/Undergraduate Credit

515. Major Topics. (2-4). Special studies in Italian language, literature and civilization. Repeatable for credit. Prerequisite: departmental consent. A 26 515 0 1104

German

Although a complete graduate program is not available currently in German, the following courses may apply toward a master's degree, if approved in advance of enrollment by the student's advisor, the chairperson of the German department and the dean of the Graduate School.

Courses for Graduate/Undergraduate Credit

524. Advanced Conversation and Composition. (3). Prerequisites: Ger. 324 or instructor's consent. A 17 524 0 1103

541. German Literature in Translation. (3). Consideration of the works of one major author, literary movement, trend or specific genre. Prerequisite: departmental consent. Repeatable once for credit. Prerequisite: upper-division standing. A 17 6410 0312

550. Directed Study. (1-3). Enrollment in any of the areas listed takes place only upon consultation with the department and agreement with the instructor concerned: (a) introduction to the study of German literature; (b) survey I: from the medieval period through the Age of Goethe; (c) survey II: 19th century to 1945; (d) contemporary literature: the literature of both Germanies since 1945; (e) special topics in literature, repeatable once for credit; (f) special topics in language, repeatable once for credit. Prerequisite: Ger. 344Q or instructor's consent. A 17 650 0 1103

750. Workshop in German. (2-4). Repeatable once for credit. A 17 750 2 1103

Greek (Ancient Classical)

Although a complete graduate program is not available currently in Greek, the following courses may apply toward a master's degree.

Courses for Graduate/Undergraduate Credit

515. Special Studies. (1-4). Topic announced by instructor. Repeatable for credit. Prerequisite: Greek 224 or instructor's consent. A 26 515 0 1110

531. Advanced Greek. (3). Sophocles and Euripides. Prerequisite: Greek 224. A 26 531 0 1110

532. Advanced Greek. (3). Thucydides. Prerequisite: Greek 531. A 26 532 0 1110

The following abbreviations are used in the course description: L stands for lecture and T for laboratory. For example, 4R 2L means four hours of lecture and two hours of lab.
the poetry of Ovid, Propertius and Tibullus.  A 26 544 0 1109

545. The Roman Novel. (3). Reading of the Satyricon of Petronius and the Golden Ass of Apuleius. The portions that are not read in Latin are read in English. Consideration is given to the development of the novel from its Greek beginnings up to the time of Apuleius and beyond. A 26 545 0 1109

546. Advanced Latin. (3). Directed reading of Latin. Reading may be combined with Latin prose composition at the option of the students. Repeatable for credit when content varies. A 26 546 0 1109

561. Roman Historians. (3). A study of the development of Roman historiography. Readings from Sallust, Caesar, Livy and Tacitus. A 26 651 0 1109

562. Cicero. (3). The orations, letters and essays of Cicero. The study concentrates on Cicero as the master of Latin prose and as one of the most important political figures of the fall of the Roman Republic. A 26 652 0 1109

565. Lucrètius and Epicureanism. (3). Reading of Lucrètius' De Rerum Natura and study of Epicureanism, the atomic theory and Democritan materialism. Consideration is given to the place of Lucrètius in Latin poetry. A 26 653 0 1109

750. Workshop in Latin. (2-4). Repeatable for credit. A 26 750 2 1109

Spanish

Master of Arts and Areas of Specialization

The Department of Modern and Classical Languages and Literatures offers courses of study leading to the Master of Arts (MA) degree in Spanish. This degree program allows for specialization in Spanish language and literature or in Spanish-American literature.

Admission Requirements

Admission to the program requires the completion of 24 hours of undergraduate Spanish, eight hours of which have been on the junior-senior level.

Degree Requirements

The MA degree in Spanish requires the completion of 32 semester hours beyond the BA degree, including at least two seminars—Span. 623, 831 or 832—that require research papers. Of these hours, 12 must be in courses numbered 800 or above. Each program must include 23 hours of Spanish, including Span. 526, 531, 532 and 621 if they or their equivalents have not been taken as undergraduate courses, and nine hours in related fields. A candidate for a degree must pass Span. 526 or an equivalent course with a grade of B or better at either the undergraduate or graduate level.

Related fields typically include another foreign language; art; English, American and foreign literatures; Latin American history; or geography. All related field courses must be approved by the chairperson of the Department of Modern and Classical Languages and Literatures and the graduate coordinator.

Special recommendation is strongly made that all MA candidates in Spanish earn a minimum of four hours of transferable credit in a university located in a Spanish-speaking country.

Examinations

Before the MA degree in Spanish is granted, all candidates must pass written and oral comprehensive examinations over reading lists in three areas of specialization of their choice and prove by written examination a reading knowledge of a second foreign language.

Courses for Graduate/Undergraduate Credit

505. Spanish Phonetics. (2). Cross-listed as Ling. 505. Prerequisite: any 200-level course or departmental consent. A 26 505 0 1105

515. Major Topics. (1-4). Special studies in (a) language, (b) literary reports, (c) commercial Spanish, (d) the language laboratory, (e) music, (f) composition, (g) problems in teaching Spanish, (h) advanced conversation. Repeatable for credit. Prerequisite: departmental consent. A 26 515 0 1105

525. Spanish Conversation III. (2). Prerequisite: Span. 325 or departmental consent. A 26 525 0 1105

526. Advanced Grammar and Composition. (3). Prerequisite: Span. 220 or departmental consent. A 26 526 0 1105

531. Survey of Spanish Literature. (3). Main currents of Spanish literature from 1700 to the present. Prerequisite: Span. 300 or departmental consent. A 26 531 0 1105

532. Survey of Spanish Literature. (3). Spanish literature from the beginning to 1700. Prerequisite: Span. 300 or departmental consent. A 26 532 0 1105

534. Contemporary Spanish Theater. (3). Prerequisite: Span. 300 or departmental consent. A 26 534 0 1105

536. Contemporary Spanish Novel. (3). Prerequisite: Span. 300 or departmental consent. A 26 536 0 1105

540Q. Contemporary Spanish Literature in English Translation. (3). Course content and may vary from semester to semester, including Spanish and/or Latin American literature. No knowledge of a foreign language is necessary. This course may count towards a Spanish major or minor with departmental consent. Repeatable for credit. Prerequisite: departmental consent when given toward a Spanish major or minor. A 26 5400 0 1105

552. Business Spanish. (3). This course provides students the opportunity to learn and practice commercial correspondence, business vocabulary, translation and interpretation of business texts. Prerequisite: Span. 526. A 26 552 0 1105

557. Literary and Technical Translating. (3). Extensive translation of literary works and technical and legal documents from Spanish to English and English to Spanish.
805. Directed Readings. (1-4). Readings vary according to the student's preparation. Preparation of reports, literary critiques and special projects in linguistics are included. A 24 805 3 1105

826. Grammar and Stylistics. (3). Intensive study of advanced grammar and stylistic usage. A 26 826 0 1105

831. Seminar in Spanish Literature. (3). (a) Middle Ages. (b) Renaissance. (c) Golden Age. (d) Cervantes. (e) modern novel. (f) Generation of ’98. (g) Spanish romanticism. (j) 20th century poetry. (k) literary criticism. (l) seminar Spanish literature, (m) 20th century theater, (n) contemporary Spanish novel. A 26 831 9 1105

832. Seminar in Latin-American Literature. (3). (a) colonial period, (b) contemporary novel, (c) short story, (d) poetry, (e) modernism, (f) essay and (j) theater. A 26 832 9 1105

Philosophy

Graduate Faculty

Associate Professors: Robert Feleppa, A. J. Mandt, Gerald H. Paske, Ben F. Rogers, David Soles, Deborah H. Soles (chairperson)

Assistant Professor: J. W. Mallory

Although there is no graduate degree in philosophy, the following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

505. Philosophy of Education. (3). An examination of educational concepts with an emphasis on the implication of such concepts with respect to the problems of moral, political and religious education in a secular, democratic society. A 24 505 0 1009

516. Recent British-American Philosophy. (3). Examination of philosophical ideas and movements in recent British and American philosophy. Movements such as logical positivism, pragmatism, ordinary language philosophy and analytic philosophy are discussed. Readings are selected from figures such as Russell, Wittgenstein, Pierce, Dewey and Quine. A 24 516 0 1509

519. Empiricism. (3). A study of the philosophical views that emphasize sensory experience rather than reasoning as a source of knowledge with particular attention paid to the philosophies of Hobbes, Locke, Berkeley, Hume and Mill. A 24 519 0 1509

540. Theory of Knowledge. (3). A critical examination of the nature of knowledge and of the philosophical problems concerning skepticism, knowledge of the self, material objects; other minds; the past; present and future; universals, and necessary truths. Selection of historical and recent writings is included. Prerequisite: one course in philosophy. A 24 540 0 1509

546. Rationalism. (3). A study of the philosophical views that emphasize reasoning rather than sensory experience as the source of knowledge with particular attention paid to the philosophies of Descartes, Spinoza and Leibniz. A 24 546 0 1509

549. Topics in Ancient Philosophy. (3). In each offering, this course explores one decisive issue in philosophy from the time of Thales through the Stoics. The examination of an issue may confine itself to one period within the total span of ancient philosophy or it may trace the issue throughout the span, indicating its contemporary treatment. Some of the issues treated are: the nature of what is, the concept of the sacred, the meaning of truth, the relation of invariance and process, the existence of universal standards of thought and conduct, the problem of knowledge, skepticism, the nature of language and the character of philosophical inquiry. A 24 549 0 1509

560. Metaphysics. (3). An exploration of some basic topics in the theory of reality. Issues include such notions as space, time, substance, causality, particulars, universals, appearance, essence and being. Prerequisite: one course in philosophy. A 24 560 0 1509

555. Philosophy of the Social Sciences. (3). A study of such topics as the relations of science with natural science and philosophy, methodological problems peculiar to social science, the nature of sound explanation, concepts and constructs and the role of mathematics and formal theories in social science. A 24 555 0 1509

557. Contemporary European Philosophy. (3). An exploration of a theme, issue, philosopher or movement in contemporary European philosophy. Philosophers considered include such figures as Husserl, Heidegger, Jaspers, Gadamer, Habermas, Marcuse, Adorno, Bergson, Sartre, Merleau-Ponty, Bachelard, Lacan, Derrida, Foucault and Ricoeur. Philosophical movements examined include such tendencies as phenomenology, idealism, existentialism, structuralism, process philosophy, hermeneutics and Marxism. A 24 557 0 1509

574. Artificial Intelligence and Philosophy. (3). Cross-listed as CS 574. Transfer of ideas between artificial intelligence and philosophy: concepts and techniques of artificial intelligence and their application in philosophy (search, heuristic, problem solving, knowledge representation, learning, discovering sources of insight for artificial intelligence in different branches of philosophy). The analogy between minds and computers, "cognition is a computation and the mind is a computer," contrasted with "there are mental features not accessible to computation." The relevance of Godel's theorem and of other results in the domain of computability are discussed in this context. Prerequisite: At least one 300-level course in computer science or philosophy. Math. 243 and five hours toward the major in any one of the physical or biological sciences with grades of C or better or departmental consent. A 24 574 0 1509

588. Studies in a Major Philosopher. (3). A concentrated study of the thought of one major philosopher announced by the instructor when the course is scheduled. Repeatable for credit. Prerequisite: instructor's consent. A 24 588 0 1509

590. Special Studies. (3). Topic for study announced by instructor. Repeatable for credit. Prerequisite: instructor's consent. A 24 590 0 1509

699. Directed Readings. (2-3). A course designed for the student interested in doing independent study and research in a special area of interest. Repeatable for credit. Prerequisite: departmental consent. A 24 699 3 1509

650. Directed Readings. (3). Designed for the graduate student desiring independent study and research in an area of special interest. May be repeated for credit. Prerequisite: departmental consent. A 24 650 3 1509

Physics

Graduate Faculty

Professors: James C. Ho, Henry Unruh, Jr.

Associate Professors: David R. Alexander, Gerald L. Loper, Jr., Joseph L. Strecker, Syed M. Taher

Assistant Professors: Donald L. Foster (chairperson and graduate coordinator), Pawan K. Kahol

Master of Science

The physics department offers courses of study leading to the Master of Science (MS) degree.

Admission Requirements

Admission to the MS program in physics requires the completion of 24 hours of undergraduate physics, including three semester hours of mechanics and three semester hours of electricity and magnetism, and meeting the Graduate School admission requirements.

Degree Requirements

The MS degree in physics requires the successful completion of a program approved by the student's adviser and the department chairperson. Two options are available to the student: (1) the thesis option requires the completion of 30 semester hours of graduate course work, which includes the presentation of a thesis, and (2) the nonthesis option requires the completion of 36 semester hours of graduate work. In both options at least 12 hours must be in courses numbered 600 or above. The department recommends that each Plan of Study include Phys. 821, Classical Mechanics; Phys. 871, Statistical Mechanics; Phys. 811, Quantum Mechanics I; and either Phys. 812, Quantum Mechanics II or Phys. 813, Quantum Mechanics III. Up to nine semester hours of course work may be taken outside the department under the thesis option. For the nonthesis option up to 12 semester hours may be taken outside the department.

An MS degree in physics with a chemical physics option is available. Requirements are those listed above, with six of the required hours chosen from Chem. 611, 725, 741, 742, 745, 746 or other approved chemistry courses. Students should take Phys. 642 unless they took it for undergraduate credit.

Other program options are available which provide the possibility of combining the study of physics with interests in other fields such as astronomy, engineering, geology, computer science, biological sciences and education.
Examinations
During the first semester, students are given a diagnostic entrance examination. A qualifying examination must be passed at least one semester before graduation and an oral defense of the thesis also is required.

Courses for Graduate/Undergraduate Credit

501. Special Studies in Physics for Educators. (1, 2, 3)* A series of courses covering basic physical concepts which provide physical science background for the elementary educator. Prerequisite: In-service elementary teacher. A 21 591 1 1902

516. Advanced Physics Laboratory. (2, 3) Electromagnetic waves, interference and diffraction. Additional topics may include geometrical optics, coherence radiation, scattering and optical properties of solids. Prerequisite: Phys. 3140 or Math. 344 with grades of C or better. A 21 591 1 1902

517. Electronics Laboratory. (2, 3) Experiments in electronics that treat some of the applications of electronics in scientific research. Experiments cover the uses of vacuum tubes, transistors, IC and digital circuits. Prerequisite: Phys. 3140, A 21 517 1 1902

551. Topics in Modern Physics. (3)* An introduction to selected areas of modern physics with emphasis on the features of atomic, nuclear and solid state physics that require the development of classical physics for their explanation. Prerequisite: Phys. 2140 or Math. 344 or departmental consent. Corequisite: Math. 344, A 21 551 1 1902

555. Physical Optics. (3)* Electromagnetic waves, interference and diffraction. Additional topics may include geometrical optics, coherence radiation, scattering and optical properties of solids. Prerequisites: Phys. 2140 or Math. 344 and Math. 21 555 1 1902

590. Stellar Astrophysics. (3) Course will focus on the application of basic physical principles to the study of stellar properties. Additional topics may include stellar atmospheres, the structure of stars, formation and evolution of stars, nuclear reactions and nucleosynthesis, unusual stars, the death of stars and the interstellar medium. Prerequisite: Phys. 551, A 12 590 1 1912

595. Galactic and Extragalactic Astronomy. (3) Galaxies and the structure of the universe will be primary topics. Topics will include the constituents and dynamics of our galaxy, the characteristics of normal galaxies, active galaxies and quasars, and cosmology. Prerequisite: Phys. 551, A 12 595 1 1912

601. Individual Readings in Astrophysics. (1-2) Several topics in astronomy and astrophysics are studied in depth. Lectures, independent readings and student projects may be assigned. May be repeated up to six hours. Prerequisite: Phys. 590 or 555 or instructor's consent. A 21 601 3 1902

611. Modern Physics I (3) Introduction to quantum mechanics, the Schrödinger equation, elementary perturbation theory and the hydrogen atom. Prerequisite: Phys. 551, A 21 611 0 1902


621. Elementary Mechanics I (3) Motion of a particle in one and several dimensions, central forces, the harmonic oscillator and the Lagrangian formulation of mechanics. Prerequisites: Phys. 2140 or Math. 344 with grades of C or better. A 21 621 0 1902

625. Electronics. (2, 3, 4) Provides a working knowledge of electronic devices and circuits for the student or research worker who has little or no background in electronics. Prerequisite: instructor's consent. A 21 625 1 1909

631. Electricity and Magnetism I (3) Direct and alternating currents, electric and magnetic field theory, including an introduction to Maxwell's electromagnetic wave theory. Prerequisites: Phys. 2140 or Math. 344 with grades of C or better. A 21 631 0 1902

632. Electricity and Magnetism II (3) A continuation of Phys. 631. Prerequisite: Phys. 631 or instructor's consent. A 21 632 0 1902

671. Thermodynamics. (3) The laws of thermodynamics, distribution functions, Boltzmann equation, transport phenomena, fluctuations and an introduction to statistical mechanics. Prerequisites: Phys. 2140 or Math. 344. A 21 671 0 1902

701. Advanced Topics in Physics. (3) A course on an advanced, current topic of interest in physics. The topic may be chosen from nuclear physics, solid state physics, astrophysics, biophysics or other areas. Prerequisite: Phys. 611 or departmental consent. A 21 701 0 1902

714. Theoretical Physics. (3) Cross-listed as Math. 714. A study of mathematical techniques that may be applied to physics and other sciences. Topics typically include power series methods, WKBJ method, contour integration, integral transforms, Hilbert space, special functions and solutions of partial differential equations. Prerequisites: Math. 550 and instructor's consent. A 21 714 0 1902


800. Individual Readings. (1-3) Repeatable for credit up to three hours. Prerequisites: 90 hours of physics and departmental consent. A 21 800 3 1902

801. Selected Topics in Physics. (2-3) Repeatable for credit up to six hours. Prerequisite: departmental consent. A 21 801 0 1902

807. Seminar. (1) Review of current periodicals; reports on student and faculty research. Repeatable for credit up to two hours. Prerequisites: 20 hours of physics. A 21 807 0 1902

808. Research. (1-3) Repeatable for credit up to six hours. A 21 808 4 1902

811. Quantum Mechanics I (3) The Schroedinger and Heisenberg formulations of quantum mechanics. Applications will include rectangular potentials, central forces and the harmonic oscillator. Applications will be spin, time independent and time dependent perturbation theory. Prerequisites: Phys. 611 and 621, or departmental consent and Math. 550. A 21 811 0 1902

812. Quantum Mechanics II (3) Applications of quantum mechanics. Topics which may be included are the WKB approximation, scattering, transformation theory, interaction picture, molecules and relativistic quantum mechanics. Prerequisite: Phys. 811. A 21 812 0 1902

813. Quantum Mechanics III. (3) Applications of quantum mechanics. Topics which may be included are the N-body problem, second quantization, photons, the electromagnetic field, superconductivity and magnetism. Prerequisite: Phys. 811. A 21 813 0 1902

821. Classical Electricity and Magnetism I (3) Maxwell's equations with application to static electricity and magnetism. Additional topics may include electromagnetic fields, vector potentials, Green's functions, relativity, optics and magnetohydrodynamics. Prerequisites: Phys. 632 and Math. 650. A 21 821 0 1902

827. Statistical Mechanics. (3) An introduction to the basic concepts and methods of statistical mechanics with applications to simple physical systems. Prerequisites: Math. 550 and Phys. 621. A 21 871 0 1902

881. Solid State Physics I. (3) The basic knowledge of the nature and properties of the solid state is studied. The structural, thermal, mechanical, electrical and magnetic properties. Also studied are electron theory of metals and band theory of solids. Prerequisites: Phys. 611 or departmental consent and Math. 550. A 21 881 0 1902


Political Science

Graduate Faculty

Professors: David N. Farnsworth, Kathryn P. Griffin, Melvin A. Kahn

Associate Professors: Kenneth Ciboski (graduate coordinator), James W. McKenney, John E. Stanga, Jr. (chairperson), James F. Sheffield, Jr.

Assistant Professors: Michael J. Broadway, Randy Bush, Samuel Hof

Master of Arts and Areas of Specialization

The political science department offers the Master of Arts (MA) degree with specializations in political science and public administration. A joint emphasis
in either health administration and education or urban studies also is available.

Admission Requirements

All applicants are expected to meet Graduate School standards for admission. In addition, the department requires students to have a B average in their major field and a B average over their last 30 hours of academic credit. Students who fail to meet these requirements may be admitted if the department's Graduate Studies Committee is satisfied that previous grades do not reflect the student's present capability for graduate study; one source of evidence is scores on the aptitude portion of the Graduate Record Examination (GRE). GRE scores are required only of those who are applying for departmental assistantships, however.

In addition to satisfactory undergraduate work, all applicants are expected to have previously earned credit in Pol. Sci. 121Q or its equivalent. Students entering the political science specialization must also have earned three hours of credit in upper-division (300 or higher) political science and three additional hours in any social science. Students who plan to specialize in public administration must have earned credit in Pol. Sci. 321 and Econ. 201-202 or their equivalents.

Degree Requirements

The MA degree requires 30 or 33 hours of credit, depending upon the option selected. All students must complete Pol. Sci. 701 and a course in statistics that is approved by the department. (An alternative research skill may be substituted with approval of the department.) At least six hours of credit must be earned in political science courses at the 800 level. Up to nine hours of credit in courses outside of political science may be applied toward the degree with the adviser's approval, and up to nine hours of graduate credit earned at other universities may be transferred into this program with the approval of the department's Graduate Studies Committee. All graduate students must complete satisfactorily at least 60 percent of the course work numbered at the 700 level and above.

Political Science Specialization. Students in the political science specialization should choose a major field from these alternatives: American government and politics, comparative politics, international relations and political philosophy. Students are strongly encouraged to earn credit in fields other than their major.

Public Administration Emphasis. In addition to courses required of all students, students in the public administration emphasis must complete one seminar from Pol. Sci. 841, 851 and 856 and two optional courses from Pol. Sci. 560, 564, 580, 587, 760, 821, 842 and 855. These students should choose one of the following tracks to complete degree requirements. Only the general track can be completed within the 30-33 hour minimum required for the MA degree.

1. General Track. Students must complete three hours of electives and appropriate hours to complete the thesis, intern or nonthesis option (nine additional hours of electives in the latter case).

2. Social Service Track. Students must take three of the following: HAE 503, 505, 507; Econ. 663 or 665; SW 502; AJ 806 or 833. They must complete the thesis, intern or nonthesis option. Courses should constitute a structured area, and other courses may be substituted with advisor's approval.

3. Health Care Administration Track. Students may take HAE 605 to fulfill the research requirement. HAE 503 and 505 are required, as is HAE 507 or Pol. Sci. 560. Completion of the thesis, intern or nonthesis option with appropriate courses also is required. Students choosing the latter must choose six hours in health care administration and three hours in political science.

4. Urban Studies Track. Pol. Sci. 841 is required, as is either Pol. Sci. 580 or 760. Students must elect three of the following: P. Adm. 700, Econ. 668, Soc. 534 and Soc. 834. Students must complete the thesis, intern or nonthesis option with appropriate courses.

5. Finance Track. Pol. Sci. 760 and 821 are required. Students must choose three of the following: Econ. 653, Econ. 853, Acct. 690 and Pol. Sci. 855 and complete the thesis, intern or nonthesis option.

6. Gerontology Track. Pol. Sci. 506 and Gerol. 800 are required. Students must choose two of the following: Gerol. 513, 514, 518Q, 731 or 801. Students enrolled in this program must have a minimum of nine undergraduate hours in gerontology as a prerequisite for admission.

Completion Options

Students may complete their degree programs using any one of the following options:

1. Thesis Option. This option is designed for students planning graduate work beyond the MA degree or careers in research. Students must complete 30 hours for the degree, six of which relate to writing an acceptable thesis (Pol. Sci. 875-876). Candidates must pass an oral defense of a thesis prospectus and the thesis.

2. Nonthesis Option. This option is appropriate for students not planning further graduate work or research careers. It requires completion of 33 hours of credit and passing a written examination in the major field of study.

3. Intern Option. This option is for students seeking an intensive, applied learning experience. The MA degree requires 30 hours, up to six of which may be earned in the process of completing an internship (Pol. Sci. 874). Students must write and orally defend an internship report before being granted internship credit. Intern positions are awarded on a competitive basis and thus cannot be guaranteed.

Courses for Graduate/Undergraduate Credit

505. The Politics of Health. (3). Cross-listed as HAE 505. A course designed to show how governments in the United States make decisions in the health field, describe the political forces shaping governmental policy in health and analyze the consequences of health policy and against an increased governmental role in health. A 22 505 0 2207

506. Politics of Aging. (3). Cross-listed as Gerol. 506. This course focuses on the role of the elderly as competitors in the political arena. In assessing the elderly's strengths and weaknesses, the course analyzes the effects of aging on political behavior, strategies of the aging—both individual and collective—and the responses of the political system. A 22 506 0 2207

520. Government and Politics of Latin America. (3). An examination of the political institutions and processes that currently exist in the Latin American republics. Emphasis is on the social, economic and psychocultural factors affecting institutional processes and processes. A 22 520Q 0 2207

524. Politics of Modern China. (3). Emphasis is on study of China's political system since 1949 in terms of non-Western goals and ideas of social organization. Themes of political integration and political development are used to minimize distortion or cultural bias. Study encompasses the roots of the political system, the system as it is now and the goals China is striving to realize. Some assessment is made about the future development of communism in China. Topics include Chinese communism and the ideological heritage; political culture; political leadership; leadership succession; the participation of the Chinese Communist Party; political communications and socialization, legal developments; policy choices; and major events, such as the Hundred Flowers Campaign, Great Leap Forward and Cultural Revolution. A 22 524 0 2207

525. Postindustrial Politics. (3). An examination and analysis of political systems and postindustrial politics in highly industrialized nations, such as the United States and Japan. Emphasizes cleavage patterns, stability-instability, party systems and comparative political policy analysis. A 22 525 0 2207

533. Policy Development in Foreign Relations. (3). The process of U.S. foreign policy making in the American structure of government. Particular attention is given to institutional conflict. A 22 533 0 2207
855. Seminar in Public Finance Systems. (3). An analytical study of selected topics in public finance, including revenue, expenditure, and borrowing policies of governmental organizations. Prerequisite: departmental consent. A 22 855 9 2207

856. Seminar in American Politics and Institutions. (3). Analytical study of selected topics in American political behavior with emphasis on individual research. Repeatable for credit when content differs substantially. Prerequisite: departmental consent. A 22 856 9 2207

874. Internship. (3-6). SU grade only. An intensive applied learning experience supervised by a University department or committee. To receive credit, a student must secure approval of a written report from his/her own department. Prerequisite: departmental consent. A 22 874 2 2207

875. Research Design. (3). SU grade only. Requires the development of a research design for the thesis. This design must be submitted to a departmental committee for evaluation and approval. Prerequisite: departmental consent. A 22 875 4 2207

876. Thesis. (1-3). A 22 876 4 2207

Psychology

Graduate Faculty

Professors: Charles A. Burdsal, Jr. (chairperson), Gary Greenberg (graduate coordinator)

Associate Professors: C. Robert Boroski, Robert K. Knapf, G. J. Meissner, Donald W. Nance, James J. Snyder

Assistant Professors: Paul D. Ackerman, M. J. Klingsporn, Elsie R. Shore, Marilyn Turner, R. D. Zettle

Master of Arts and Areas of Specialization

The psychology department offers courses of study leading to the Master of Arts (MA) degree. The degree is one of three programs: (1) general-experimental psychology, (2) clinical-experimental psychology and (3) community psychology.

Admission Requirements

Applications for admission should be filed with the dean of the Graduate School by March 1 for enrollment the following fall. In addition to the usual application information, the following are required: (1) three letters of reference from persons acquainted with the applicant's academic background and potential and (2) a brief autobiographical statement describing particular interests, experiences and goals related to academic and professional work in psychology.

Applicants are evaluated with respect to (1) undergraduate grade point average, (2) amount, type and scope of undergraduate preparation and (3) reference letters. Applications are informed of admission or rejection by approximately April 1. Applications received after March 1 are acted on periodically.
until fall enrollment, with acceptances depending upon the department's graduate teaching capacity.

Prerequisites
Regardless of the program to which the student is applying, for full graduate standing, the student must have undergraduate courses in general psychology, psychological statistics, experimental psychology and history/systems. In addition, depending upon the intended area of study, the following courses are required.

General-Experimental: Three of the following—Physiological Psychology, Psychology of Learning, Comparative Psychology, Psychology of Motivation and Psychology of Perception.

Clinical-Experimental: Psychology of Learning, Abnormal Psychology and one of the following—Psychology of Motivation, Physiological Psychology or Psychology of Perception.

Community: Two from the following—Psychology of Learning, Psychology of Motivation, Physiological Psychology, Psychology of Perception, Psychology of Consciousness, Comparative Psychology or Psycholinguistics; and two from the following—Social Psychology, Child Psychology, Psychology of Personality, Psychology of Aging, Psychology of Illness, Psychology of Women, Abnormal Psychology or Developmental Psychology.

Degree Requirements
All graduate students in degree programs are required to complete a thesis with enrollments in Psych. 875 and 876. In addition to regular course examination, all students must pass an oral examination over their thesis and program area. The thesis will ordinarily be a major research project which must be preceded by approval of a formal written proposal by the student's thesis committee. Also, students must take Univariate Research Design and Multivariate Research Design. Additional requirements are determined by the program in which the student is enrolled. Students should be aware of the Graduate School's six-year limit for completing degree programs. The psychology department expects degree-bound students to make satisfactory progress toward the completion of their degree programs.

General-Experimental: Each student must take four of the following—Advanced Social Psychology, Seminar in Behavioral Development, Seminar in Learning, Seminar in Comparative Psychology, Seminar in Motivation and Emotion and Seminar in Perception. In addition, the student must take 12 hours of electives determined in consultation with an adviser. The elective hours may be used to produce a subspecialty tailored to the student's needs and interests. Those students interested in the Human Factors Psychology subspecialty will take as their elective hours Computer Applications in the Behavioral Sciences, Aerospace Psychology, F&D Procedures and Practices in Human Factors and Human Factors in Engineering.

Clinical-Experimental: The following courses are required of each student entered in the program—Seminar in Psychotherapy, Seminar in Clinical Psychology, Seminar in Behavioral Assessment, Clinical Research and Practice (taken twice) and Seminar in Behavior Therapy. In addition, each student must take six hours of electives determined in consultation with an adviser.

Community: Each student must take the following—Seminar in Community Psychology, Research in Community Psychology, Practicum in Community Psychology (taken twice), Psychological Service Agencies and Seminar in Consultation and Counseling. In addition, 8-9 hours of electives (a minimum of three courses) must be taken. One of the courses must be in the psychology department, one must be outside the psychology department and the third may be either. All electives are determined in consultation with the student's adviser.

Courses for Graduate/Undergraduate Credit

5020. Comparative Psychology. (3). Psychological and ethological analyses of behavior are compared and contrasted. The evolution, development, and behavior of animals are stressed. Major topics include a critique of the instinctive, ethological and sociobiological interpretations of behavior. Lectures are supported with laboratory demonstrations. Repeatable once. Prerequisite: One course from Group A. A 23 5200 2001

508. Psychology Tutorial. (3). Selected topics in psychology. Repeatable for a maximum of six hours of credit. Instructor's consent may be required. Check Schedule of Courses. Prerequisite: Psych. 1110. A 23 508 2001

512. Primatology. (3). A survey of the primates (including humans) and their behavior. Topics include principles of evolution and taxonomy, the transition to Homo sapiens, the evolution of behavior, the development of language, learning in the primates and the development of behavior. Prerequisite: Psych. 1110. A 23 512 2002

514. Psychology of Health and Illness. (3). A survey of the relationships between psychology/behavior and physical health and illness. Topics include stress and coping, health habits, symptom perception, health care provider-client relationships, hospitalization and prevention. A self-study of lifestyle and behavior in relation to health and illness may be included. Prerequisite: Psych. 1110. A 23 614 2001

516. Drugs and Human Behavior. (3). A survey of the actions and effects of use of legal and illegal psychoactive drugs, and of the use of psychoactive drugs to treat psychological disorders. Social-cultural, personal and situational determinants and consequences of drug use and abuse will be discussed. Prerequisite: Psych. 1110. A 23 516 2002

522. Biological Psychology. (3). A review of the biological foundations of behavior. Topics include the evolutionary basis of behavior, behavior genetics, a critical analysis of brain-behavior relationships, the role of hormones in behavior and neurochemical correlates of behavior. Prerequisite: Psych. 1110. A 23 522 2010

524. Advanced Psychology of Personality. (3). More extensive treatment of the topics of psychology of personality with special emphasis on contemporary theories, research and application of the psychological study of personality. Prerequisite: Psych. 324Q. A 23 524 2001

526. Psychological Testing and Measurement. (3). A critical analysis of the psychological fundamentals of tests and the interpretation of test findings. Several tests representing the areas of intelligence, personality, normal and abnormal psychology, interests, special abilities and attitudes are surveyed to illustrate general principles of testing. Prerequisite: Psych. 401. A 23 526 2006

532. Psycholinguistics. (3). Cross-listed as Ling. 545. Survey of psychological, linguistic and informational analyses of language. Topics include the performance-competence distinction, child development of speech, animal communication systems and the relation of language to thought. Prerequisite: Psych. 1110. A 23 532 9 2001


536. Behavior Modification. (3). A study of the basic assumptions, principles and issues of behavioral approach to helping persons with psychological problems. Demonstration and individualized practice in general helping skills as well as individual projects in applying these skills are included. Prerequisites: Psych. 1110 and instructor's consent. A 23 536 2 2003

544. Abnormal Psychology. (3). An introductory survey of abnormalities of behavior. Definitions, causes, types and classifications of abnormal behavior are examined. Attention is given to various theories of abnormality, research evidence and various methods of diagnosis and treatment. Hypotheses regarding prevention of abnormality are presented. Prerequisite: Psych. 3240. A 23 544 2000

546. Practicum in Applied Behavior Analysis and Social Learning. (3). IR; 1R. Placement in local human service agencies for about eight hours a week for 14 weeks. Under supervision, students assist in the development and delivery of services at the agency site. Repeatable once. Prerequisites: Psych. 536 and instructor's consent. A 23 546 2 2003

556. Introduction to Clinical Psychology. (3). A survey of current ethical, conceptual and research issues involved in the assessment and treatment of psychopathology. Contemporary psychotherapies are reviewed
with an emphasis on the relative efficacy of each and the therapeutic mechanisms through which they initiate behavioral change. Prerequisite: Psych. 324Q. A 23 556 0 2003

568. Computer Applications to the Behavioral Sciences. (3). (2R, 2L). This course is an introduction to computer applications to the behavioral sciences. Included are: 1) techniques of analyzing experimental data, 2) statistical applications to interactive computing, 3) "canned" statistical programs, 5) word processing and 6) other current computer applications. Prerequisites: nine hours in the social sciences. A 23 568 1 2007

601. Systems and Theories in Psychology. (3). An intensive review of systems and theories of psychology including behaviorism, Gestalt psychology, structuralism and others. An attempt is made to develop the logical relations of those theories to one another as well as to consolidate modern viewpoints and practices into a comprehensive system. Prerequisite: 15 hours of psychology or instructor's consent. A 23 601 0 2001

608. Special Investigation. (1-3). Upon consultation with instructor, advanced students with adequate preparation may undertake independent study of undirected or directed readings in psychological problems. Repeatable for a maximum of six credit hours. Consultation and approval by an appropriate advisor are required prior to registration. Prerequisites: nine hours in psychology and instructor's consent. A 23 608 4 2001

622. History of Psychology. (3). Traces the development of philosophical and empirical concepts of psychology from the ancient Greeks through the 19th century. The origins and various views of the body-mind relationship are examined. The influences of naturalistic assumptions and research methods on the development of psychology are emphasized. Prerequisites: nine hours of psychology or instructor's consent. A 23 622 0 2001

704. Advanced Social Psychology. (3). An intensive review of selected contemporary issues in social psychology. Prerequisite: Psych. 330Q. A 23 704 9 2005

728. Seminar in Psychotherapy. (3). Provides an in-depth description and critical analysis of various theories and methods of psychotherapy. Attention is given to the efficacy of these therapeutic approaches and a survey of common issues in psychotherapy, such as process and outcome, and client and therapist variables in the therapeutic process. Prerequisites: Psych. 111Q and instructor's consent. A 23 728 9 2003

748. Research and Development in Applied Settings. (3). (2R, 2L). An introduction to research and development activities in industry. Lecturers cover sources of research development problems in industry, the role of company research sources, technical communications, assembling literatures, research design and publishing practices. Lab work involves practice in planning, conducting and reporting of research with company resources, presentations, schedules and budgets and analysis of industry research proposals. Prerequisite: 15 hours of psychology or instructor's consent. A 23 748 1 2008


756. Aerospace Psychology. (3). Exploration of the many roles of scientific psychology in aviation and aerospace science. Surveys the research and literature in the areas such as psychophysiological aspects of flight, environmental effects on human performance in aviation, aircrew skill requirements and training, flight with computer display systems and aviation safety. Prerequisite: 15 hours of psychology or instructor's consent. A 23 756 0 2008

Courses for Graduate Students Only

802. Seminar in Clinical Psychology. (3). Intensive study of clinical theory, research and practice. Includes such issues as an intensive examination of psychotherapeutic approaches, issues in assessment, research in clinical psychology, appropriate research designs in clinical science, client rights, legal and ethical concerns, licensure and certification and related topics. Prerequisite: instructor's consent. A 23 802 9 2003

804. Seminar in Behavioral Development. (3). A critical analysis of the concept of development and of theories of behavioral development. Course begins with a review of the concept of integrative levels and proceeds to a discussion of modern evolutionary thought. The concept of development is examined from psychological, biological and anthropological perspectives. Finally, various theories of human development are critically evaluated. Prerequisite: instructor's consent. A 23 804 9 2001

811. Seminar in Cognitive-Behavioral Assessment. (4). (3R, 3L). Surveys issues of reliability and validity, provides description, critical analysis and practice in clinical use of several psychological assessment methods such as interviewing, observation, self-report and standardized intelligence and personality tests. Focus is upon comprehensive clinical assessment, including integration and reporting of assessment data for treatment planning. Prerequisite: instructor's consent. A 23 811 9 2003

815. Clinical Research and Practice. (3). Designed to give the student further experience in clinical skills and research and practice. Students will work with individual clients seen through the departmental clinic. May be taken for a maximum of six credit hours. Prerequisite: instructor's consent. A 23 815 2 2003

820. Graduate Research Seminar. (3). Analysis and explanation of assumptions and experimental methodologies of the types of research that lead to discovery of testing of scientific laws. Although not limited to psychology, special emphasis is given to laboratory research illustrating the control of individual behavior. Prerequisite: instructor's consent. A 23 820 9 2001

826. Seminar in Behavior Therapy. (4). (3R, 3L). A review of the theoretical and empirical support for specific behavior therapeutic practices. Approaches may include systematic desensitization, flooding, contingency management techniques and aversive therapies. The interface between behavioral assessment and clinical practice also is discussed. Prerequisite: instructor's consent. A 23 826 9 2003

830. Seminar in Community Psychology. (3). Comprehensive overview of theory, research and practice in the emerging field of community psychology in the context of general systems theory. Topics include prevention, consultation, community mental health and a community versus individual perspective to health and human problems. Prerequisite: instructor's consent. A 23 830 9 2005

831. Research in Community Psychology. (3). An examination of the perspective of community psychology specifically concerning the applied methods of needs assessment and program evaluation. Special emphasis on how to use applied research methods to precipitate planned community and organizational change and social reform. Prerequisite: instructor's consent. A 23 831 2 2005

832. Practicum in Community Psychology. (3). Supervised practice in such areas as psychological consultation, program evaluation, program development, paraprofessional training and preventative programs in community agencies and organizations. Repeatable for a maximum of six credit hours. Prerequisite: Psych. 830 and 831 and instructor's consent. A 23 832 2 2005

833. Psychological Service Agencies. (3). An in-depth examination of psychological service agencies with regard to structure, functions, financing, goals, planning, development, evaluation and accountability. Prerequisite: instructor's consent. A 23 833 0 2005

834. Seminar in Consulting and Counseling. (3). The theories and techniques of consultation, counseling and interviewing are examined. Emphasis is on an understanding of the factors of individual and interpersonal functioning in organizations and systems. Prerequisite: instructor's consent. A 23 834 9 2005


844. Seminar in Personality and Psychosocial Disorders. (3). Relationship of normal behavior development and maladjustment and also a critical review of theory and research. Prerequisite: instructor's consent. A 23 844 9 2003

845. Development of Abnormal Behavior. (3). A consideration of the descriptive characteristics of deviant and abnormal behavior from a developmental perspective. The ecological, social-environmental, personal and genetic-biological contexts and causes of such behavior are considered. Implications for prevention and clinical interventions will be discussed. Prerequisite: instructor's consent. A 23 845 9 2003

852. Univariate Research Design. (3). Analysis of variance for various single and multi-factor designs, analysis of covariance, multiple comparisons and other selected topics. Also included is the use of computer program packages for the analysis of data. The course emphasizes psychological research in laboratory and applied settings. Prerequisite: Psych. 842 or instructor's consent. A 23 852 9 2001

853. Multivariate Research Design. (3). Multivariate methods, techniques and designs in psychological research including multiple regression, discriminant analysis, profile similarity, factor analysis and other related areas. Also included is the use of computer program packages for the analysis of data. The course emphasizes research in applied and field settings. Prerequisite: Psych. 842 or instructor's consent. A 23 853 9 2001

865. Seminar in Psychology of Learning. (3). Intensive study of theory and research in learning processes. Included are the study of principles of individual behavior and some of
the variables of which it is a function as illustrated by respondent and operant conditioning along with some areas of application. Prerequisites: Psych. 302 and instructor's consent. A 23 865 9 2002

870. Seminar in Current Developments. (3). Intensive study of current issues, techniques, research and application. Repeatable for different topics for a maximum of six hours. Prerequisite: instructor's consent. A 23 870 9 2001

872. Seminar in Comparative Psychology. (3). Intensive study of psychological and ethological research and theories of behavior. The course is oriented around the evolution and development of behavior. Topics include a review of the concept of integrative levels in psychology. Prerequisites: Psych. 5020 and instructor's consent. A 23 872 9 2002


885. Seminar in Perception. (3). Intensive study in theory and research in perceptual processes. Prerequisites: Psych. 332, or equivalent, and instructor's consent. A 23 885 9 2001

Religion

Graduate Faculty

Associate Professors: Michael Kalton, Paul Wiebe

Although there is no graduate program in religion, the following courses may be taken for graduate credit.

Courses for Graduate/Undergraduate Credit

760. Workshop in Religion. (2-4). A 15 750 0 1510

790. Independent Study. (1-3). Designed for the student who is capable of doing graduate work in a specialized area of the study of religion that is not formally offered by the department. Repeatable for credit. A 15 790 0 1510

Sociology/Social Work

Graduate Faculty

Professor: John J. Hartman (chairperson)

Associate Professors: Nancy Brooks (graduate coordinator), William C. Hayes (director of Gerontology Center)

Assistant Professors: Robert L. Allegrucci, Elwin M. Barrett, Elena Bastida, John Cochran, Laura Eells, Bobbey J. Humphrey, Bernice Hutcherson, Timothy W. Laurie, Ronald R. Matson, Kathleen M. O'Flaherty, Gregory L. Wiltfang

Master of Arts

The sociology department offers courses of study leading to the Master of Arts (MA) degree with options for thesis and nonthesis programs, as well as an emphasis in gerontology.

Admission Requirements

Applicants are evaluated for admission with respect to their undergraduate record, Graduate Record Examination scores (optional) and three letters of reference from professors who supervised their undergraduate work. For consideration for admission to degree status, applicants are expected to have at least 15 hours in sociology including courses in social statistics, social theory and research methods. Specific course prerequisites may be made up after admission by students with otherwise adequate backgrounds. Final recommendation on a candidate's admission to the MA program in sociology is made to the Graduate School by the graduate coordinator of the Department of Sociology.

Degree Requirements

Students pursuing the MA degree in sociology may follow either a thesis or a nonthesis program.

Thesis Program. Students in the thesis program must take a total of 32 hours, including Soc. 800, Research Methods in Sociology, and 845, Seminar in Sociological Theory, and two 800-level graduate seminars as well as completion of their thesis hours. Sixty percent of the 32 hours must be 700 level or above.

Nonthesis Program. Students in the nonthesis program must take a total of 38 hours. They must take at least 11 hours of courses numbered 800 or above, including Soc. 800, Research Methods in Sociology, and 845, Seminar in Sociological Theory, and two 800-level graduate seminars. Each student must demonstrate skill in a collateral area, such as research or computer programming. Soc. 851, Directed Research, is needed to fulfill this requirement. A total of 60 percent of the 36 hours must be 700 level or above.

Degree Requirements for the MA with Gerontology Emphasis

Students may complete the MA degree in sociology with an emphasis in social gerontology under either the thesis or nonthesis program as described below. For either program 60 percent of the courses must be 700 level or above.

Thesis Program. Students must complete the sociology core, Ger. 800 and three of the gerontology courses listed on the next page.

Sociology Core Courses ............... Hrs.
Soc. 510, Introduction to Methods, or

511, Applied Quantitative Research ............... 3
Soc. (Geron.) 513, Sociology of Aging ............... 3
Soc. 800, Research Methods in Sociology ............... 3
Soc. 845, Seminar in Sociological Theory ............... 3
Soc. 875-876, Thesis* ............... 3-6
Seminar electives (3 seminars above 800) ............... 9

Gerontology Courses
Ger. 800, Seminar I ............... 3
and three of the following courses
Ger. (Anthro.) 514, Anthropological Perspectives in Aging ............... 3
Ger. (Biol.) 5160, Biology of Aging ............... 3
Ger. (IS) 731, Growth and Development IV: Adults and Aging ............... 3
Ger. (Econ.) 663, Economic Insecurity ............... 3
Ger. 801, Field Research in Gerontology ............... 3

Total Hours ............... 36-39

*Thesis must be aging related.

Nonthesis Program. Students must complete the sociology core, Ger. 800 and four of the gerontology courses listed below.

Sociology Core Courses Hrs
Soc. 510, Field Research Methods, or
Soc. 511, Applied Quantitative Research ............... 3
Soc. (Geron.) 513, Sociology of Aging ............... 3
Soc. 800, Research Methods in Sociology ............... 3
Soc. 845, Seminar in Sociological Theory ............... 3
Soc. 851, Directed Research* ............... 3
Seminar electives (3 seminars above 800) ............... 9

Gerontology Courses
Ger. 800, Seminar I ............... 3
and four of the following courses
Ger. (Anthro.) 514, Anthropological Perspectives in Aging ............... 3
Ger. (Biol.) 5160, Biology of Aging ............... 3
Ger. (IS) 731, Growth and Development IV: Adults and Aging ............... 3
Ger. (Econ.) 663, Economic Insecurity ............... 3
Ger. 801, Field Research in Gerontology ............... 3

Total Hours ............... 39

*Directed research must be aging related.
Examinations
Students electing the thesis program in sociology must pass an oral defense of the thesis.

Sociology

Courses for Graduate/Undergraduate Credit

501. Sociological Statistics. (3). Generally offered only in fall semester. Applications of descriptive and inferential statistics to sociological problems. Topics include measures of central tendency, dispersion and association, simple linear regression, hypothesis testing, and analysis of variance. Prerequisites: Soc. 111Q and Math. 111 or equivalent. A 25 501 0 2208

510. Field Research Methods. (3). An examination of various qualitative research tools and techniques used by sociologists. As part of the learning experience, students are involved in direct field observation in natural social environments. Prerequisite: Soc. 111Q. A 25 510 0 2208

511. Applied Quantitative Research. (3). An examination of the survey as a tool used to address sociological questions. Topics include survey design, sampling, data collection techniques and interpretation of results. Students gain experience in designing and administering surveys. Prerequisite: Soc. 212. A 25 511 0 2203

513. Sociology of Aging. (3). Cross-listed as Ger 513. Analysis of the social dimensions of old age, including changing demographic structure and role changes and their impact on society. Prerequisite: Soc. 111Q. A 25 531 0 2208

515. Sociology of the Family. (3). Analysis of American family behavior, including the selection of marriage partners, the husband-wife and parent-child relationships and the relation of these patterns of behavior to other aspects of American society. Prerequisite: Soc. 111Q. A 25 515 0 2208


517. Intimate Relations. (3). This course is designed to examine the social dimensions of intimacy. The course includes an analysis of intimacy in different types of relationships, i.e., romantic, friendship, marriage, and research in the area is reviewed with a special focus on the implications of intimate social interaction. Prerequisite: Soc. 111Q. A 25 517 0 2208

523. Sociology of Law. (3). The study of law and legal institutions within their social context. Prerequisite: Soc. 111Q. A 25 523 0 2208

526. Political Sociology. (3). Social bases and consequences of political behavior. Also included are the study of power and authority, problems in the development and maintenance of viable democratic political structures and bureaucratic organization and power. Prerequisite: Soc. 111Q. A 25 526 0 2208

527. Violence and Social Change. (3). The analysis of the causal processes and functions of extreme and violent political behavior, i.e., revolutionary, insurrectionary and protest movements. The course includes an analysis of consequences for social change. Prerequisite: Soc. 111Q. A 25 527 0 2208

534. Urban Sociology. (3). Urban population, organization and institutions, and programs of city planning. Prerequisite: Soc. 111Q. A 25 534 0 2208

537. The Social Consequences of Disability. (3). Cross-listed as Ger 537. An introduction to the study of the social aspects of disability, including the impact of social values, institutions and policies upon adults with disabilities. Appropriate for both students of sociology and other social sciences. Prerequisite: Soc. 111Q. A 25 537 0 2208

538. Medical Sociology. (3). An analysis of the role of the medical profession and the relationship of medicine to social and cultural change. Prerequisite: Soc. 111Q. A 25 538 0 2208

539. Juvenile Delinquency. (3). The factors related to juvenile delinquency and the treatment of delinquency and prevention. Prerequisite: Soc. 111Q. A 25 539 0 2208

540. Criminology. (3). The extent and nature of crime and the methods of international research. Prerequisites: Soc. 111Q, 111R. A 25 540 0 2208

541. Contemporary Corrections. (3). Historical and contemporary programs for the treatment of offenders, viewed as significant in social change. Prerequisite: Soc. 539 or 540. A 25 541 0 2208

560. Selected Topics in Sociology. (3). Study in a specialized area of sociology with emphasis on student research projects. Prerequisites: Soc. 111Q, 511. A 25 560 0 2208

580. Seminar on the Family. (3). Cross-listed as Women's Studies, 580. An in-depth examination of the family as a social institution and its role in society. Prerequisite: Soc. 510 or 511 and departmental consent. A 25 580 9 2208

581. Seminar on Juvenile Delinquency. (3). An in-depth examination and practical application of research methods in the study of delinquency. Prerequisite: Soc. 510 or 511 and departmental consent. A 25 581 9 2208

582. Seminar in Social Movements. (3). Analysis of the causes and consequences of social movements in society. Prerequisite: Soc. 510 or 511 and departmental consent. A 25 582 9 2208

583. Seminar in Comparative Social Movements. (3). Analysis of the causes and consequences of social movements in society. Prerequisite: Soc. 510 or 511 and departmental consent. A 25 583 9 2208

584. Seminar in Urban Sociology. (3). Analysis of social processes and institutions in urban society. Prerequisite: Soc. 510 or 511 and departmental consent. A 25 584 9 2208


Courses for Graduate Students Only

800. Research Methods in Sociology. (3). The application of research methods to sociological data. Topics include research design, sampling, data collection techniques, computer-based analysis of data, scaling and measurement. Prerequisite: Soc. 510. Students must design their own research projects. Prerequisites: Soc. 510 or 511 and departmental consent. A 25 800 9 2208

805. Seminar in Qualitative Methodology. (3). An in-depth examination and practical application of various research methods in sociology. Topics include participant observation, qualitative interviewing, and unobtrusive measures. Prerequisites: Soc. 510 or departmental consent. A 25 805 9 2208

815. Seminar on the Family. (3). Review of recent research in the area of deviance and social change. Prerequisite: Soc. 510 or departmental consent. A 25 815 9 2208

820. Seminar in Social Movements. (3). Analysis of the causes and consequences of social movements in society. Prerequisite: Soc. 510 or 511 and departmental consent. A 25 820 9 2208

822. Seminar in Deviant Behavior. (3). In-depth examination of recent theory, methods and research in the area of deviance. Prerequisites: Soc. 510 or 511 and departmental consent. A 25 822 9 2208

825. Seminar in Organizational Analysis. (3). Exploration of selected problems in organizational theory. Prerequisite: Soc. 510 or 511. A 25 825 9 2208

830. Seminar in Stratification and Power Structure. (3). Analysis of the forms and dynamics of social inequality as a socio-political phenomenon. Prerequisites: Soc. 510 or 511 and departmental consent. A 25 830 9 2208

831. Seminar in Urban Sociology. (3). In-depth examination of the social processes and institutions in urban society. Prerequisite: Soc. 510 or 511. A 25 831 9 2208

832. Seminar in Juvenile Delinquency. (3). A study of juvenile delinquency from a number of theoretical frameworks, accentuating the contextual complexity of the subject matter. Prerequisites: Soc. 510 or 511 and departmental consent. A 25 832 9 2208

833. Seminar in Urban Sociology. (3). An in-depth examination of the social processes and institutions in urban society. Prerequisite: Soc. 510 or 511. A 25 833 9 2208

845. Seminar in Sociological Theory. (3). A course emphasizing continuity between sociological and theo­logical theory. The perspective is both historical and analytical, spanning the 18th, 19th and 20th centuries, and concluding with the works of representative contemporary thinkers. Prerequisite: Soc. 645 or 646 or departmental consent. A 25 845 9 2208

* Prerequisite may be waived with departmental consent.
Although a complete graduate program is not available currently in social work, the following courses may apply toward the master's degree. (3). Descriptive and analytical approach to social welfare problems, policies, programs and issues, including an analysis of the influence of values on the formulation of social welfare policy. In-depth examination of selected issues in public and voluntary areas and alternative methods of meeting needs are included. Prerequisite: SW 201 for social work majors, departmental consent for non-majors. A 25 502 0 2104

550. Social Welfare Policy and Services II. (3). Analytical approach to social welfare problems, policies, programs and issues, including an analysis of the influence of values on the formulation of social welfare policy. In-depth examination of selected issues in public and voluntary areas and alternative methods of meeting needs are included. Prerequisite: SW 500. A 25 500 0 2104

551. Independent Studies. (1-3). Individual projects designed for social work students who are capable of doing independent work in areas of special interest. Repeatable for credit not to exceed six hours. Prerequisite: instructor's consent. A 25 551 3 2104

550. Personal Human Interaction within Society. (3). This course provides students with a beginning theoretical framework within which the integration of prior knowledge can be made regarding physical, mental and social development of the human being, perspectives on American culture and subcultural variations and their effect on human adaptability in the social environment and the relationship of those entities to beginning professional social work practice. Prerequisites: SW 200 and six hours from a list of social and behavioral science courses approved by the social work faculty and selected in consultation with a social work adviser. A 25 550 0 2104

560. Internships in Social Work. (3-5). To provide a specially designed field experience for special students who need or desire training that will enhance their professional abilities and for whom academic credit is appropriate. It is also designed to meet experiential learning needs of special designated students for whom academic credit is appropriate. Repeatable for credit not to exceed a total of six hours. Prerequisite: instructor's consent. A 25 570 2 2104

601. Advanced Social Work Practice. (3). Advanced practice theory with special emphasis on becoming both knowledgeable and skillful in applying theory to practice. The focus of this class is on developing a clear understanding of concepts, principles, techniques and processes of social work methods as they relate to individuals, families and groups and to the larger community. This course is to be taken concurrently with SW 602 except by department consent. Prerequisites: SW 502 and departmental consent. A 25 601 0 2104

602. Practicum I. (4). Placement in community social welfare agencies for supervised periods of observation and direct service assignments with special emphasis on performance of basic practice skills and understanding of the social welfare agency and its role in the community service network. This course is to be taken concurrently with SW 601 except by department consent. Prerequisites: a grade of 8 or better in SW 502 and departmental consent. A 25 602 2 2104

604. Seminar on Research in Practice. (3). A critical look at practice and professional issues, using social work research. The course analyzes current social work practice, as well as its future directions. SW 605 is to be taken concurrently except by departmental consent. Prerequisite: SW 601. A 25 604 9 2104

605. Practicum II. (5). Placement in community social welfare agencies for supervised direct service assignments with emphasis on formulation of appropriate goals. The selection of various social work roles and in-depth development of techniques and skills common to practice in the social welfare field are included. SW 604 is not to be taken concurrently except by departmental consent. Prerequisite: SW 602. A 25 605 2 2104

610. Aging: Personal, Social and Professional Perspectives. (3). Cross-listed as Geron. 610. A realistic look at the comprehensive role of social work practice and the helping professions in work with the aging. Provides a focus on work with individuals, groups and community organizations. Links social with economic and political factors. Highlights current and future developments in social policy, human service practice and demography as the total life cycle is conceptualized. Prerequisite: departmental consent. A 25 610 0 2104

750. Social Work Workshops. (1-5). Specialized instruction using a variable format in a social welfare relevant subject. This course may be offered together with SW 150. Prerequisite: instructor's consent. A 25 750 2 2104

The following abbreviations are used in the course descriptions: A stands for lecture and L for laboratory. For example, 4P 3L means four hours of lecture and two hours of lab.
General Programs

Communications—Richard N. Armstrong, coordinator
Liberal Studies—Supervisory Committee, Sally Kitch, chairperson
Public Administration—Joseph P. Pisciotte, director
Women's Studies—Tina Bennett-Kastor, coordinator

Communications

Graduate Faculty
Professors: Bela Kirayfalvi, Richard C. Weisbach
Associate Professors: Joyce P. Cavarozzi, John Gaston, Audrey Needles, Charles Pearson, Robert M. Smith
Assistant Professors: Les Anderson, Richard Armstrong (graduate coordinator), Judith Babich, Suzanne Frentz, Genaro Gonzalez, James Hallmark, Robert Illidge, Francis L. Kelly, Judith Pier, Pat Washington, Arden Weaver, Keith Williamson (chairperson)

The graduate program in communications at The Wichita State University is designed to provide students with a multidisciplinary foundation in human communication and to serve as a broad spectrum of interests and needs in many fields of endeavor. The program is based upon integration and synthesis of academic resources in communications in several departments and disciplines throughout the University.

A program administration committee composed of representatives from participating units provides direction for the Master of Arts degree in communications program.

Master of Arts in Communications and Areas of Specialization

The Master of Arts degree in communications (MAC) program permits a generalist or specialist approach to anyone in the following areas: (1) theatre and drama; (2) general communications; (3) mass communications; (4) communication theory; (5) cross-cultural communications. Students are provided with a thesis option (30-hour minimum) or a nonthesis option (36-hour minimum) in each area of emphasis except general communications. The latter provides a nonthesis program only.

Admission Requirements

In addition to the general Graduate School admission requirements, applicants' backgrounds must reflect competence in any one or more of the several communications areas. Such competence, based upon academic training or equivalent professional/vocational experience, will be evaluated by the coordinator of graduate studies and graduate faculty who comprise the Communications Program Admissions Committee. Students may be admitted to the program with deficiencies in background, but these deficiencies must be overcome by course work not to exceed nine credit hours within the first academic year as stipulated by the admissions committee. In no case will courses taken to fulfill deficiencies be counted toward the minimum credit hour degree requirements.

Degree Requirements

Program Core (Required) Courses. All students enrolled in the MAC degree program must take the courses listed below, except as noted.

Comm. 801, Introduction to Communication Research 2 hours
Comm. 802, Historical and Qualitative Methodologies in Communication Research 2 hours or Comm. 803, Empirical/Quantitative Research Methodology in Communication Research 2 hours
Comm. 870, Directed Research (nonthesis students) 2 or 3 hours
Comm. 875-876, Thesis (thesis students) 2-2 hours

Area Core (Required) Courses. In addition to the program core courses just listed, students must take certain required courses in their area of emphasis.

Communication Theory
Comm. 702, Contemporary Theories of Oral Communication 3 hours
Comm. 865, Organizational Communication 3 hours
Both Comm. 802 and 803 (see program core above) 2 hours

Note: All communication theory majors in the nonthesis option will be required to take three hours of Comm. 870 (see program core above).

Cross-Cultural Communications
Min. Stud. 540, Advanced Cross-Cultural Communications 3 hours
Min. Stud. 545, Cross-Cultural Communications Theory 3 hours

Mass Communication
Comm. 720Q, Dimensions of Mass Communication 3 hours
Comm. 737, Processes and Effects of Mass Communication 3 hours
Comm. 770, The Audience 3 hours

Theatre and Drama
Thea. 623Q, Development of the Theatre I 3 hours
Thea. 624Q, Development of the Theatre II 3 hours
Thea. 824, Development of Modern Theatre Styles 3 hours or Thea. 823, History of Dramatic Criticism 3 hours

General Communication
At least one core course in each of the other four areas of emphasis 12 hours

Other Courses. In addition to the required program and area core courses, students in each area of emphasis, with advice and consent of their graduate faculty adviser, must select courses to complete the Plan of Study, as discussed in the Graduate School section at the beginning of the Graduate Bulletin. The Plan of Study will be individually designed to accommodate a student's background, interests and needs and must include a minimum of 60 percent of their graduate hours at the 700-899 level (i.e., 18 hours of a 30-hour program or 21 hours of a 36-hour program).

Examinations

Written comprehensive examinations will be administered to all candidates during the final semester of their degree program. In addition, those enrolled in thesis options will present an oral defense of the thesis. Examining committees will consist of the adviser, acting as chairperson, and three or four other members of the graduate faculty in communications, at least one of whom shall be from a discipline or area other than the student's area of emphasis.

Master of Education

The MEd program provides extensive study in secondary education with content emphasis in speech communication, including rhetoric and public address, theatre, broadcasting and...
The Master of Arts in Liberal Studies (MALS) program is designed for persons who wish to pursue a particular topical or interdisciplinary interest at the graduate level, but find the existing programs either too specialized or insufficiently individualized. The liberal studies program offers students an opportunity to design their own program of study to answer their particular needs and interests.

Admission Requirements
Applicants should have a baccalaureate degree from an accredited institution and, generally, have a grade point average of 3.00 or better. Usually no more than six hours of graduate credit from another program may be transferred into the liberal studies program.

When submitting an application to the Wichita State Graduate School, students should include a brief essay describing their reasoning for selecting the liberal studies program and their educational goals for the program.

Three graduate faculty representing at least two of the departments in which the student's work will be concentrated should be secured as program advisers. One of these advisers, who must be a graduate faculty member of Fairmont College of Liberal Arts and Sciences, will serve as the student's primary adviser and chair the student's committee.

The Liberal Studies Supervisory Committee may request that the applicant submit Graduate Record Examination scores (verbal and quantitative).

Students meeting standards for admission to the program will be admitted on a conditional basis, pending final approval of their Plan of Study.

Before completing the first 12 hours of graduate work in the program, the student must:
1. Complete selection of members of the faculty advising committee and form the graduate studies coordinator.
2. With the assistance of this committee, prepare a Plan of Study to be approved by the graduate coordinator and the Graduate School.

Once accepted by the Graduate School, the Plan of Study becomes the student's individualized curriculum, and any changes to it must be approved by the student's advisory committee and the MALS Supervisory Committee.

Degree Requirements
The structural framework for the degree is a Plan of Study, developed by the student in consultation with faculty in the program. It must include:
1. A minimum of 36 semester hours of credit from at least three disciplines
2. No more than 12 semester hours from any one department
3. A maximum of 12 hours in a college other than liberal arts and sciences
4. At least 18 of the 36 total hours in courses numbered 700 or above
5. Three of the 36 hours must be taken at a level of 800 or above

Courses for Graduate Students Only

800. Research Goals and Strategies. (3) An introduction to the research goals, methods and sources in the humanities, social sciences and natural sciences, with special attention to the opportunities and problems of choosing research activities involving more than one discipline. Required of all students in the Master of Arts in Liberal Studies Program. A 33 900 4 4999

875. Thesis. (1-6). A course for students who are finishing the Master of Arts in Liberal Studies (MALS). The student writing a thesis must be enrolled in this course until the thesis is completed and all thesis requirements have been satisfied. Prerequisite: consent of student's degree committee chairperson and instructor. A 33 875 4 4999

885. Terminal Project. (2-6). A course for students who are near the end of their MALS program and involved in a Terminal Project. The Terminal Project may have many aspects such as field work, practicum, internship, research report, or any other individualized activity, but the scope of it must be approved by the student's advisory committee. The student involved in one must be enrolled in this course until the project is completed and all project requirements have been satisfied. A 33 865 4 4999

Public Administration

Graduate Faculty
Regents Professor of Urban Affairs: Glenn W. Fisher
Professors: Clark D. Ahlberg, H. Edward Ermieje (associate director, Center for Urban Studies), John F. Mullen (director, Center for Urban Studies), Samuel J. Yeager

Assistant Professors: George M. Platt, Nancy McCarthy Snyder

Associate Faculty in Public Administration Professors: Robert D. Alley (education), John J. Hopkins (sociology)

Associate Professors: Richard Graham (mechanical engineering), William C. Hays (sociology/gerontology and director, University Gerontology Center), Don E. Malzahn (industrial engineering), Gerald S. McDougall (chairperson, economics), I. N. Yoon (economics)


**Master of Public Administration**

The Master of Public Administration (MPA) degree at The Wichita State University is designed to prepare students for professional careers in public and quasi-public organizations. The program is interdisciplinary in nature and is structured to respond to the unique clientele of an urban university.

The philosophy underlying the MPA degree is that interdisciplinary approaches are essential for understanding the changing urban environment and for effective performance in management and staff positions in government. In their degree programs students have the opportunity for exposure to the methods and perspectives of the social and behavioral sciences, engineering and technology and the humanities. The link between these disciplines and the problems of public management are emphasized through methods which include observation of practitioners in the classroom, policy relevant research assignments, public affairs seminars led by successful professionals and internships. Most faculty contributing to the degree program have significant professional experience in state and local government and are involved in research relevant to state and local governments and nonprofit organizations in Kansas.

Graduates of the program have gone on to hold positions ranging from city managers to budget analysts in state government to management analysts in major hospitals. Although the majority are employed in the public sector, some graduates of the program hold positions in the private sector, while still others have pursued additional study in law, doctoral education or other specializations.

**Admission Requirements**

Applicants for the degree program must meet the requirements for admission to the Graduate School. In addition, students must have completed introductory college professional courses in the areas of microeconomics, economic principles, public administration and statistics. Students may be admitted to the program with deficiencies in background areas, but the deficiencies must be overcome within the first academic year. Courses taken to fulfill deficiencies will not count toward the 36-hour degree requirement.

**Degree Requirements**

The Master of Public Administration degree consists of 39 graduate hours, taken over at least three semesters of study. The degree is made up of three elements—the core curriculum, an area of specialization and a completion option.

**Core Curriculum**

All degree candidates are required to complete the seven core courses:

- P. Adm. 625, Computer Applications for Public Policy. Introduces the student to microcomputer uses in the public sector.
- P. Adm. 702, Research Methods in Public Administration. An examination of research tools used to analyze public policy and administrative performance.
- P. Adm. 710, Scope of Public Administration. An examination of the field of public administration and issues shaping the future of the discipline.
- P. Adm. 730, Decision Making. A study of the relationship of political considerations to administrative decision making.
- P. Adm. 770, Environment of Public Administration. Examines the political and economic environment of public administration.

**Areas of Specialization**

The degree allows students to develop a specialization in one of three specialization options: management, financial management or policy analysis.

**Completion Options**

Students may complete the degree program in one of two ways:

- Applied Research Option—Students may choose the applied research option for completion of the degree and earn three hours credit. In this option the student conceptualizes and researches a policy relevant question and delivers a finished product with policy application. Students must successfully defend the paper before a faculty committee.
- Thesis Option—This option is designed for students planning graduate work beyond the MPA degree or careers in research. Six credit hours may be earned in writing an acceptable thesis. Candidates must pass an oral defense of the thesis.

**Internships**

Internships are an important part of the MPA Program. Pre-service students are encouraged to take an internship which must last at least nine months. Internship (P. Adm. 890) will carry three hours credit and will include attendance at a monthly seminar. Students opting for an internship must also complete an applied research paper (3 hours) which may be based upon an appropriate internship project. Intern positions are remunerative and are awarded on a competitive basis. Although placement cannot be guaranteed, the Hugo Wall Center for Urban Studies has an excellent placement record.

**Financial Assistance**

The Board of Trustees of The Wichita State University, through the Graduate School and the Center for Urban Studies, offers a number of graduate assistantships on a competitive basis. Recipients receive a stipend for the academic year plus a partial tuition waiver. Graduate assistants work 20 hours per week with faculty in the center's teaching, research and public service activities.

The Center for Urban Studies also designates two outstanding graduate assistants as Hugo Wall Fellows. Each fellow is granted a $600 per semester stipend in addition to the regular graduate assistantship remuneration.

Internship positions, while not guaranteed, are remunerative and are awarded on a competitive basis.

**Courses for Graduate/Undergraduate Credit**

625. Computer Applications for Public Policy. (3). Cross-listed as P. Adm. 625. Introduces students to major types of software applications for IBM-compatible microcomputers and their use in public policy analysis. Prerequisite: enrollment in MPA program or instructor's consent. P 13 700 0 2214

700. Urban Affairs. (3). A study of the policy issues faced by local government in an urban setting from a multidisciplinary point of view. Prerequisite: enrollment in urban affairs program or instructor's consent. P 13 700 0 2214

702. Research Methods in Public Administration. (3). This course is designed to acquaint the student with applied policy research methods. Students study basic principles and techniques of research, emphasizing how these can be applied. Example applications are taken from urban problems. Emphasis is on the formulation of realistic models and solutions. Computer techniques are developed in class as necessary. Prerequisite: instructor's consent. P 13 702 4 2214

710. Scope of Public Administration. (3). Cross-listed as Pol. Sci. 710. Review of the scope of the field of public administration and an examination of the different fields of study within the discipline. Prerequisite: enrollment in MPA program or instructor's consent. P 13 710 0 2214

720. Urban Systems. (3). Cross-listed as IE 720. This course develops the principles of systems analysis and the tools by which these principles can be applied. Example applications are taken from urban problems. Emphasis is on the formulation of realistic models and solutions. Computer techniques are developed in class as necessary. Prerequisite: instructor's consent. P 13 720 0 2214

730. Decision Making. (3). Cross-listed as Mgmt. 660. Course includes theories of decision-making ability under varying degrees of uncertainty. Content coverage includes such materials as theories of decision making, environment for stimulating creativity, cognitive inhibitors to problem identification, alternative evaluation techniques, decision implementation and utilization of quantitative tools.
in decision making. Prerequisite: instructor's consent. P 13 730 0 2214

740. Policy Evaluation. (3). This course is designed to assist public sector monitoring and control of program and service delivery quality. The social sciences offer a variety of research tools and methods that have management feedback applications which are appropriate for evaluating performance. Prerequisite: instructor's consent. P 13 740 0 2214

755. Special Topics in Urban Affairs. (3). Provides students with an opportunity to engage in advanced study in urban topics that are of immediate concern and arise only occasionally. The content varies with issues that arise, student needs and faculty expertise. Directed to Master of Public Administration students. May be repeated if topics are different. Prerequisite: instructor's consent. P 13 755 0 2214

761. State and Local Financial Systems. (3). Course deals with selected aspects of state and local government financial management. Introduction to fund accounting, costing of government services, capital budgeting and asset management. P 13 761 0 2214

770. The Environment of Public Administration. (3). Course surveys the political and economic institutions that underlie the practice of public administration. Topics include political systems, constitutional authority, legislative process, intergovernmental relations, the price system, market failure, government regulation, public finance and public choice. Prerequisites: Pol. Sci. 321 and Econ. 202. P 13 770 0 2214

Courses for Graduate Students Only

875-876. Thesis. (3-3). Prerequisite: advisor's consent. P 13 875 0 2214; P 13 876 0 2214

890. Internship. (3). The internship is designed to integrate academic pursuits and practical experience. Students admitted to the internship are assigned to work in an approved government, community or private organization for a period of three to 12 months. P 13 890 2 2214

898. Applied Research Paper. (3). The applied research paper under the direction of a faculty committee is designed to develop and measure competency in the areas of writing, research and policy conceptualization. Each paper addresses a policy relevant question and the delivery of a finished product with policy application. This course is to be taken in the last semester of course work. P 13 898 4 2214

Women's Studies

Graduate Faculty

Associate Professors: Sally Kitch (director), Elke Shipe (psychology), Anita Sken (English), Jacqueline Snyder (continuing education)

Assistant Professors: Elena Bastida (sociology), Dorothy Billings (anthropology), Gayle Davis, Carol Konik

Students may earn a master's degree in several areas with an emphasis in women's studies. These include instructional services, counseling and school psychology, sociology and cross-cultural communications. Women's studies may be included as one of two or three areas of interest under the MA degree in Liberal Studies, an individually designed, interdisciplinary graduate program. In other areas, such as the community program in psychology, students may orient course electives and thesis research to accommodate an interest in women's studies. The following courses are available for graduate credit.

Courses for Graduate/Undergraduate Credit

516. Sociology of Sex Roles. (3). Cross-listed as Soc. 516. A 10 516 0 2208

530. The American Woman in History. (3). Cross-listed as Hist. 530. A 10 530 0 2205

533. Women and the Law. (3). This course is an introduction to the legal aspects of women's rights, including the equal rights amendment to the U.S. Constitution; right to choose a name; sex discrimination in employment, education and credit; welfare and criminal justice. Consideration also is given to women in the field of law, such as lawyers and legislators. A 10 533 0 4903


535. Images of Women in Literature. (3). Cross-listed as Eng. 535. Women characters as stereotypes, archetypes and fully developed human beings in the works of various authors. A 10 535 0 1502

536Q. Writing by Women. (3). Cross-listed as Eng. 536. The work of major women writers, both British and American, in poetry and prose. A 10 536Q 0 1502

542. Women in Other Cultures. (3). Cross-listed as Anthro. 542. A 10 542 0 2202

570. Directed Readings. (1-3). This course is designed for students who wish to pursue special reading or research projects not covered in course work. A 10 570 3 4903

580. Special Topics. (1-3). This course focuses on advanced topics of interest to women's studies. A 10 580 0 4903

580C. Contemporary Women's Art. (3). This course focuses on works by women in the visual arts, music and poetry since the 1960s. A 10 580C 0 4903

580D. Theories of Feminism. (3). This course examines various approaches taken by theorists both of the women's movement and of the cultural status of women. A 10 580D 3 4903

580J. Women's Traditional Arts. (3). Cross-listed as Comm. 580J. A course designed to provide the woman student experience in decision making and to improve skills in leadership through role playing and exercise in group dynamics. A 10 580J 0 4903

635. Leadership Techniques for Women. (3). Cross-listed as Comm. 635. A course designed to provide the woman student experience in decision making and to improve skills in leadership through role playing and exercise in group dynamics. A 10 635 0 4903

870. Directed Readings. (2-3). Designed for graduate students who wish to pursue research in areas not normally covered in course work. Repeatable for credit with department consent. Prerequisite: instructor's consent. A 10 870 0 4903

880. Seminar in Women's Studies. (3). Intensive study of selected women's studies topics. Seminar discussion, reports and research project. Repeatable for credit with departmental consent. Prerequisite: instructor's consent. A 10 880 0 4903

880A. Advanced Theories of Feminism. (3). This course will examine in depth social topics in feminist theory, including such subjects as narrative theory of women's writing as well as theories of female consciousness, of language and gender, and of women and history. Theoretical issues in women's studies will also be explored. A 10 880A 0 4903

The following abbreviations are used in the course descriptions: A stands for lecture and L for laboratory. For example, 4R: 2L means four hours of lecture and two hours of lab.
Graduate Faculty—1988-89

Full Membership

Date or dates following title refer to time of initial and successive appointments. Faculty listed have academic rank.


Adamson, Ginette, Associate Professor of French and Chairperson of Modern and Classical Languages and Literatures (1972). Diplôme de Fin d’Études Normales, École Normale d’Institutrices, 1963; MA, North Carolina Central University, 1965; PhD, Washington University, 1975.

Alexander, David R., Associate Professor of Physics and Executive Director of Lake Afton Public Observatory (1979). BS, Kansas State University, 1967; AM, Indiana University, 1969; PhD, 1971.

Allen, Anneke S., Associate Professor of Chemistry (1964). Candidate Ryskunversiteit Groningen Netherlands, 1952; PhD, Tuine University, 1966.

Alley, Robert D., Professor of Secondary Education and Associate Dean of Education (1967). BS, Iowa State University, 1957; ME, University of Montana, 1969; EdD, Arizona State University, 1967.


Armstrong, Richard N., Assistant Professor of Speech Communication (1987). BA, Southern Utah State College, 1972; MA, Brigham Young University, 1974; PhD, Bowling Green State University, 1978.


Bajaj, Prem N., Associate Professor of Mathematics and Statistics (1986). BA, Punjab University, 1951; MA, 1954; MS, Case Western Reserve University, 1967; PhD, 1969.

Ballenger, Marcus T., Associate Professor of Elementary Education (1950). BSE, North Texas State University, 1959; MED, Texas Tech University, 1963; EdD, 1970.

Bastida, Elena M., Assistant Professor of Sociology (1981). BA, Kansas State University, 1970; MA, 1972; PhD, University of Kansas, 1979.

Batemman, Morita M., Associate Professor of Decision Sciences (1966). BSME, University of Southern California, 1946; MS, University of North Carolina, 1950; PhD, Oklahoma State University, 1967.

Belt, John A., Associate Professor of Management (1971). BA, University of Southern California, 1966; PhD, Texas Tech University, 1971.


Bereman, Nancy, Assistant Professor of Management (1980). BA, The Wichita State University, 1962; MBA, 1974; PhD, University of Minnesota, 1985.

Bernhart, Walter D., Professor of Aeronautical Engineering (1954, 1964). BSCE, Kansas State University, 1950; MS, The University of Georgia, 1953; MA, University of Kentucky, 1955; PhD, Purdue University, 1965.


Cardenas, Anthony J., Associate Professor of Spanish (1975). BA, University of New Mexico, 1968; MA, University of Wisconsin, 1969; PhD, 1974.


Carroll, Jeri Ann, Associate Professor of Elementary Education (1982). BME, University of Kansas, 1950; MS, 1953; PhD, 1980.

Chaffee, Leonard M., Professor of Educational Administration and Supervision (1967). BA, Hiram College, 1957; MS, Kent State University, 1952; PhD, Ohio State University, 1961.


Chang, Dae H., Professor of Administration of Justice (1975). BA, Michigan State University, 1957; MA, 1958; PhD, 1962.

Chaudhuri, Jharna, Assistant Professor of Mechanical Engineering (1984). BS, Lady Brabourne College, Calcutta University, 1967; MS, University of New York, 1975; PhD, Rutgers University, 1982.

Cho, Dong Woo, Professor and Chairperson of Economics (1972). BS, Seoul National University, Seoul, Korea, 1966; MA, Wayne State University, 1969; PhD, University of Illinois, 1973.


Christ, Ronald, Associate Professor of Political Science (1969). BFA, Kansas City Art Institute, 1972; MFA, Indiana University, 1974.

Chung, Kae H., Professor and Chairperson of Management (1970). BA, Seoul National University, Seoul, Korea, 1959; MBA, Louisiana State University, 1965; PhD, 1968.

Ciba, Bernhard R., Adjunct Professor of Psychology (1989). BS, Iowa State University, 1961; MA, 1960, PhD, University of Washington, 1971.

Clark, James E., Assistant Professor of Economics and Director, Center for Economic Education (1976). BA, Michigan State University, 1960; MA, Northwestern University, 1971; PhD, 1976.

Cochran, John K., Associate Professor of Sociology (1986). BA, University of Florida, 1980; MA, 1982; PhD, 1986.

Collison, Brian D., Associate Professor of Computer Science and School Psychology (1986). MS, University of Kansas, 1956; MEd, 1962; PhD, University of Missouri, 1969.


Corbett, Donald L., Professor of Music Education (1971). BME, The Wichita State
Adjunct Faculty

Ackerman, Paul D., Assistant Professor of Psychology (1969). BA, The University of Kansas, 1964; MA, 1966; PhD, 1968.


Allegretti, Robert L., Assistant Professor of Sociology (1967). BS, Pittsburgh State University, 1960; MA, 1963; PhD, University of Missouri, 1969.


Bainz, Judith, Assistant Professor of Theater (1984). BA, Edgefield College, 1974; MA,2 University of Wisconsin, 1976; PhD, University of California, 1981.

Baikken, Linda, Assistant Professor of Educational Psychology (1985). BA, Northern Michigan University, 1960; MS, Utah State University, 1979; EdD, Boston University, 1983.


Beachey, Wilmer D., Assistant Professor and Director of Respiratory Therapy (1963). BS, AA, degree, 1966; AS, Indiana University, 1972; BS, 1974; Med. of University of Illinois, 1981.


Blatchley, John T., Assistant Professor of Biological Sciences (1967). BS, The Wichita State University, 1962; MS, 1965.

Blessing, J. Dennis, Assistant Professor and Chairperson of Physician Assistant Program (1967). BS, Sam Houston State University, 1973; BHS, Duke University, 1976; PA, 1976; MIF, The Wichita State University, 1986.

Bowman, Barbara E., Assistant Professor of Biological Sciences and Assistant Dean of the College of Engineering (1965). BS, University of Utah, 1954; MSE, The Wichita State University, 1966; PhD, The University of Kansas, 1979.


Broadway, Michael J., Assistant Professor of Geography (1984). BEd, Nottingham University, 1975; MS, London University, 1977; PhD, 1980.


Burkholder, Douglas G., Assistant Professor of Mathematics and Statistics (1949). BA, Wichita State College, 1980; PhD, University of Iowa, 1984.


Cavazzoli, Joyce Pennington, Associate Professor of Theater (1955). BSE, Ohio University, 1953, MA, Ohio State University, 1953.

Chambers, Ronald Dean, Assistant Professor and Clinical Supervisor of Community...


Conrad, Mary Elaine, Assistant Professor of Medical Technology (1960). BS, Kansas Newman College, 1957; MS, Kansas State University, 1961.

Conner, Mary Frey, Assistant Professor of Elementary/Secondary Education (1987). BS, Bowling Green State University, 1974; MS, University of Toledo, 1979; PhD, Ohio State University, 1984.


Erickson, James, Assistant Professor of Computer Science (1963). BM, University of Michigan, 1969; MA, University of Minnesota, 1973; PhD, 1976.

Frentz, Suzanne, Assistant Professor of Speech Communications (1966). BA, The Wichita State University, 1952; MA, Kansas State College, 1968; PhD, University of Wisconsin-Madison, 1981.

Garver, Stockton H., Assistant Professor of Art History (1973). BA, Harvard University, 1964; MA, Indiana University, 1972; PhD, 1980.

Jantze, Margaret L., Associate Professor and Chairperson of Business Education (1968). BS, The University of Nebraska, 1959; EdD, 1963.

Jewell, Ward T., Assistant Professor of Electrical Engineering (1967). BSEE, Oklahoma State University, 1979; MSSEE, Michigan State University, 1980, PhD, Oklahoma State University, 1986.

Kailali, Ken, Adjunct Professor of Computer and Communications, Engineering (1985). BA, The Wichita State University, 1974; MA, 1976; PhD, University of Oklahoma, 1981.

Kehoe, Patrick E., Assistant Professor of Latin (1984). BA, University of St. Louis, 1963; PhD, University of Cincinnati, 1967.

Kelly, Francis L., Assistant Professor of Speech Communication (1965). BA, De Paul University, 1954; MT, University of Illinois, 1962; PhD, University of Arizona, 1966.

Klettner, Frank R., Adjunct Professor of Communication Disorders and Sciences (1976). BS, University of Wisconsin, 1949; MS, 1951; DBA, 1981.

Laube, Terence R., Assistant Professor of Social Work (1976). BS, Central Missouri State University, 1972; MA, 1974; PhD, St. Louis University, 1981.


Lee, Carl Ann, Assistant Professor of Health, Administration and Gerontology (1976). BS, Marymount College, 1964; MS, 1967; PhD, University of Nebraska, 1976.


Lefkowitz, John, Assistant Professor of Computer Science (1964). BS, Iowa State University, 1963; PhD, 1967.

Lindsey, Richard, Assistant Professor of Physics (1962). BA, University of Michigan, 1963.


Miller, Leonard Scott, Assistant Professor of aeronautical Engineering (1967). BS, University of Michigan, 1963; PhD, 1967.

Munoz, Elias M., Assistant Professor of Spanish (1967). BA, University of Michigan, 1968; PhD, University of Iowa, 1981.


Naim, Majid, Assistant Professor of Industrial Engineering (1985). BS, University of Texas, 1970; MS, 1974; PhD, 1980.


Nielsen, Carl C., Assistant Professor of Finance (1968). BS, Dana College, 1956; MA, University of Nebraska, 1963; PhD, 1966.
Academic Calendar for 1989-90

Summer Session 1989

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 22-June 2</td>
<td>Presession and workshops</td>
</tr>
<tr>
<td>May 29</td>
<td>Memorial Day holiday</td>
</tr>
<tr>
<td>June 1-2</td>
<td>Summer Session registration</td>
</tr>
<tr>
<td>June 5</td>
<td>Classes begin, first four-week term</td>
</tr>
<tr>
<td>June 30</td>
<td>Final day of first four-week term registration for second four-week term</td>
</tr>
<tr>
<td>July 3</td>
<td>Classes begin, second four-week term</td>
</tr>
<tr>
<td>July 4</td>
<td>Independence Day holiday</td>
</tr>
<tr>
<td>July 28</td>
<td>Summer Session ends</td>
</tr>
</tbody>
</table>

Fall Semester 1989

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 21-26</td>
<td>Fall semester registration</td>
</tr>
<tr>
<td>August 26</td>
<td>Classes begin</td>
</tr>
<tr>
<td>September 2-4</td>
<td>Labor Day holiday</td>
</tr>
<tr>
<td>October 20</td>
<td>Midterm point</td>
</tr>
<tr>
<td>November 3</td>
<td>Final date for withdrawal with nonpenalty grades</td>
</tr>
<tr>
<td>November 13-21</td>
<td>Pre-registration period for spring semester. Exact dates published in the Schedule of Classes</td>
</tr>
<tr>
<td>November 22-26</td>
<td>Thanksgiving recess</td>
</tr>
<tr>
<td>December 14</td>
<td>Last day of classes</td>
</tr>
<tr>
<td>December 15</td>
<td>Study day</td>
</tr>
<tr>
<td>December 16-22</td>
<td>Final examinations</td>
</tr>
<tr>
<td>December 23</td>
<td>Semester ends</td>
</tr>
</tbody>
</table>

Spring Semester 1990

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 15</td>
<td>Martin L. King Day, no day</td>
</tr>
<tr>
<td>January 16-20</td>
<td>Spring semester registration</td>
</tr>
<tr>
<td>January 22</td>
<td>Classes begin</td>
</tr>
<tr>
<td>March 11-17</td>
<td>Spring recess</td>
</tr>
<tr>
<td>March 19</td>
<td>Classes resume</td>
</tr>
<tr>
<td>March 23</td>
<td>Midterm point</td>
</tr>
<tr>
<td>April 6</td>
<td>Final date for withdrawal with nonpenalty grades</td>
</tr>
<tr>
<td>April 16-27</td>
<td>Pre-registration period for fall semester. Exact dates published in the Schedule of Courses</td>
</tr>
<tr>
<td>May 11</td>
<td>Last day of classes</td>
</tr>
<tr>
<td>May 14</td>
<td>Study day</td>
</tr>
<tr>
<td>May 15-21</td>
<td>Final examinations</td>
</tr>
<tr>
<td>May 22</td>
<td>Semester ends</td>
</tr>
<tr>
<td>May 26</td>
<td>Commencement</td>
</tr>
</tbody>
</table>

Summer Session 1990

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 28</td>
<td>Memorial Day, no day</td>
</tr>
<tr>
<td>May 29-June 6</td>
<td>Presession and workshops</td>
</tr>
<tr>
<td>June 7-8</td>
<td>Summer Session registration</td>
</tr>
<tr>
<td>June 14</td>
<td>Classes begin, first four-week term</td>
</tr>
<tr>
<td>July 4</td>
<td>Independence Day, holiday</td>
</tr>
<tr>
<td>July 6</td>
<td>Final day of first four-week term registration for second four-week term</td>
</tr>
<tr>
<td>July 9</td>
<td>Classes begin, second four-week term</td>
</tr>
<tr>
<td>August 3</td>
<td>Summer Session ends</td>
</tr>
</tbody>
</table>
## Academic Calendar for 1990-91

### Fall Semester 1990

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 20-25</td>
<td>Fall semester registration</td>
</tr>
<tr>
<td>August 27</td>
<td>Classes begin</td>
</tr>
<tr>
<td>September 1-3</td>
<td>Labor Day, holiday</td>
</tr>
<tr>
<td>October 19</td>
<td>Midterm point</td>
</tr>
<tr>
<td>November 2</td>
<td>Final date for withdrawal with nonpenalty grades</td>
</tr>
<tr>
<td>November 12-20</td>
<td>Preregistration period for spring semester. Exact dates published in the Schedule of Courses.</td>
</tr>
<tr>
<td>November 21-25</td>
<td>Thanksgiving recess</td>
</tr>
<tr>
<td>December 13</td>
<td>Last day of classes</td>
</tr>
<tr>
<td>December 14</td>
<td>Study day</td>
</tr>
<tr>
<td>December 15-21</td>
<td>Final examinations</td>
</tr>
<tr>
<td>December 22</td>
<td>Semester ends</td>
</tr>
</tbody>
</table>

### Spring Semester 1991

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 14-19</td>
<td>Spring semester registration</td>
</tr>
<tr>
<td>January 21</td>
<td>Martin L. King Day, holiday</td>
</tr>
<tr>
<td>January 22</td>
<td>Classes begin</td>
</tr>
<tr>
<td>March 10-16</td>
<td>Spring recess</td>
</tr>
<tr>
<td>March 18</td>
<td>Classes resume</td>
</tr>
<tr>
<td>March 22</td>
<td>Midterm point</td>
</tr>
<tr>
<td>April 5</td>
<td>Final date for withdrawal with nonpenalty grades</td>
</tr>
<tr>
<td>April 17-26</td>
<td>Preregistration period for fall semester. Exact dates published in the Schedule of Courses</td>
</tr>
<tr>
<td>May 10</td>
<td>Last day of classes</td>
</tr>
<tr>
<td>May 13</td>
<td>Study day</td>
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<tr>
<td>May 14-20</td>
<td>Final examinations</td>
</tr>
<tr>
<td>May 21</td>
<td>Semester ends</td>
</tr>
<tr>
<td>May 25</td>
<td>Commencement</td>
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</table>

### Summer Session 1991

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 27</td>
<td>Memorial Day, holiday</td>
</tr>
<tr>
<td>May 28-June 7</td>
<td>Presession and workshops</td>
</tr>
<tr>
<td>June 6-7</td>
<td>Summer Session registration</td>
</tr>
<tr>
<td>June 10</td>
<td>Classes begin, first four-week term</td>
</tr>
<tr>
<td>July 4</td>
<td>Independence Day, holiday</td>
</tr>
<tr>
<td>July 5</td>
<td>Final day of first four-week term; registration for second four-week term</td>
</tr>
<tr>
<td>July 8</td>
<td>Classes begin, second four-week term</td>
</tr>
<tr>
<td>August 2</td>
<td>Summer Session ends</td>
</tr>
</tbody>
</table>
Graduate School Deadlines
Summer 1989-Spring 1990

In addition to course requirements, the following applicable deadlines must be met to insure graduation. Failure to observe them will delay graduation.

<table>
<thead>
<tr>
<th>Event</th>
<th>Summer 1989</th>
<th>Fall 1989</th>
<th>Spring 1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>June 1-3</td>
<td>August 21-26</td>
<td>January 15-20</td>
</tr>
<tr>
<td>Final date for filing Application for Degree card</td>
<td>June 9</td>
<td>September 11</td>
<td>February 5</td>
</tr>
<tr>
<td>in Graduate School office</td>
<td></td>
<td>November 17</td>
<td>April 13</td>
</tr>
<tr>
<td>Last date for oral examinations</td>
<td>July 7</td>
<td>December 9</td>
<td>May 4</td>
</tr>
<tr>
<td>Last date for incomplete grades to be removed</td>
<td>July 14</td>
<td>December 9</td>
<td>May 4</td>
</tr>
<tr>
<td>Bound thesis due in Graduate School office</td>
<td>July 14</td>
<td>December 9</td>
<td>May 4</td>
</tr>
<tr>
<td>All financial obligations to the University must</td>
<td>July 14</td>
<td>December 9</td>
<td>May 4</td>
</tr>
<tr>
<td>have been met</td>
<td>None</td>
<td>None</td>
<td>May 26</td>
</tr>
<tr>
<td>All departmental requirements must have been met</td>
<td>None</td>
<td>None</td>
<td>May 26</td>
</tr>
<tr>
<td>Commencement</td>
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These dates may be subject to change.

Key to Course Descriptions

Symbols
When two course numbers are joined by a hyphen (-), the first semester is prerequisite to the second; when the numbers have an ampersand (&) between them, the two semesters may be taken in either order. Unless specifically noted otherwise, the first course listed is offered in the fall semester and the second in the spring.

The number of hours of credit for each course is indicated in parentheses following the course title. The number of class meetings per week is normally the same as the number of credit hours. Two hours of laboratory work are usually required for one hour of credit. In courses involving meetings other than lectures, the following symbols are used: R, lecture; L, laboratory; C, conference; D, demonstration; and P, practicum, with the hours of practicum per week given in front of the letter (6-8P means six to eight hours of practicum per week.)

Abbreviations
The following abbreviations of academic departments are used in references to courses offered by those departments.

Acct. = Accounting
Admin. = Administration (business)
AE = Aeronautical engineering
AJ = Administration of justice
AM = Applied music
Amer. Stud. = American studies
Anthro. = Anthropology
Art. Ed. = Art education
Art. Hist. = Art history
Biol. = Biology
Counseling and School Psychology
Chem. = Chemistry
Comm. = Communications
CS = Computer science
CSP = Counseling and School Psychology
DH = Dental hygiene
DS = Decision sciences
EAS = Educational administration and supervision
Econ. = Economics
EE = Electrical engineering
Eng. = English language and literature
Engr. = General engineering
Fin. = Finance
Fr. = French
GD = Graphic design
Geog. = Geography
Geol. = Geology
Ger. = German
Geron. = Gerontology
HAE = Health administration and education
Hist. = History
Hon. = Honors Program
HS = Health sciences
IE = Industrial engineering
IS = Instructional services (education)
IT = Industrial technology
Ling. = Linguistics
LS = Library science
Math. = Mathematics
ME = Mechanical engineering
Mgmt. = Management
Min. Stud. = Minority studies
Mod. = Modern and classical languages and literatures
Mkt. = Marketing
MT = Medical technology
Mus. = Musicology-composition
Mus. Ed. = Music education
Mus. Perf. = Music performance
Nurs. = Nursing
PA = Physician assistant
P. Adm. = Public administration
PE = Physical education, health and recreation
Pers. = Personnel (business)
Phil. = Philosophy
Phys. = Physics
Pol. Sci. = Political science
Psych. = Psychology
PT = Physical therapy
RE = Real estate
Rel. = Religion
RT = Respiratory therapy
SA = Studio arts
Sm. Bus. = Small business
Soc. = Sociology
Span. = Spanish
Stat. = Mathematics (statistics)
SW = Social work
Thea. = Theater
UA = Urban affairs
WS = Women's studies
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Visitors to the Wichita State campus should obtain temporary parking permits from the Police Department, open 24 hours a day.
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C = Certificate  B = Baccalaureate  S = Specialist  
A = Associate    M = Master      D = Doctorate